MTU Aero Engines

23

Annual Report

MTU AERO ENGINES AG

FISCAL YEAR 2023

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Key facts and figures with year-on-year comparison

[T1] Selected consolidated financial information and key figures at a glance

in € million (unless stated otherwise)	2023	2022	Change against previous year in %
Revenue and earnings			
Revenue	5,363	5,330	0.6
thereof: commercial engine business [1]	711	1,335	-46.7
thereof: military engine business [1]	538	496	8.3
thereof: commercial maintenance business [1]	4,225	3,616	16.8
Gross profit	118	855	-86.2
Earnings before interest and taxes (EBIT)	-161	508	<-100
Net income	-97	333	<-100
Adjusted earnings			
Adjusted revenue	6,326	5,330	18.7
Adjusted earnings before interest and taxes (adjusted EBIT)	818	655	24.9
Adjusted EBIT margin (in %)	12.9	12.3	
Net income	594	476	24.8
Balance sheet			
Total assets	10,204	9,230	10.5
Equity	2,933	3,107	-5.6
Equity ratio (in %)	28.7	33.7	
Net financial debt	631	753	-16.2
Cash flow			
Cash flow from operating activities	777	728	6.8
Cash flow from investing activities	-420	-400	-5.0
Free cash flow	352	326	7.8
Cash flow from financing activities	-294	-224	-31.3
Number of employees at year end			
Commercial and military engine business	7,544	6,973	8.2
Commercial maintenance business	4,626	4,300	7.6
Total number of employees	12,170	11,273	8.0
Share indicators			
Earnings per share in €			
Basic earnings per share	-1.90	6.21	<-100
Diluted earnings per share	-1.90	6.06	<-100

[1] Before consolidation

To our shareholders

Letter to our shareholders

Dear shareholders,

2023 was a year of contrasts at MTU Aero Engines.

Operationally, MTU remained in top form. We were very successful in our core business and generated adjusted revenue of €6.3 billion and adjusted EBIT of €818 million. The free cash flow amounted to €352 million. On an organic basis, we therefore fully achieved our targets. All areas of the company made a key contribution to this success. Moreover, we are still on track for our goal of revenue of €8 billion and an operating profit of €1 billion by 2025, 8 - 1- 25.

At the same time, we faced the enormous financial consequences of the Geared Turbofan fleet management plan, which had an impact of around € 1 billion on our reported revenue and earnings. As a result, MTU reported negative earnings for the first time in its 90-year history. The fleet management plan was triggered by a manufacturing problem with a component produced by our program partner Pratt & Whitney. This affects us through our risk- and revenue-sharing agreement because our share of the earnings and the risks associated with the Geared Turbofan is 18%. The Geared Turbofan fleet management plan will also have a substantial impact on our cash flow in the coming years. That means we have to pay special attention to our cost structure.

These ups and downs were reflected in our share price in 2023: Thanks to our successes, our share rose to a high for the year of €244.50 in April. When the impact of the Geared Turbofan fleet management plan was announced, our shares lost a quarter of their value. They are now recovering. Nevertheless, our market capitalization is still below the actual value of our company. I assure you that we are working hard to close the gap.

At the same time, I would like to thank you, our shareholders, for supporting us through all the highs and lows in 2023 and for your continuing loyalty. Despite the difficult situation, we would like to show our appreciation by paying a dividend for 2023. At the Annual General Meeting, we will therefore be proposing a dividend of €2.00 per share. That is a sign of our reliability, even in challenging times. We want MTU to remain an attractive and future-oriented investment for you.

I can assure you: MTU's future prospects are good. Unlike the situation at the beginning of the coronavirus pandemic, we are not coming to a sudden halt – quite the contrary! Aviation is on an upswing and the sector is poised for growth. Some regions and segments have already exceeded the pre-Covid level. There is high demand for new engines and maintenance services. The Paris and Dubai airshows were good indicators of the positive outlook for the aviation sector. Aircraft manufacturers booked record orders in Paris and MTU secured orders worth more than U.S.$1 billion. In Dubai, we gained orders of more than U.S.$500 million. That places us in a good starting position. We further improved this position in 2023 by investing continuously in the future of the company – both in technology and in our capacity at all locations worldwide.

For example, a new production building for disks was erected in Munich. In addition, we held the groundbreaking ceremony for our new development center. New training capacities were established at our locations in China and Canada as a sound basis for vocational and further training of skilled staff. In addition, we took a second test station into service in Zhuhai, China. In 2023, we also expanded the capacity of our on-site service network: We obtained permits in Australia for the CF34 engines for regional aircraft and in Brazil for our CFM56 engines, which are used in the classic A320 family. MTU Maintenance Dallas can now perform on-site engine tests at its new, larger premises. In 2023, it was once again clear that we are making the right investments, and that our investments during the coronavirus pandemic were also right. Without them, we would not have the capacity for the additional upcoming shop visits resulting from the Geared Turbofan fleet management plan. We face a balancing act: positioning the company well for market requirements and, at the same time, implementing the inspection program efficiently in collaboration with our partners.

At this point, I would like to stress that, with regard to the Geared Turbofan fleet management plan, MTU is part of the solution, not part of the problem. We are doing everything within our power to remedy the situation as quickly as possible together with our partners. MTU is both a pioneer and a benchmark: Since the start of the Geared Turbofan fleet management plan, we have used our expertise to suggest improvements and to enhance the inspection process – across the entire MRO network for the Geared Turbofan. In addition, we are evaluating whether we can shift maintenance work on other engines to other MTU locations to free up capacity for the Geared Turbofan in Hanover. Furthermore, we are working on expanding Geared Turbofan maintenance capacities also at other sites such as EME Aero or MTU Maintenance Zhuhai so that we can work through this issue as quickly as possible. We are making a clear contribution to regaining airlines' trust in the Geared Turbofan.

After all, the capabilities of this engine are undisputed. This is not a fundamental or technological problem; it is a manufacturing problem. The Geared Turbofan has the right, future-oriented architecture. It is a vital component in our technology agenda as we move towards emission-free flying.

In 2023, we also drove forward other technologies within our technology agenda. As part of the European Clean Sky 2 research program, we are optimizing our low-pressure turbines and high-pressure compressors. Our WET concept is making progress with funding from the European Clean Aviation program. Clean Aviation is also providing funding for our Flying Fuel Cell. For the Flying Fuel Cell, we need absolutely reliable, high-performance electric propulsion systems. To position ourselves optimally for this, in 2023, we acquired the electric motor developer eMoSys. eMoSys' drives already have the highest known power density. Furthermore, together with MT Aerospace we are developing a complete liquid hydrogen fuel system for commercial aviation. Our Flying Fuel Cell should be the first application. To sum up: Even in challenging times, we are investing in our future so that we remain a leading technology company. Our clear goal is emission-free flying. In this way, we want to play our part in solving climate change because that is one of the most urgent problems facing humanity.

In 2023, we also made good progress with future technologies for military aircraft. A four-year technology agreement was signed for the new European fighter jet system FCAS. This includes additional technology studies for the demonstration phase of the engine. Moreover, together with Safran, we want to work on an engine for the next generation of military helicopters. Rapid and efficient development should be achieved through a pan-European team.

MTU has been driving forward all of these topics with great commitment. That is only possible with a strong team. In the numerous uncertainties and crises of recent years, MTU has been demonstrating its strength. On behalf of the Executive Board, I would like to thank all employees for their exceptional commitment and enormous flexibility. We are proud to have such a competent and motivated team at our side. And we are sure that together we can master the Geared Turbofan fleet management plan and use our operational strength to shape the future of the aviation sector.

We will not allow ourselves to be blown off course. We are charting a focused yet calm track through these turbulent times. We have honed our strategy and have a keen eye on our targets. MTU is a healthy, growth-oriented company with opportunities in all segments. Our long-term prospects are still strong. We still want to continue to grow profitably. Even though 2024 will be dominated by the Geared Turbofan fleet management plan, we anticipate a positive organic trend – in all business areas. In 2024, revenue is expected to rise fastest in the commercial series business. We also expect to see an increase in revenue in the spare parts business, commercial maintenance and the military business. Looking beyond this year, we remain confident. 8 – 1 – 25 still applies. On an adjusted basis, by 2025, we want to generate revenue of €8 billion and an operating profit of €1 billion.

In short, we intend to deliver on our promises in the future – and we will do so. I would be delighted if you would continue to put your trust in us on this journey.

Sincerely yours

The Executive Board

Lars Wagner

Chief Executive Officer (CEO)
born in 1975

Degree in mechanical engineering and aeronautical engineering and an MBA
Appointed until December 31, 2025

Responsibilities:
Human resources, legal affairs, strategy, technology & engineering, corporate communications;
Chief Sustainability Officer (CSO)

Peter Kameritsch

Chief Financial Officer (CFO) and Chief Information Officer (CIO)
born in 1969

Degrees in physics and business administration
Appointed until December 31, 2025

Responsibilities:
Finance, IT

Dr. Silke Maurer

Chief Operating Officer (COO)
born in 1972

Degree in mechanical engineering
Appointed until January 31, 2026

Responsibilities:
Purchasing, production, assembly, quality

Michael Schreyögg

Chief Program Officer
born in 1966

Degree in mechanical engineering
Appointed until June 30, 2026

Responsibilities:
Marketing & Sales and program management for MTU's commercial and defense programs, MTU Maintenance locations

Report of the Supervisory Board

Gordon Riske
Chairman of the Supervisory Board

MTU is extremely well positioned in the market and operationally it is a high performer. That is demonstrated by its strong organic growth in 2023. However, the Geared Turbofan fleet management plan weighed heavily on reported revenue and earnings in 2023. Thanks to its technological edge, balanced portfolio and broad customer base, MTU is well placed to achieve a further rise in revenue and earnings on an adjusted basis in 2024, and to go on growing beyond 2024. The following sections contain the Supervisory Board's report on its activities in fiscal year 2023. The Supervisory Board will continue its close and trustful collaboration with all stakeholders in 2024.

Activities of the Supervisory Board

In this report, the Supervisory Board provides information in accordance with Section 171 (2) of the German Stock Corporation Act (AktG) on its activities in fiscal year 2023 and the results of its review of the annual financial statements and consolidated financial statements. In 2023, the Supervisory Board carried out, fully and with due care, the duties of oversight and advice entrusted to it by law, the articles of association, and its own rules of procedure.

It regularly advised the Executive Board on the running of the company, continually supported and monitored the management of the business activities and assured itself that the Executive Board's dealings were proper and lawful. The Supervisory Board was informed and consulted in a direct and timely manner on all decisions of consequence for the company. The Executive Board provided the members of the Supervisory Board with regular, prompt and comprehensive information on the company's situation. The Supervisory Board received written monthly reports on the company's net assets, financial position and results of operations. At its meetings, the Supervisory Board also discussed the business performance of all of MTU's affiliated companies.

The Supervisory Board discussed the strategy and all important projects with the Executive Board. After examination and careful deliberation, the Supervisory Board endorsed the company's strategic orientation with its focus on sustainable and profitable organic growth. The Supervisory Board passed resolutions on all transactions for which its approval was required in accordance with the law, the company's articles of association or the Executive Board's rules of procedure after reviewing and discussing them with the Executive Board. Preparatory meetings can also take place without the Executive Board as necessary. Moreover, the Supervisory Board regularly schedules meetings without the Executive Board.

In 2023, as in previous years, the Supervisory Board examined and oversaw the internal control mechanism at MTU, especially the risk management system, internal auditing and legally compliant corporate governance. It examined these systems with the support of the Audit Committee and in dialogue with the Executive Board and reached the conclusion that the company has implemented them appropriately and effectively; in particular there is an appropriate and effective internal control and risk management system for the accounting process. Furthermore, the Supervisory Board looked extensively at the company's compliance.

In view of the legal requirements for stock corporations, which impose an obligation to obtain the consent of the Supervisory Board for certain related party transactions, the Supervisory Board adopted an internal procedure to comply with these requirements in 2020. In the reporting period, there were no transactions requiring consent or disclosure.

Meetings of the Supervisory Board

The Supervisory Board held five regular in-person meetings in 2023. It also held one extraordinary meeting using the hybrid format, i.e., some members attended in person while others took part via a video conference. The members took part in all meetings. Attendance was therefore 100%. In addition, one workshop was organized for the Supervisory Board with external support and the Executive Board and Supervisory Board held a joint strategy workshop.

[T2] Supervisory Board members' attendance at meetings of the Supervisory Board and its committees

Supervisory Board members	No. of meetings attended (incl. committee meetings)	Meetings attended in %
Gordon Riske (Chairman)	12 / 12	100%
Josef Mailer (Deputy Chairman)	17 / 17	100%
Dr. Christine Bortenlänger	13 / 13	100%
Thomas Dautl (until May 11, 2023)	1 / 1	100%
Kai Eisenblätter (since May 11, 2023)	5 / 5	100%
Daniele Frijia	10 / 10	100%
Dr.Ing. Jürgen M. Geißinger (until May 11, 2023)	3 / 3	100%
Dr.-Ing. Marc Haltrich (since May 11, 2023)	5 / 5	100%
Anita Heimerl	6 / 6	100%
Heike Madan (until May 11, 2023)	4 / 4	100%
Dr. Rainer Martens	6 / 6	100%
Dr. Joachim Rauhut	17 / 17	100%
Claudia Sowa-Frank (since May 11, 2023)	9 / 9	100%
Univ.-Prof. Dr. Marion A. Weissenberger-Eibl	6 / 6	100%
Michael Winkelmann (until May 11, 2023)	1 / 1	100%
Ute Wolf (since May 11, 2023)	5 / 5	100%
Average attendance rate	**0**	**100%**

At its meeting on March 21, 2023, the Supervisory Board discussed MTU's financial statements. The Supervisory Board adopted the annual financial statements and the consolidated financial statements and approved the combined management report for the company and the Group for fiscal 2022. In addition, it looked in detail at MTU's Annual Report and the allocation of the net profit for 2022 available for distribution and approved the Executive Board's profit distribution proposal. A dividend payment of €3.20 per share eligible for the dividend was therefore proposed to the Annual General Meeting on May 11, 2023. The Supervisory Board approved the non-financial statement for the MTU Group and the company for fiscal 2022. Other issues examined by the Supervisory Board were the short-term incentive (STI) payable to the members of the Executive Board for 2022 and the definition of financial and non-financial targets for the award of STI payments to Executive Board members for 2023. The report of the Supervisory Board to the Annual General Meeting and the agenda for the meeting were also agreed on. Furthermore, the Supervisory Board approved the management compensation report and the corporate governance statement. The Executive Board reported on the company's situation, including information on supply chain problems across the sector and the implementation of an IT security roadmap.

At its meeting on May 11, 2023, the Supervisory Board considered, among other things, the acquisition of the Starnberg-based electric motor developer eMoSys GmbH, the signature of a memorandum of understanding with Safran on the joint development of a helicopter engine, and the start-up of the test station at MTU Maintenance Zhuhai's new, second facility in Jinwan. It also looked in detail at the achievement of the first milestone in the NEFE project. The Executive Board reported to the Supervisory Board on the quarterly figures for the first quarter.

At the meeting on July 25, 2023, the Supervisory Board was given a report on the status of implementation of the CSRD (Corporate Sustainability Reporting Directive). There was also information on the celebration to market the 40th anniversary of IAE and the V2500 program. Another important topic was the successful presentation of technologies for climate-neutral aviation at the Paris Air Show. Furthermore, there was an update on the profitability of the PW1100G-JM Geared Turbofan program. In addition, the Executive Board reported on progress with MTU's geothermal project. An exploratory drill was scheduled for October / November. Start-up is expected for winter 2024 / 2025. MTU expects this to reduce CO_2 emissions at the Munich location by 80%.

At the extraordinary meeting on September 22, 2023, the Supervisory Board was given an update on the PW1100G-JM fleet management plan and the resulting aircraft on ground (AOG) times for airlines. Moreover, it was given extensive information on this issue and its impact on the company at all subsequent meetings. In addition, regular and timely reports on the latest developments were provided by the Executive Board to a Supervisory Board working group. Another item was the proposal for a new compensation system for the Executive Board and its components.

At the meeting on October 24, 2023, the Executive Board reported on the groundbreaking ceremony for the new development center at the Munich location, the Geared Turbofan fleet management plan, the ongoing recovery of air traffic and MTU's continued growth, supported by all market segments. Further, it reported on global deliveries of passenger aircraft, MTU's production strategy 4.0, the supply situation of suppliers in Israel, and the quality and occupational safety situation, which are at a high level. The Supervisory Board looked intensively at technology development in the commercial and military areas and MTU's future propulsion concepts, with improvements in climate impact and energy consumption. The Supervisory Board was also given information on the ongoing development of the technology for the Flying Fuel Cell, digitalization paths for all core processes at MTU, the MRO segment, where revenue was above the pre-Covid level, planned capacity expansions, the continued ramp-up of the EME Aero joint venture in Poland and the new site in Serbia, and on the Zhuhai location in China, with its new training center. Moreover, it adopted a resolution on the new compensation system for the Executive Board, which will be submitted to the Annual General Meeting 2024 for approval.

At the meeting on December 11, 2023, the Supervisory Board examined the company's situation and held a detailed discussion of the operational business plans and the budget for 2024. The meeting also included a detailed review and confirmation of the management's compliance with the German Corporate Governance Code. Further items at this meeting were the compensation of the Executive Board, especially the status of achievement of the ESG targets for 2023 and proposals for the ESG targets and strategic multipliers for 2024. The Supervisory Board thanked the Executive Board for waiving a considerable portion of its variable compensation in view of the anticipated financial burden on the company as a result of the Geared Turbofan fleet management plan, which was initiated in 2023. The results of the review of the efficiency of the Supervisory Board were also presented. The Supervisory Board voted on the appointment of one shareholder representative to the Supervisory Board of MTU Maintenance Hannover GmbH. In addition, it discussed the competitive situation in China.

At its meetings, the Supervisory Board also discussed the legal requirements and the recommendations of the German Corporate Governance Code regarding Executive Board compensation. The compensation system takes account of sustainability targets and provides for appropriate and motivating compensation.

Between official meetings, the Chairman of the Supervisory Board was regularly briefed on the company's current situation, significant business transactions and important pending decisions. This entailed regular meetings with the Executive Board, including consulting on strategy, the status of planning, the progress of business, the company's risk situation, the risk management system and compliance.

Corporate governance

The Supervisory Board is convinced that MTU's success is based, among other factors, on good corporate governance. For this reason, in 2023 the Supervisory Board once again looked in detail at the application and implementation of the German Corporate Governance Code (GCGC), based on the current version of April 28, 2022. Furthermore, the Supervisory Board regularly discusses the composition of the Executive Board and Supervisory Board with a view to diversity and the appropriate inclusion of women.

The Supervisory Board's rules of procedure contain binding provisions for dealing with conflicts of interest. Such conflicts must be disclosed and, where appropriate, may result in termination of the member's term of office. This also applies for proposals for election submitted to the Annual General Meeting. There were no conflicts of interest in the reporting period. With the exception of a consulting agreement between a Supervisory Board member and one of the company's suppliers, there were no consulting agreements, contracts for services or similar contractual agreements between members of the Supervisory Board and MTU Aero Engines AG or any of its subsidiaries, or with customers, suppliers, lenders or other third parties in 2023. If there are any discussions or resolutions affecting this supplier in future, the Supervisory Board member concerned will not take part in them. There were no such discussions or resolutions in the reporting period.

The Supervisory Board also undertook a detailed examination of the recommendations of the GCGC on the independence of the members representing the shareholders. The Supervisory Board deems all of its members to be independent. This expressly applies to the employee representatives and to Dr. Rainer Martens, who ceased to be a member of MTU's Executive Board at the end of 2017. Moreover, it applies to Dr. Joachim Rauhut, who has been a member of the Supervisory Board for more than 12 years. Consequently, all Supervisory Board committees consist exclusively of independent members. For the future, the Supervisory Board has set twelve years as the maximum period for membership of the Supervisory Board and considers this to be appropriate for MTU. Members of the Supervisory Board undertake training on their own responsibility, with support from MTU where necessary. MTU may also defray the costs of training. In fiscal year 2023, MTU supported training and development measures and also held a strategy workshop in December. In consultation with the Executive Board, the Supervisory Board ensures long-term succession planning for appointments to the Executive Board. To this end, the Supervisory Board regularly reviews the present term of all Executive Board contracts, taking into account, in all cases, the age of each member and the competency profile of potential candidates.

There is an onboarding process for new members of the Supervisory Board. This gives them a thorough insight into MTU's product portfolio, strategy, corporate governance and how the Supervisory Board works.

The Supervisory Board regularly assesses how effectively the Supervisory Board as a whole and its committees perform their tasks. At the turn of 2022 / 2023, the Supervisory Board conducted a self-assessment of the work in plenary session, with the aid of an external consultant. This took the form of a questionnaire and individual interviews with each Supervisory Board member and the Executive Board. The topics included, in particular, the provision of information for the Supervisory Board, the discussion culture, the composition of the committees and the preparation of meetings. Benchmarking against a selected peer group of companies was also used. The results were discussed with the Supervisory Board at a separate workshop in spring 2023. They form the basis for the ongoing development of the work of the Supervisory Board and its profile of skills and expertise as well as for the final assessment by the Supervisory Board, that its work was, and still is, performed efficiently. In fall 2023, the Supervisory Board conducted a further self-assessment using a questionnaire developed by an external law firm. The members of the Supervisory Board considered that their work was conducted efficiently and adopted some specific measures to enhance the preparation and conduct of its meetings.

In 2023, the Audit Committee also performed another self-assessment. This comprised a questionnaire developed by an external firm of lawyers. The focal areas of this self-assessment were the tasks and organization of the committee, the skills of its members, oversight of the audit, internal auditing and the risk management system, and financial reporting. The members of the Audit Committee considered the work of the committee to be conducted efficiently and adopted some specific measures to enhance the organization of its work.

Cooperation between the Supervisory Board and the Executive Board, and among the members of the Supervisory Board, in the past fiscal year was judged to be very good. No conflicts of interest arose between MTU and any member of its Executive Board or Supervisory Board.

In a joint declaration with the Executive Board dated December 11, 2023, in accordance with the requirements of Section 161 of the German Stock Corporation Act (AktG), the Supervisory Board states that MTU Aero Engines AG complies with all the recommendations of the German Corporate Governance Code (GCGC) in the version dated April 28, 2022. This declaration of conformity is reproduced in this Annual Report in the section of the management report headed *Corporate governance statement*, together with a more detailed description of the company's corporate governance system. The declaration has also been posted on the *MTU website.*

Committee meetings

By convention, the Supervisory Board has three committees with equal numbers of employee and shareholder representatives: an Audit Committee, a Personnel Committee and – in compliance with Section 27 (3) of the German Codetermination Act (MitbestG) – a Mediation Committee. Each of these committees presents regular reports on its activities at the plenary meetings of the Supervisory Board.

A Nomination Committee, which meets on an ad hoc basis, has been set up in accordance with the recommendations of the German Corporate Governance Code. The task of the Nomination Committee is to find suitable candidates for election to the Supervisory Board. Its members are Gordon Riske (Chairman) and Dr. Joachim Rauhut (since May 11, 2023) / Dr. Jürgen M. Geißinger (until May 11, 2023). In 2023, the Nomination Committee held two meetings – to prepare for a successor to Dr. Joachim Rauhut, who will be leaving the Supervisory Board at the Annual General Meeting 2024. In addition to the competencies of potential candidates, special attention was paid to their available time. The Supervisory Board also examined the availability of its current members. It concluded that it all members, without exception, have sufficient time for their work on MTU's Supervisory Board and its committees in addition to their other professional activities and that their availability is good. This is reflected both in the very high attendance rates at plenary and committee meetings (100% in 2023), the thorough preparation and follow-up of the meetings – which have been extended since spring 2023 – and the intensive and in-depth discussions at the meetings and with the Executive Board.

The Personnel Committee is responsible, among things, for concluding contracts with the Executive Board, including on their compensation, and for proposing candidates for the Executive Board. The members of this committee are Gordon Riske, Dr. Joachim Rauhut (since May 11, 2023) / Dr. Jürgen M. Geißinger (until May 11, 2023) and the employee representatives Josef Mailer and Danielle Frijia. The Personnel Committee met four times in 2023 – including two extraordinary meetings (total attendance: 100%). Issues examined included the short-term incentive (STI) payment to the members of the Executive Board for 2022, the definition of targets for the award of STI payments to Executive Board members for 2023, including the targets and bandwidths for the ESG criteria, and the recommendation to the Supervisory Board for the appointment and compensation of members of the Executive Board. The committee also discussed the new compensation system for the Executive Board in detail. Other topics were the status of achievement of the ESG targets for 2023 and a discussion of the proposed ESG targets and strategic multipliers for 2024.

The Mediation Committee, whose members are identical with those of the Personnel Committee, did not have to convene in 2023.

The members of the Audit Committee are Dr. Joachim Rauhut (Chairman), Dr. Christine Bortenlänger, Claudia Sowa-Frank (since May 11, 2023) / Heike Madan (until May 11, 2023), and Josef Mailer. It held six routine meetings in the year under review. Attendance was 100%.

The Audit Committee focused on reviewing the annual financial statements, the consolidated financial statements and the combined management report, including the non-financial statement of the MTU Group and MTU Aero Engines AG as well as the company's net assets, financial position and results of operations, and the annual and half-year reports and quarterly statements. In addition, it prepared the Supervisory Board's proposal to the Annual General Meeting on the appointment of the auditor. Further, it was responsible for engaging the auditor, the agreement with the auditor on the audit fees, and for specifying the key areas of focus for the audit of the annual financial statements and consolidated financial statements for 2023.

The Audit Committee oversaw the quality of the audit and the independence of the auditor, which had been confirmed by the auditor. Furthermore, the Audit Committee discussed the additional services provided by the auditor. The procedure for procuring the non-audit services provided by the auditors was reviewed and affirmed and the content and fees for such services in the reporting period were approved on a case-by-case basis.

At five of its six meetings and through additional direct discussions between the Chairman of the Audit Committee and the auditor, the Audit Committee obtained reports from the auditor on its audit strategy and approach, the audit process, especially its effectiveness and progress, and the results of the audit, and asked critical questions. Moreover, it examined the qualification of the persons engaged to conduct the audit and the auditor's general quality assurance concept and its practical application.

The committee and other members of the Supervisory Board received the audit reports from KPMG for their deliberations. These documents were reviewed in detail in the presence of the auditor. On this basis, the committee recommended that the Supervisory Board should adopt the financial statements and consolidated financial statements for the fiscal year 2023, and approve the combined management report and the Executive Board's profit distribution proposal.

In accordance with statutory requirements, the Audit Committee monitored the accounting process, the accounting-related internal control and risk management system and the internal auditing system, which it judged to be appropriate and effective. It oversaw the company's compliance activities and received reports from the internal auditors. The Audit Committee received reports from the heads of the Corporate Audit and Compliance units and on related party transactions. No material weaknesses were established in the internal control system for the accounting process or system for early identification of risks.

Furthermore the Audit Committee discussed the necessary impairment losses due to the war in Ukraine, and accounting for the GTF engines, received the reports on the financial status of the material joint ventures EME Aero (Poland) and MTU Maintenance Zhuhai (China), the status reports on aircraft financing arrangements and financial investments, implementation of the CSRD (Corporate Sustainability Reporting Directive) at MTU, “Scope 3” (identification of indirect emissions in MTU's value chain), and MTU's quarterly financial statements. In addition, the committee obtained information on the status of non-financial reporting, the company's procedure for determining and reporting adjusted performance indicators, the organization of accounting and on the ongoing development of the risk management system and the internal control system.

Adoption of the annual financial statements, the approved consolidated financial statements and the management report

The annual financial statements, consolidated financial statements and combined management report of the MTU Group and MTU Aero Engines AG for 2023 were audited by KPMG, Munich, whose appointment was approved by the Annual General Meeting. KPMG issued an unqualified audit opinion. This was signed by Johannes Hanshen and Angelika Huber-Straßer, who audited MTU for the first time in fiscal year 2023. The audit reports and documents to be reviewed were submitted in good time to all members of the Supervisory Board. The Chairman of the Audit Committee reported to the Supervisory Board on the audit performed by KPMG. On this basis, the Supervisory Board conducted a thorough review of the annual financial statements, consolidated financial statements and the combined management report of the MTU Group and MTU Aero Engines AG for fiscal year 2023 and the Executive Board's proposal for the distribution of the net profit. The auditor attended the meetings of the Audit Committee of MTU Aero Engines AG on October 24, 2023, December 12, 2023, January 24, 2024 and March 12, 2024, and the meeting held by the Supervisory Board on March 19, 2024 to discuss the financial statements, and presented the main findings of the audit. The Supervisory Board reviewed the annual financial statements, consolidated financial statements, combined management report including the non-financial statement, and the profit distribution proposal, and raised no objections. The company's annual financial statements and consolidated financial statements for 2023, as submitted by the Executive Board, were approved at the Supervisory Board's meeting on March 19, 2024. The annual financial statements are therefore adopted. The Supervisory Board agreed to the Executive Board's proposal for the distribution of the net profit after giving due consideration to the interests of the company and its shareholders. A dividend payment of €2.00 per share eligible for the dividend will therefore be proposed to the Annual General Meeting.

Changes in the governing bodies

MTU's former Chief Operating Officer, Lars Wagner, has been the company's new CEO since January 1, 2023 and Dr. Silke Maurer has been the new Chief Operating Officer (COO) since February 1, 2023.

There were four changes on the Supervisory Board in 2023. On the employees' side, there were three changes: Thomas Dautl, Heike Madan and Michael Winkelmann were members of the Supervisory Board until May 11, 2023. Kai Eisenblätter, Dr.-Ing. Marc Haltrich and Claudia Sowa-Frank have been members since May 11, 2023. The Supervisory Board thanks Heike Madan, Thomas Dautl and Michael Winkelmann for their work. On the employer's side, the term of office of Dr. Jürgen M. Geißinger ended at the end of the Annual General Meeting on May 11, 2023. The Supervisory Board thanks Dr. Jürgen M. Geißinger for his many years of service and his enormous commitment. Ute Wolf is a new member of the Supervisory Board. She was elected to the Supervisory Board of MTU at the company's Annual General Meeting on May 11, 2023 with 97.38% of the votes.

The Supervisory Board would like to thank the Executive Board for its close and constructive collaboration. It would also like to thank all employees and the Works Council for their successful work and enormous commitment in 2023. Moreover, the Supervisory Board is grateful to all MTU's shareholders for the trust they place in the company.

Munich, March 19, 2024

Gordon Riske
Chairman of the Supervisory Board

The Supervisory Board

Members of the Supervisory Board and the additional mandates they hold on supervisory boards or comparable oversight bodies of other business enterprises in Germany or abroad

Gordon Riske

Chairman of the Supervisory Board

Independent Management Consultant

Former CEO of KION Group AG, Frankfurt am Main

Atlas CopCo AB, Sweden
Sunlight Group Energy Storage Systems S.A., Greece
Weichai Power Co., Ltd., China, until June 5, 2023

Josef Mailer

Deputy Chairman of the Supervisory Board

Chairman of the Group Works Council of MTU Aero Engines AG, Munich

Chairman of the Works Council of MTU Aero Engines AG, Munich

Dr. Christine Bortenlänger

Chief Executive of Deutsches Aktieninstitut, Deutsches Aktieninstitut e.V., Frankfurt am Main

Covestro AG
Covestro Deutschland AG (Covestro Group)
Siemens Energy AG
Siemens Energy Management GmbH (Siemens Energy Group)
TÜV Süd AG

Thomas Dautl, until May 11, 2023

Director Technical Supplier Management and Development, MTU Aero Engines AG, Munich

Kai Eisenblätter, since May 11, 2023

Chairman of the Works Council of MTU Maintenance Hannover GmbH, Hannover
Deputy Chairman of the Group Works Council of MTU Aero Engines AG, Munich

MTU Maintenance Hannover GmbH

Daniele Frijia

Managing director and cashier of IG Metall Munich

Linde GmbH
Linde Holding GmbH
Nokia Solutions and Networks Management GmbH

Dr.-Ing. Jürgen M. Geißinger, until May 11, 2023

Independent entrepreneur

Former CEO of Schaeffler AG, Herzogenaurach

Bizerba Management SE
Bizerba SE & Co. KG (Bizerba Group)
clean-tek Holding AG, Switzerland
Marquardt Management SE
J. & J. Marquardt KG (Marquardt Group)

Dr.-Ing. Marc Haltrich, since May 11, 2023

Senior Consultant Powder Metal,
MTU Aero Engines AG, Munich

Anita Heimerl

Member of the Group Works Council of
MTU Aero Engines AG, Munich

Full-time member of the Works Council of
MTU Aero Engines AG, Munich

Heike Madan, until May 11, 2023

Director and second authorized representative,
IG Metall Aalen & Schwäbisch Gmünd | Ostalb

KONE GmbH
ZF Automotive Germany GmbH

Dr. Rainer Martens

Independent consultant

Formerly Chief Operating Officer of
MTU Aero Engines AG, Munich

Renk Group AG, from September 1, 2023
until February 21, 2024

Dr. Joachim Rauhut

Independent consultant

Former Chief Financial Officer of
Wacker Chemie AG, Munich

creditshelf AG, until June 4, 2023
Stabilus S.A.

Claudia Sowa-Frank, since May 11, 2023

Lawyer for the IG Metall Executive Committee,
Frankfurt/Main

Univ.-Prof. Dr. Marion A. Weissenberger-Eibl

Director of the Fraunhofer Institute for Systems and Innovation Research ISI in Karlsruhe and holder of the Chair of Innovation and Technology Management at the Karlsruhe Institute of Technology

Heidelberg Materials AG
Semperit Aktiengesellschaft Holding, Austria, since April 25, 2023
ExxonMobil Central Europe Holding GmbH, since June 23, 2023

Michael Winkelmann, until May 11, 2023

Employee at MTU Maintenance
Berlin-Brandenburg GmbH, Ludwigsfelde

Corporate health management

MTU Maintenance
Berlin-Brandenburg GmbH

Ute Wolf, since May 11, 2023

Independent consultant

Former member of the Executive Board (CFO)
of Evonik Industries AG

DWS Group GmbH & Co. KGaA
Klöckner & Co. SE
Infineon Technologies AG

Supervisory Board committees

Personnel Committee

Gordon Riske, Chairman
Daniele Frijia
Dr.-Ing. Jürgen M. Geißinger,
until May 11, 2023
Josef Mailer
Dr. Joachim Rauhut, since May 11, 2023

Audit Committee

Dr. Joachim Rauhut, Chairman
Dr. Christine Bortenlänger
Heike Madan, until May 11, 2023
Josef Mailer
Claudia Sowa-Frank, since May 11, 2023

Mediation Committee

Gordon Riske, Chairman
Daniele Frijia
Dr.-Ing. Jürgen M. Geißinger,
until May 11, 2023
Josef Mailer
Dr. Joachim Rauhut, since May 11, 2023

Nomination Committee

Gordon Riske, Chairman
Dr.-Ing. Jürgen M. Geißinger,
until May 11, 2023
Dr. Joachim Rauhut, since May 11, 2023

The MTU share

Volatile equity markets

2023 was dominated by inflation, central bank monetary policy, fears of recession, the uncertain outlook for the corporate sector, the war in Ukraine, the Middle East conflict and other international tensions. However, this had little impact on the global equity markets. Despite short-term volatility, the overriding sentiment was positive, resulting in solid price gains over the year.

The German blue-chip index, DAX, also posted a positive performance in 2023. It started the year at a low of 14,069 points. The index moved upward in the first half of the year, despite the rise in benchmark interest rates, to 16,470 points at the end of July. At the end of October, the DAX dropped back to around 14,700 points. In the final weeks of the year, the DAX rallied again, and rose to a high for the year of 16,794 points on December 11. It closed 2023 at 16,752 points, a gain of 20.3% over the year.

Following the recovery of many aviation stocks in 2022, the sector performance on the equity markets was again very robust in 2023. According to the International Air Transport Association (IATA), the positive trend in passenger traffic continued. Worldwide, passenger traffic was back at 98% of the pre-pandemic level. This also benefited the sector index: The Stoxx Europe TMI Aerospace & Defense Index, which includes shares in MTU as well as the Airbus Group, Safran, and Rolls-Royce, posted a positive trend in 2023 and rose continuously over the year. It ended the year up 37.5%.

Weak price performance by MTU shares

In the first half of the year, MTU's share price rose continuously, with some volatility, climbing to a high for the year of €244.50 in April. On July 25, 2023, RTX, the parent company of Pratt & Whitney, announced a fleet management plan for the Geared Turbofan(GTF) – an engine program in which MTU has a stake. Despite confirming the increased forecast for adjusted EBIT when the half-year results were published, shares in MTU lost ground and were €208.50 on July 26, 2023. On September 11, 2023, RTX announced that the Geared Turbofan fleet management plan would be extended, reducing the engine consortium's earnings by around U.S.$ 6 to 7 billion. This led to a further considerable drop in MTU's share price on the following days and the share fell to a low for the year of €161.20 on September 21, 2023. However, following publication of the nine-month results, which were impacted by exceptional charges for the Geared Turbofan fleet management plan, the share price continued to rally. Positive factors were probably the organic growth in all business segments and renewed confirmation of its guidance for its adjusted results for the full year. Shares in MTU ended 2023 at €195.25.

Overall, the share therefore fell 3.4% over the year. MTU's market capitalization was around €10 billion at year-end 2023.

[T3] MTU share performance in 2023 compared with stock market indices (indexed; Dec. 31, 2022 = 100)

[T4] Year-on-year indicators for shares in MTU

		2023	2022
Highest price for the year[1]	€	244.50	216.20
Lowest price for the year[1]	€	161.20	153.20
Price at start of year[1]	€	206.50	186.60
Year-end price[1]	€	195.25	202.20
Performance over the year[2]	%	-3.44	+13
Market capitalization at year end	€ million	10,500	10,808
Average daily trading volume	€ million thousand shares	34 169	34 186
Earnings per share	**€**	**-1.90**	**6.21**
Dividend per share	**€**	**2.00[3]**	**3.20**

[1] Xetra closing price.
[2] Based on Xetra year-end share price (Dec. 31).
[3] Proposal to the Annual General Meeting.

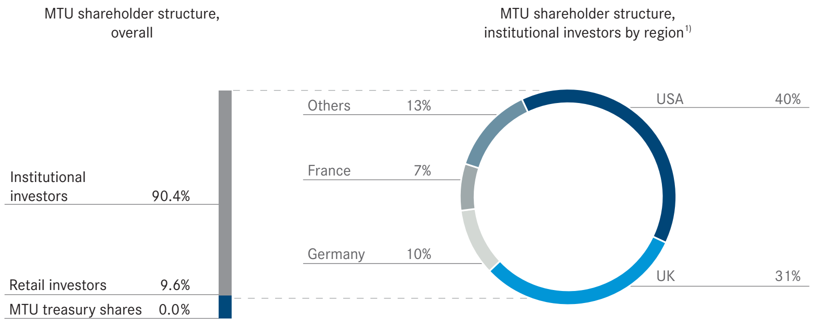
Dividend

Shareholders participate in MTU's success through a dividend. Despite the charges for the Geared Turbofan fleet management plan, the Executive Board and Supervisory Board have decided to pay a dividend for 2023. At the Annual General Meeting on May 8, 2024, they will propose payment of a dividend of €2.00 per share for fiscal year 2023. The dividend would be paid on May 14, 2024. The payment ratio would be 18% of MTU's adjusted net income.

Trading volume

In 2023, the average number of MTU shares traded via Xetra trading was 169,000 shares per day, compared with 186,000 per day in 2022. The highest number of shares traded was 1,085,379 on September 12, 2023. The average daily trading volume was around €34 million (previous year: €35 million). At the end of 2023 MTU ranked 32nd in the DAX 40 index in terms of market capitalization (previous year: 28th).

[T5] Shareholder structure



[1] Approximation based on top 100 shareholders.
Source: Shareholder analysis, as of Q4 2023.

High proportion of institutional shareholders

Voting rights totaled 53,824,489 in 2023. The free float was 100% on December 31, 2023. 0% of the shares were held by the company. Around 90.4% of the free float was held by institutional investors and 9.6% by retail investors. The majority of institutional investors are based in the USA, continental Europe and the UK. At the end of 2023, notifications under Section 33 of the German Securities Trading Act (WpHG) had been received from the following institutional investors:

[T6] Institutional investors with voting rights > 3%

DGAP	Investor	Voting rights in %	No. of MTU shares
07/12/2023	BlackRock Global Funds, Luxemburg	3.13	1,683,480
21/11/2023	Morgan Stanley, USA	3.75	2,016,795
18/10/2023	BlackRock, Inc., USA	11.22	6,037,562
09/10/2023	Ministry of Finance on behalf of the State of Norway, Norwegen	3.07	1,654,391
01/12/2021	Kenneth C. Griffin, Irland	3.03	1,630,560
18/02/2021	The Capital Group Companies, USA	9.87	5,313,778
23/04/2020	EuroPacific Growth Fund, USA	4.80	2,583,956
26/09/2018	Massachusetts Financial Services Company, USA	4.76	2,561,829

* Investor share in % translated on the basis of the current voting rights of 53,824,489.

Broad coverage by analysts

As of December 31, 2023, 26 analysts were reporting regularly on MTU. At the end of December, 17 financial institutions rated the stock as a buy, 9 had it on hold and none had a sell recommendation (2022: 15 "buy," 8 "hold," 1 "sell"). The average price target was €219.

[T7] The following financial institutions report regularly on MTU:

Agency Partners	Exane BNP Paribas	Morgan Stanley
Alpha Value Research	Goldman Sachs	ODDO Securities Research
Barclays	Hauck & Aufhäuser	Redburn Atlantic
Berenberg	HSBC	Société Générale
BernsteinResearch	Jefferies	Stifel
BoA Merrill Lynch	JPMorgan Cazenove	UBS
Citi Global Markets Research	Kepler Cheuvreux	Vertical Research
Deutsche Bank	Landesbank Baden-Württemberg	Warburg Research
DZ Bank	Metzler	

Intensive investor relations work

In 2023, MTU once again organized many IR events. One-on-one meetings and investors' conferences were held as both in-person and remote events. In all, MTU took part in 16 international investors' conferences, including the German Investment Seminar organized by Oddo and Commerzbank in New York, the German Corporate Conference organized by Kepler Cheuvreux in Frankfurt and numerous investors' conferences held by various banks in London.

A key platform for dialogue with shareholders was the MTU Annual General Meeting, which was held digitally on May 11, 2023, as a video webcast. Around 72% of the share capital with voting rights was represented (previous year: around 74%).

The Paris Airshow, which was held in 2023 for the first time since 2019 and is one of the most important events in the aviation sector, was also used to engage in intensive dialogue with capital market players. At the Investor & Analyst Event at the Paris Airshow, the Executive Board and Investor Relations team explained MTU's future opportunities and growth prospects to around 200 analysts and representatives of investors.

In all, MTU had around 1,000 contacts with investors in 2023.

Information on IR topics can be found in the *Investor Relations section of the MTU website (www.mtu.de).* You are also welcome to contact the IR team by calling +49 (0)89 1489-4787.

Management compensation report

The compensation report describes the principles applied in determining the compensation for the Executive Board and Supervisory Board of MTU Aero Engines AG, and states the amount and composition of that compensation. The compensation report complies with the provisions of Section 162 of the German Stock Corporation Act (AktG) and was prepared jointly by the Supervisory Board and the Executive Board.

Principles of the compensation system for members of the Executive Board

At the proposal of the Personnel Committee of MTU Aero Engines AG, the Supervisory Board decides on a system of compensation for the members of the Executive Board, including the material contractual elements such as the total amount of the compensation and its breakdown into non-performance-related and performance-related components. The Personnel Committee regularly reviews the appropriateness and market alignment of the Executive Board compensation. For this, it also uses the expertise of independent external compensation experts with regard to both the compensation system and the structure of the target direct compensation compared with relevant stock market segments. For MTU, the comparison is based on the MDAX stock market segment. In addition, given MTU's inclusion in the DAX in 2019, it refers to the DAX segment (peer group for the horizontal comparison). If a need for adjustment is identified, the Personnel Committee submits a corresponding proposal to the Supervisory Board. In accordance with the statutory requirements, the compensation system is resubmitted to the Annual General Meeting for approval at the latest every four years and in the event of significant modifications.

The management compensation system, which was developed in 2021 to take account of the second Shareholder Rights' Directive (ARUG II) and the German Corporate Governance Code (GCGC) and approved by the Annual General Meeting on April 21, 2021 (agenda item 7) has been applied unchanged since 2021 – including in 2023. In accordance with Section 120a (4) of the German Stock Corporation Act (AktG), the compensation report 2022 was submitted to the Annual General Meeting for approval on May 11, 2023 and was approved by 73.53% of the votes cast.

In agreement with the Executive Board members, the Supervisory Board plans to submit a modified compensation model, effective from 2024, to the Annual General Meeting for approval. The modifications take into account the statutory requirements and fulfillment of the recommendations of the German Corporate Governance Code (GCGC). Furthermore, the aim is to find a balance between market-aligned compensation of the Executive Board members and the relevant expectations of MTU's investors. The Supervisory Board strives to address the suggestions and criticism of investors and the signal effect of the change in the "say-on-pay" approval rate with regard to the compensation report (Annual General Meeting 2023: 73.53%; Annual General Meeting 2022: 76.86%). The planned modifications to the compensation system in fiscal year 2024 are described below in the section Planned modification of the Executive Board compensation system as of fiscal year 2024.

Principles of total compensation

[T8] Structure of the compensation system (total target direct compensation)

Non-performance-related components [1]	~ 39%	Fixed compensation	Contractually agreed fixed compensation, paid in 12 equal installments
	~ 1%	Fringe benefits	- Taxable reimbursements of expenses - Cash equivalent of payments in kind - Insurance premiums
Performance-related components	~ 60%	Short-term incentive (STI) (performance-related component excluding long-term incentive)	~ 40 % of variable compensation Financial performance criteria: Adjusted EBIT and free cash flow Cap 0 - 200 % Non-financial ESG targets are taken into account via a muliplier (0.8-1.2)
		Restricted Stock Plan (RSP) (performance-related component as long-term incentive)	~ 60% of variable compensation Financial performance criteria (multi-year approach): Adjusted EBIT and relative Total Shareholder Return Cap 0–200 % Effectively granted as MTU shares (4-year holding period)

[1] Executive Board members appointed after January 1, 2021 receive a pension allowance as contribution to a pension plan.

All amounts are rounded to full euros, unless otherwise specified. Due to rounding, it is possible that individual amounts in the compensation report may not correspond exactly to the totals stated and that the percentages presented may not correspond exactly to the absolute amounts they refer to.

Non-performance-related components

Non-performance-related compensation, which normally makes up around 40% of the target direct compensation, is paid on a monthly basis and consists of fixed compensation and fringe benefits. The fringe benefits comprise taxable reimbursements of expenses such as insurance premiums, including any taxes thereon, and the cash equivalent of payments in kind such as the provision of company cars for business and private purposes.

Performance-related components

Performance-related compensation makes up around 60% of the target direct compensation; it consists of a short-term incentive (STI) and the Restricted Stock Plan (RSP / LTI).

Short-term incentive (STI)

Performance-related compensation is paid in the form of a short-term incentive (STI). It normally comprises approximately 40% of the performance-related components. Its effective calculation depends on the degree of target achievement for two equally weighted targets, which are the Group's key performance indicators (KPIs) adjusted EBIT (profitability) and free cash flow (liquidity).

Group KPI adjusted earnings before interest and taxes (adjusted EBIT)

Adjusted EBIT does not come under the provisions of the International Financial Reporting Standards (IFRS); it is to be regarded explicitly as an addition to the key financial indicators reported pursuant to IFRS and is calculated as follows: As in previous periods, the EBIT calculated in accordance with IFRS is adjusted to eliminate the following recurring special items "effects from purchase price allocation" and "effects from the increase in the stake in IAE-V2500". Further, an adjustment is made for significant non-period earnings impacts on the basis of the internal materiality criterion for external reporting. In the reporting period, as in previous periods, such adjustments relate to "impairment losses," "restructuring expenses" and "changes in the consolidated group", and thus to the corresponding earnings contributions, in other words "other significant non-period earnings impacts". It is common practice for items to be classified as special items to be eliminated in the reconciliation to adjusted EBIT by consultation between the CEO, the CFO, the Chairman of the Supervisory Board, and the Audit Committee. Background information and quantified details of the special items for which adjustments were made in the reconciliation to adjusted EBIT in the reporting period can be found in the management report in the section headed Economic report / Results of operations / Reconciliation to adjusted key performance indicators.

Group KPI free cash flow

MTU determines its free cash flow by combining its cash flow from operating activities with its cash flow from investing activities and eliminating components of the latter (non-recurring cash flows) that lie outside the operational management of the core business. To arrive at the free cash flow, these non-recurring cash flows were therefore eliminated from the cash flow from investing activities. Following its standard practice, MTU identified non-recurring cash flows in connection with

- the acquisition of stakes in OEM engine programs and MRO programs,
- interest-bearing sales financing arrangements and investments for the purpose of efficient liquidity management,
- the acquisition and divestment of material equity investments.

Background information and quantified details of the special items for which adjustments were made in the reconciliation to adjusted free cash flow in the reporting period can be found in the management report in the section headed *Economic report / Results of operations / Reconciliation to adjusted free cash flow.*

The performance targets adjusted EBIT and free cash flow to be achieved in the respective fiscal year to ensure full payment of the STI component of the target direct compensation are set annually in advance by the Supervisory Board, taking the operational business plan into account. The target achievement levels for both performance targets are calculated on this basis, the arithmetic mean of which corresponds to the STI target achievement level. The entry threshold for the STI target achievement level was set at 80%. If it is achieved, it corresponds to a payment of 50% of the STI component. There is no STI entitlement below this entry threshold. Similarly, the maximum payment is capped at 200%, which is payable if the maximum STI target achievement of 120% is reached. Between the entry threshold, the 100% level and maximum STI target achievement, the payment percentage is interpolated on a straight line in each case.

The non-financial performance targets of relevance for the STI comprise ESG targets from the areas of environmental management, compliance, social commitment, growth & resilience, product stewardship & quality, innovation, attractiveness as an employer, employees & diversity as well as responsible procurement and digital issues. The ESG targets, their level and the target achievement ranges are also set annually by the Supervisory Board, taking corporate planning into account. The corresponding ESG multiplier is derived from the achievement of the ESG targets and takes the form of a scaled increase or reduction in the STI payment, based on the achievement of the financial targets, of up to 20% – ESG multiplier between 0.800 and 1.200.

If the term of office of a new Executive Board member starts during a fiscal year, the entitlement to the STI for that fiscal year is granted on a pro rata temporis basis.

Restricted Stock Plan (RSP) / Long-term incentive (LTI)

For the long-term performance-related compensation component Restricted Stock Plan (RSP or LTI - long-term incentive), payment is calculated on the basis of the level of achievement of the multi-year RSP/LTI performance targets, in other words, from target achievement over a three-year performance period, comprising the fiscal year in which the payment is granted and the two preceding years. The payment percentage and the multi-year target achievement level for the RSP / LTI are calculated from the arithmetic mean of the achievement of the average adjusted EBIT target and the average relative total shareholder return (TSR) of MTU shares relative to the STOXX Europe Total Market Aerospace & Defense index (reference index) – TSR target achievement – in each case within the three-year performance period (performance criteria).

Target achievement for the adjusted EBIT performance criteria is calculated as the arithmetic mean of the corresponding payment percentage for the fiscal years in the performance period using the same method as is used to determine the STI payment percentage.

Achievement of the TSR target for each year in the performance period is derived by comparing the average performance of shares in MTU and the reference index in the 30 trading days immediately prior to the end of the fiscal year or the end of the preceding fiscal years. The entry threshold for the TSR target component has been set at a relative performance versus the reference index of −10 percentage points. This corresponds to a payment of 50%. The maximum TSR target achievement is outperformance of the index by +10 percentage points, corresponding to an LTI payment level of 200%. Analogously to the STI, the TSR target achievement level is interpolated on a straight line between the entry threshold, and a relative performance of zero and maximum target achievement.

The RSP / LTI payment percentage for the three-year performance period is calculated as the arithmetic mean of the multi-year achievement of the adjusted EBIT target or the related adjusted EBIT payment percentage and the TSR target achievement or the associated TSR payment percentage. The RSP / LTI payment percentage is based on a scale of between 0% to 200% based on the target direct compensation agreed with the individual Executive Board member.

If the term of office of a new Executive Board member starts during a fiscal year, the entitlement to the RSP / LTI is granted on a pro rata temporis basis. When calculating the RSP / LTI payment percentage for fiscal years in which the new member did not serve on the Executive Board or only served for part of the year, target achievement for the two performance criteria (adjusted EBIT and TSR) is set at 100%. For those years in which the individual served a full year on the Executive Board, the actual target achievement for the year is used.

If an RSP / LTI is granted for the reporting period, settlement takes the form of a taxable cash payment, which is paid on the condition that, after deduction of individual income tax, it will be used for the purchase of MTU shares; these are subject to a four-year lock-up period.

Further rules on compensation

All Executive Board members appointed prior to fiscal year 2021 received direct defined benefit pension commitments. The structure of these commitments is outlined below in the section Rules when terminating the contracts of Executive Board members. Instead of such defined benefit entitlements, Executive Board members appointed after January 1, 2021 receive an annual pension allowance as a contribution to a pension plan.

Further, the compensation system for the Executive Board contains penalty and claw-back rules. This enables the Supervisory Board, at its discretion, to reduce performance-related components that have not been paid out (penalty clause) or claim reimbursement of performance-related components that have already been paid (claw-back clause). The penalty and claw-back clauses take effect in cases of serious breaches of contract, for example of the Code of Conduct or compliance guidelines, and retrospective adjustment of performance-related compensation components that have been determined and/or paid on the basis of inaccurate consolidated financial statements if the amended consolidated financial statements would have resulted in a lower payment.

The share ownership guidelines require the CEO and the other members of the Executive Board to acquire shares in MTU equivalent to 300% (CEO) and 200% (other Executive Board members) respectively of their gross annual basic salary within four years. Shares acquired through the RSP are included. All Executive Board members fulfilled this individual obligation in the reporting period. The shares held in compliance with the share ownership guidelines are subject to a two-year lock-up period when a member leaves the Executive Board.

Under Section 87a (2) sentence 2 of the German Stock Corporation Act (AktG), in specific exceptional circumstances (e.g. in the event of a serious financial or economic crisis), the Supervisory Board may temporarily depart from the defined compensation system if this is in the long-term interests of MTU. General unfavorable market developments explicitly do not constitute specific exceptional circumstances permitting temporary departure from the compensation system.

Departure from the compensation system is only possible on the basis of a corresponding resolution by the Supervisory Board, based on a proposal by the Personnel Committee, after careful examination of its necessity. Even in such cases, the compensation must still be geared to the long-term and sustainable development of MTU and reflect the success of the company and the performance of the Executive Board.

The components of the compensation system where such departures are permitted in the circumstances outlined above are the performance criteria for the STI and RSP and their weighting, the ranges for possible achievement of the targets and the methods used to determine target achievement. Similarly, the Supervisory Board can temporarily grant additional compensation components or replace individual compensation components by other compensation components if the incentive effect of the compensation of the Executive Board cannot be achieved adequately by adjusting the existing compensation components.

In accordance with Section 87a (1) sentence 2 no. 1 of the German Stock Corporation Act (AktG), the Supervisory Board has set a maximum level of compensation for each member of the Executive Board. This comprises all fixed and variable components (fixed compensation, fringe benefits, pension arrangements, STI, and RSP / LTI). The maximum compensation caps the total compensation granted for a fiscal year, irrespective of the time of payment. It is €5.5 million for the Chairman of the Executive Board and €3.0 million for the other Executive Board members and thus unchanged from the previous year.

Planned modification of Executive Board compensation system as of fiscal year 2024

The basic principles of the new compensation system for the Executive Board – to be applied from fiscal year 2024, subject to the approval of of the Annual General Meeting – are set out below. Some have been taken over from the present system as they are still aligned with the market and strategy, while others have been newly incorporated into the system on the basis of the present developments at MTU and the feedback from investors:

The total compensation will still comprise non-performance-related components (fixed compensation, fringe benefits) and performance-related components (STI, Performance Share Plan – PSP / LTI). Special attention has been paid to the ongoing development of the performance-related components, especially the performance-related long-term component. The rules on pension arrangements are unchanged.

The STI remains a performance-related component with a short-term incentive effect. Within this structure, the previous performance-related financial key performance indicators, adjusted EBIT and free cash flow, will be supplemented by non-financial ESG performance criteria. The payment of the STI will therefore be based on the level of achievement of financial and non-financial performance criteria. To this extent, the new compensation system takes account of the increasing significance of ESG / sustainability aspects of corporate governance and the corresponding demands made by investors.

Furthermore, the introduction of a strategic multiplier enables the Supervisory Board to reward the success of the Executive Board in implementing specific strategic and transformative measures. As in the previous system, the STI targets and the corresponding target achievement curves and thus the entry thresholds and caps on target achievement / payment percentages will be set by the Supervisory Board at the beginning of each fiscal year.

The previous performance-related long-term incentive component, the Restricted Stock Plan (RSP / LTI), is to be replaced by a Performance Share Plan (PSP / LTI). The planned introduction of the PSP / LTI will grant a market-oriented, long-term incentive (LTI) that correlates better with investors' expectations. In particular, payment will reflect both financial performance criteria and non-financial ESG performance criteria. Unlike the old RSP / LTI, the financial performance criteria will be adjusted earnings per share (adjusted EPS) and the relative total shareholder return (TSR), which measure the success of MTU shares in comparison (TSR percentile ranking) to the STOXX Europe Total Market Aerospace & Defense index (benchmark index).

Contrary to the former RSP / LTI component, in the planned PSP / LTI from 2024, the targets for the financial performance criteria and the non-financial ESG performance criteria, the corresponding target achievement curves, and thus the entry thresholds and caps on the target achievement / payment percentages, will be defined by the Supervisory Board on the basis of a recommendation by the Personnel Committee at the start of the respective grant year for the entire performance period. The performance period has been extended to four years, comprising the grant year and the following three years.

Further details of the planned modification of the compensation system for the Executive Board and supplementary criteria, penalty and clawback rules, share ownership guidelines, etc. can be found in the invitation to the Annual General Meeting 2024.

Development of performance-related components

Short-term incentive (STI)

The Supervisory Board set the following performance targets for the short-term incentive (STI) for the reporting period: adjusted EBIT of €750 million (actual: €818 million) and free cash flow (FCF) of €330 million (actual: €352 million). Consequently, the entry threshold for target achievement for the STI was exceeded in the reporting period and the target achievement level, as outlined above, was therefore 139.25% (previous year: 200%).

Despite MTU's operational success in 2023, the Executive Board felt obligated to waive compensation components for the reporting period because the expected financial burden in connection with the PW1100G-JM Geared Turbofan fleet management plan initiated in 2023 resulted in a net loss (before adjustments) in the reporting period, and a corresponding impact on liquidity is expected in subsequent years.

Specifically, the Executive Board members declared that they would waive those portions of variable compensation with a short- and long-term incentive effect (STI and RSP / LTI) to which they would have been contractually entitled as a result of the attainment of certain adjusted financial targets for 2023 that exceed a threshold of 100%. The ESG multiplier for the STI, based on achievement in the reporting period, is applied in accordance with the contractual ruling.

As ESG targets for the reporting period, the Supervisory Board defined the areas of environmental management (criterion: ESG target "CO_2", which is focused on reducing climate-related CO_2 emissions in the operation of the sites) and attractiveness as an employer and employees & diversity (criterion: "number of training days per employee"). A target range of 80 – 120% was set for each of these criteria. Both criteria are included with an equal weighting in the determination of the ESG multiplier. Compared with the previous year, the basis used to measure target achievement for the non-financial "CO_2" performance criterion was extended to include two further Group companies – in Vancouver and Serbia (both part of the MRO segment). Consequently, all fully consolidated production / maintenance location are integrated into MTU's climate protection strategy, the ecoRoadmap, which aims to achieve climate-neutral production and maintenance activity at MTU's sites or to systematically reduce their CO_2 emissions. The most important elements of this multi-faceted strategy are: higher energy efficiency, captive generation of sustainable energy at the site, procurement of low-emission energy sources such as green electricity, and emissions compensation. By setting specific climate goals, MTU wants to play a part in achieving the climate targets set out in the Paris Agreement.

The non-financial performance criterion CO_2 takes into account, as subcomponents, remaining CO_2 emissions as "maximum remaining CO_2 emissions in kt CO_2 absolute" and "CO_2 abatement realized through sustainable measures in kt CO_2 absolute." In view of the capacity-intensive requirements relating to the measurement and review of CO_2, this criterion was determined for a 12-month performance period of December 1, 2022 through November 30, 2023. Consequently, the performance period differs from the reporting period. Target achievement for the subcomponent "CO_2 abatement realized through sustainable measures in kt CO_2 absolute" is determined using the emission factors for the baseline year 2019 – the year when MTU introduced its "ecoRpadmap" climate strategy.

The maintenance operation (Group company) in Vancouver, Canada included for the first time in 2023 was already operational in 2019, so it increases the CO_2 emissions in the baseline year 2019. To evaluate the realized climate protection measures at this location, the emissions from the baseline year 2019 are used in the subcomponent "CO_2 abatement realized through sustainable measures in kt CO_2 absolute."

The new maintenance facility in Nova Pazova, Serbia was not operational in the baseline year 2019. All CO_2 emissions from this site contribute to emissions in the context of organic growth but do not increase the emissions measured in the baseline year 2019. When evaluating the climate protection measures realized at this site, the first year of operation (2023) is therefore taken as the baseline. The planned emissions from this site in 2023 form the basis for the subcomponent "CO_2 abatement through sustainable measures in kt CO_2 absolute" and are therefore included in the definition of the overall target for this subcomponent. For the Nova Pazova site, the common country-specific emissions factor for each energy source for 2023 is used.

In this way, integration of the target values for the new locations takes into account the requirements set out in the Greenhouse Gas Protocol.

The two subcomponents are considered separately and, in particular, not cumulatively. Furthermore, measurement of target achievement for the non-financial targets is based on an integral view of MTU's global production / maintenance locations in Munich, Hanover, Ludwigsfelde, Rzeszów, Vancouver and Nova Pazova.

For the non-financial performance criterion "CO_2," at the beginning of 2023 the Supervisory Board defined 54 kt remaining CO_2 emissions as 100% target achievement for the subcomponent "maximum remaining CO_2 emissions in kt CO_2 absolute". For the component "CO_2 abatement realized through sustainable measures in kt CO_2 absolute", the Supervisory Board defined a reduction in CO_2 of 3.54 kt compared with the audited baseline year (2019) as the basis for 100% target achievement in the reporting period. Furthermore, the Supervisory Board decided that the target achievement for the components of the non-financial "CO_2" performance criterion would be measured by means of linear interpolation within a range of 70% (remaining emissions of 70 kt CO_2 / sustained CO_2 reduction of 2.48 kt) to 130% (remaining emissions of 38 kt CO_2 / sustained CO_2 reduction of 4.60 kt). Target achievement for the ESG target "CO_2" is derived as the arithmetic mean of the target achievement of the subcomponents, with a minimum CO_2 target achievement of 80% and a maximum target achievement of 120%.

Thanks to reduction in CO_2 emissions and the additional purchase of green power, the "maximum remaining CO_2 emissions in kt CO_2 absolute" for the relevant performance period of the reporting period were just 49 kt CO_2, which was 9% below the target of 54 kt CO_2. Therefore, the corresponding target achievement for this component is 109%. Moreover, as a result of operational measures and investments in the reporting period and previous periods, a calculated reduction of 4.52 kt CO_2 was achieved in the performance period for the component "CO_2 abatement realized through sustainable measures in kt CO_2 absolute", which exceeded the target saving of 3.54 kt CO_2 by 28%. The corresponding target achievement level is therefore 128%. The arithmetic mean of the target achievement of each of the subcomponents gives a target achievement level of 119% for the ESG (non-financial) target "CO_2" in the reporting period.

Achievement of the non-financial (ESG) performance criterion "number of training days per employee" was derived from the average training days per employee at the German locations (Munich, Hanover, Ludwigsfelde), based on training undertaken in the period January 1, 2023 through December 9, 2023. In this way, the company sets a strategic, forward-looking focus on proactive learning and individual development as a prerequisite for the recruitment and retention of employees, who realize their potential and put their ideas into practice. Through this ESG target, the company is strengthening its established leadership values "we transform", "we empower", and "we create trust", for all managerial staff by making the employee leadership and development process a central management focus. Guiding employee development in addition to the management task of successfully driving forward the respective business and balancing resources is a particularly complex challenge for executives. For the ESG target "number of training days per employee," the Supervisory Board defined an average of 2.5 training days per employee at the German locations as 100% target achievement. The target range is between 80% and 120%. A target achievement level of 80% is defined as 2 training days per employee, while 3 training days per employee equate to target achievement of 120%.

The average number of training days per employee at the Germany locations was 3.6 in 2023, so target achievement for the criterion "number of training days per employee" is 120%.

The target achievement levels of 119% for the ESG target "CO_2" and 120% for the "number of training days per employee" target give an arithmetic mean of 119.50% and an ESG multiplier of 1.195.

In combination with the achievement of the financial targets of relevance for the STI, i.e., adjusted EBIT and free cash flow, and taking into account the Executive Board's waiver for the reporting period (payment percentage 100.00%) and the non-financial performance targets "CO_2" and "number of training days per employee" (ESG multiplier 1.195), the effective STI payment percentage for the reporting period is 119.50%.

Restricted Stock Plan (RSP) / Long Term Incentive (LTI)

The value of the Restricted Stock Plan (RSP or LTI – long-term incentive) is based on the contractually agreed RSP grant value and the realized multi-year RSP / LTI performance level. As outlined above, the latter is calculated individually for each Executive Board member for each RSP/LTI tranche in the reporting period as the arithmetic mean of the target achievement of the adjusted EBIT and the relative total shareholder return (TSR) measured against the STOXX® Europe Total Market Aerospace and Defense in the reporting period and the two preceding years.

Achievement of the multi-year RSP / LTI performance targets developed as follows:

[T9] Achievement of the RSP / LTI performance targets in 2023

	2023	2022	2021
Adjusted EBIT			
Target level in € million	750	560	400
Actual level in € million	818	655	468
Adjusted EBIT performance (in % of target level)	109.08%	116.96%	117.03%
Achievement adjusted EBIT target in %	145.40%	184.80%	185.15%
Three-year average of target achievement adjusted EBIT in %	**171.78%**		
Relative total shareholder return (TSR)			
TSR performance MTU in %	–4.97%	17.25%	–15.15%
TSR performance reference index in %	36.24%	18.47%	5.43%
Delta TSR in percentage points	–41.21%	–1.22%	–20.58%
TSR target achievement in %	0.00%	93.90%	0.00%
Three-year average of target achievement TSR in %	**31.30%**		
Total target achievement (three-year average)	**101.54%**		

The performance-related compensation component RSP / LTI granted for the reporting period on the basis of multi-year target achievement is normally paid in the following year.

Despite MTU's operational success in 2023, the Executive Board felt obligated to waive compensation components for the reporting period because the expected financial burden in connection with the PW1100G-JM Geared Turbofan fleet management plan initiated in 2023 resulted in a net loss (before adjustments) in the reporting period, and a corresponding impact on liquidity is expected in subsequent years.

Specifically, the Executive Board members declared that they would waive those portions of variable compensation with a short- and long-term incentive effect (STI and RSP / LTI) to which they would be contractually entitled as a result of the attainment of certain adjusted financial targets for 2023 that exceed a threshold of 100%.

The next table shows the basis for determining the multi-year target achievement level for the performance-related components:

[T10] Variable compensation payment percentages

	2023	2022	2021	2020 [1]	2019 [1]
STI	119.50 [2]	219.00	218.00	0.00	180.00
RSP / LTI	100.00 [3]	106.51	116.84	173.60	164.87
Price of RSP shares purchased					
Purchase price per share	N.N. [4]	228.92	209.50	119.20	209.20

[1] Payment percentage calculated on the basis of the compensation system applicable up to and including fiscal year 2020.
[2] In light of the waiver by the Executive Board members, the actual total target achievement of 139.25% is capped at 100.00%. The ESG multiplier of 119.50% is applied. This results in a payment percentage of 119.50%.
[3] In light of the waiver by the Executive Board members, the actual target achievement of 101.54% is capped at 100.00%.
[4] The RSP / LTI compensation components will only be paid out in 2024 so the puchase price per share will not be set until after preparation of this compensation report.

Compensation of individual members of the Executive Board

Compensation for the reporting period

The following table contains an individual breakdown of the compensation of each Executive Board member for the reporting period. The non-performance-related compensation is reported as compensation granted and corresponds to the amounts paid in the reporting period. The performance-related compensation is presented as compensation granted and owed and corresponds to the expected amount of performance-related compensation based on the audited consolidated financial statements for the reporting period.

Despite MTU's operational success in 2023, the Executive Board felt obligated to waive compensation components for the reporting period because the expected financial burden in connection with the PW1100G-JM Geared Turbofan fleet management plan initiated in 2023 resulted in a net loss (before adjustments) in the reporting period, and a corresponding impact on liquidity is expected in subsequent years.

Specifically, the Executive Board members declared that they would waive those portions of variable compensation with a short- and long-term incentive effect (STI and RSP / LTI) to which they would be contractually entitled as a result of the attainment of certain adjusted financial targets for 2023 that exceed a threshold of 100%. The following ESG multiplier for the STI, based on achievement in the reporting period, is applied in accordance with the contractual ruling in agreement with the Supervisory Board.

[T11] Total compensation granted and owed

Members of the Executive Board	**Lars Wagner** Chief Executive Officer	**Peter Kameritsch** Chief Financial Officer and Chief Information Officer	**Dr. Silke Maurer** Chief Operating Officer since February 1, 2023	**Michael Schreyögg** Chief Program Officer	**Summe**
in €	2023	2023	2023	2023	2023
Fixed compensation	999,996	600,000	550,000	600,000	2,749,996
Pension allowance			183,333 [1]		183,333
Fringe benefits [2]	36,386	9,863	16,001	26,826	89,077
Total non-performance-related compensation	**1,036,382**	**609,863**	**749,335**	**626,826**	**3,022,406**
Proportion of non-performance-related compensation in %	**34%**	**39%**	**46%**	**39%**	
STI [3]	896,250	430,200	394,350	430,200	2,151,000
RSP / LTI [3]	1,100,000	540,000	495,000	540,000	2,675,000
Total performance-related compensation	**1,996,250**	**970,200**	**889,350**	**970,200**	**4,826,000**
Proportion of performance-related compensation in %	**66%**	**61%**	**54%**	**61%**	
Total compensation granted and owed	**3,032,632**	**1,580,063**	**1,638,685**	**1,597,026**	**7,848,406**

[1] Amount paid out in the reporting period for discretionary personal pension provision.
[2] Fringe benefits include charges to taxable income covering benefits in kind amounting to €58,279 and premiums for insurance policies taken out on behalf of members of the Executive Board amounting to €5,997 and membership contributions amounting to €24,802.
[3] The performance-related compensation granted for the reporting period will be paid out in the following year, after adoption of the consolidated financial statements.

Members of the Executive Board did not receive any compensation for supervisory board and similar appointments at Group companies. The Group did not grant any loans to members of the Executive Board in the reporting period or the previous year. The compensation of the Executive Board did not have to be adjusted due to a penalty or claw-back ruling in either the reporting period or the previous year. Moreover, there was no need to temporarily depart from the defined compensation system due to specific exceptional circumstances. The agreed maximum compensation of €5.5 million for the CEO and €3.0 million for each of the other Executive Board members was not exceeded in any case.

Former Executive Board members received pension payments of €908,259 in the reporting period (Reiner Winkler €601,634; Dr. Rainer Martens €306,625).

The following table shows the change in the individual compensation of the Executive Board and Supervisory Board members, the earnings indicators for the company and the Group and the average compensation of the workforce.

Moreover, the review of the target direct compensation of the Executive Board members is performed on a multi-year basis, as in the past, and not on a one-year basis, as is the case for the rest of the workforce. It is always benchmarked using a comparison within the relevant stock market segment (horizontal comparison): MTU has been included in the DAX segment since 2019; before that it was in the MDAX segment.

From an overall perspective, the following aspects need to be taken into consideration in the vertical comparison, especially with regard to the development of compensation over time:

/ The impact of performance-related compensation components varies greatly in the vertical comparison because of the differentiated compensation structures and are not a reflection of the development of the target direct compensation.
/ To date, the review of the target direct compensation of the Executive Board members has been performed on a multi-year basis, whereas the review and adjustment of compensation for the remaining workforce has been performed annually.
/ Moreover, when considering the development of the target direct compensation of Executive Board members, structural aspects need to be taken into account; in particular, these include the rising demands made on the Executive Board following MTU's inclusion in the DAX stock market segment.

[T12] Vertical comparison

	2023	Change 2023 vs. 2022 in %	2022	Change 2022 vs. 2021 in %	2021	Change 2021 vs. 2020 in %	2020	Change 2020 vs. 2019 in %	2019
Compensation granted and owed to Executive Board members active in the reporting period									
Lars Wagner [1]	3,032,632	53%	1,977,460	9%	1,809,566	32%	1,374,109	–28%	1,919,319
Peter Kameritsch	1,580,063	–20%	1,973,178	9%	1,812,449	31%	1,379,276	–28%	1,926,888
Dr. Silke Maurer	1,638,685	– [2]							
Michael Schreyögg	1,597,026	–20%	1,991,578	9%	1,830,669	31%	1,395,212	–28%	1,940,722
Earning indicators									
Adjusted Group EBIT (IFRS)	818	25%	655	40%	468	13%	416	–45%	757
Net profit of MTU Aero Engines AG (German Commercial Code [HGB]) [3]	–255	–195%	267	35%	198	50%	132	64%	80
Average compensation of the workforce									
Employees in Germany [4]	94,380	6%	88,870	2%	87,118	8%	81,035	–7%	86,922

[1] Appointed CEO effective January 1, 2023 – as a result, his target direct compensation was adjusted.
[2] Executive Board member since February 1, 2023.
[3] As in the previous year: does not provide a meaningful insight into the economic development of the MTU Group and therefore agreed between the Executive Board and Supervisory Board as not relevant for compensation.
[4] Includes the active workforce in Germany (permanent employees, including employees on parental leave working part-time) standardized to full-time equivalents (FTEs) based on the following compensation elements: performance-unrelated basic salary and, depending on employment group, collectively agreed one-time payments or performance-related variable compensation (profit-shareing bonus, bonuses I and II, STI and RSP / LTI).

[T13] Vertical comparison

	Change 2023 vs. 2022 in %	Change 2022 vs. 2021 in %	Change 2021 vs. 2020 in %	Change 2020 vs. 2019 in %
Compensation of former Executive Board members				
Dr. Rainer Martens	1%	34%	– [1]	
Dr. Stefan Weingartner	– [2]	–100% [2]	– [2]	
Reiner Winkler	– [3]			
Compensation granted and owed to present Supervisory Board members				
Gordon Riske (Chairman of the Supervisory Board, Personnel Committee and Nomination Committee) (Supervisory Board member since May 5, 2022)	55%	– [4]		
Josef Mailer (Deputy Chairman of the Supervisory Board)	0%	74%	–6%	1%
Dr. Joachim Rauhut (Chairman of the Audit Committee; member of the Personnel Committee and Nomination Committee since May 11, 2023)	14%	85%	–5%	–6%
Dr. Christine Bortenlänger (member of the Audit Committee since April 22, 2021)	0%	97%	17%	–9%
Thomas Dautl (Supervisory Board member until May 11, 2023)	–65%	67%	3%	–9%
Kai Eisenblätter (Supervisory Board member since May 11, 2023)	– [3]			
Daniele Frijia (Supervisory Board member since August 17, 2022)	152%	– [4]		
Dr.-Ing. Jürgen M. Geißinger (Supervisory Board member until May 11, 2023)	–63%	49%	2%	2%
Dr. Marc Haltrich (Supervisory Board member since May 11, 2023)	– [3]			
Anita Heimerl	3%	67%	0%	–7%
Heike Madan (Supervisory Board member until May 11, 2023)	–64%	81%	–6%	–7%
Dr. Rainer Martens (Supervisory Board member since January 26, 2021)	3%	77%	– [1]	
Claudia Sowa-Frank (Supervisory Board member since May 11, 2023)	– [3]			
Univ.-Prof. Dr. Marion A. Weissenberger-Eibl	3%	67%	3%	–9%
Michael Winkelmann (Supervisory Board member between May 1, 2020 and May 11,2023)	–65%	67%	48%	– [5]
Ute Wolf (Supervisory Board member since May 11, 2023)	– [3]			

[1] First-time payment in fiscal year 2021.
[2] One-time payment in fiscal year 2021.
[3] First-time payment in reporting period.
[4] First-time payment in fiscal year 2022.
[5] First-time payment in fiscal year 2020.

In view of the extensive operating activities of the national companies in the MTU Group, considerations on retaining earnings at national companies for business policy reasons, and the fact that MTU Aero Engines AG performs central tasks for the MTU Group, for example financing and its role as a tax group, the net profit of MTU Aero Engines AG calculated in accordance with the German Commercial Code (HGB) is not a good reflection of the performance of the MTU Group. Consequently, the net profit of MTU Aero Engines AG is not a suitable reference base for performance-related compensation components, which regularly take into account financial and non-financial targets for the Group. Therefore, the adjusted EBIT for the Group is included in the vertical comparison as an additional earnings indicator as it is used as the financial performance indicator for the performance-oriented compensation components of both the Executive Board and the entire workforce in Germany. In all compensation groups evaluated, the calculation of the annual changes in compensation excludes company pension schemes.

Perspective for the compensation of the Executive Board members in/for 2024

The compensation system for Executive Board members is to be modified from fiscal year 2024 – provided that this is approved by the Annual General Meeting 2024. The financial and non-financial / strategic targets of relevance for the performance-related compensation components for the Executive Board for 2024 will be set in parallel with the preparation of the compensation report and the audited consolidated financial statements for 2023. In view of the sensitivity of the forecasts on which the targets are based, in keeping with the procedure used in the year under review and previous periods, they will be published in the compensation report 2024. The aforementioned financial and non-financial targets are naturally consistent with the forward looking statements in the management report (forecast and non-financial statement) in the Annual Report 2024.

Rules when terminating the contracts of members of the Executive Board

In the reporting period, the active members of the Executive Board who were appointed prior to January 1, 2021 were granted defined benefit commitments whose structure corresponds to that of pension commitments for members of governing bodies of peer-group companies. Executive Board members appointed after January 1, 2021 receive a pension allowance as a contribution to a pension plan, paid out annually in cash, instead of the pension commitment outlined above. This enables Executive Board members to take responsibility for building up their personal pension provision at their own discretion. Granting a pension allowance relieves MTU of the opportunities and risks related to defined benefit commitments.

Defined benefit commitments for retirement and survivors' pensions

The active members of the Executive Board – provided they were appointed before fiscal year 2021 – earn company pension entitlements in the fiscal year in accordance with the "MTU Pension Capital" plan, which governs the post-employment benefits for members of the Executive Board of MTU Aero Engines AG. The benefit target is to provide a pension amounting to 60% of the basic salary after 15 years of service on the Executive Board.

To replace any MTU pension entitlements earned by individual Executive Board members prior to their appointment to the Executive Board, they are granted an initial transfer amount equal to their individually earned pension capital.

Once the initial transfer amount has been determined, a pension account is opened for each eligible member of the Executive Board, to which further capital units are credited annually. The annual capital units are determined on the basis of the individual Executive Board member's contribution and an age-related factor. The age-related factor represents an interest rate of 6% p.a. until the age of 60. The contribution period is normally limited to 15 years of service on the Executive Board and ends at the age of 60. From the age of 61, the pension account earns interest at 4% p.a. until the pension is drawn (= bonus amount). The total of the accrued capital units, plus the initial transfer amount and any bonus amounts credited, make up the pension capital available to finance post-employment benefits.

If benefits are payable because a member of the Executive Board becomes disabled or dies before reaching the fixed retirement age of 60, 50% of the benefits earnable up to the fixed age limit are added to the accrued balance on the pension account, taking into account the promised contribution period. The amount credited is based on the contribution paid at the time of exit.

When an insured event occurs, the pension capital is generally granted as a one-time payment. At the request of the Executive Board member and subject to the Group's approval already granted, a lifelong annuity may be granted, based on interest of 6% on the pension capital and benefit increases of 1% p.a. Alternatively, at the request of the Executive Board member, the capital may be drawn in 10 installments, with a 4% increase in each case. When an insured event occurs, the pension account is topped up to the level of benefit commitment under the plan (guaranteed capital). Pension benefits do not become payable until an insured event occurs (i.e., on reaching pensionable age, or in the event of disability or death), even if the insured party leaves the Executive Board. The pension entitlement is vested from inception.

Basic details of the above-mentioned commitments and benefits are shown in the following table:

[T14] Existing post-employment benefit entitlements

Members of the Executive Board in €	Initial transfer amount [1]	Guaranteed capital [2]	Annual contribution	End of contribution period	Annual pension amount [3]
Lars Wagner	207,344	207,344	486,341	1.1.2033	791,687
Peter Kameritsch	461,573	461,573	258,072	1.4.2029	303,253
Michael Schreyögg	365,627	365,627	275,975	1.8.2026	337,719

[1] Credit for past service up to date of changeover to new system - Michael Schreyögg: July 1, 2013; Peter Kameritsch and Lars Wagner: January 1, 2018.
[2] Level of benefits to which the insured party would have been entitled under the previous pension plan.
[3] All entitlements to company pension benefits (excluding the individual employee-funded capital account ["Pension Capital Aufbaukonto"]) taking into account the maximum contribution period.

The differences in the annual contributions to the pension accounts result from the remaining periods of service until the end of the respective maximum contribution period, the respective age-related factors, and the individual amounts of pensionable compensation.

The following table shows the service cost for the reporting period and the previous year, and the corresponding levels of provisions, recognized in accordance with IFRS for members of the Executive Board:

[T15] Allocations to pension provisions and total amounts recognized

Members of the Executive Board in €	Year	Service cost (IFRS)	Past service cost (IFRS)	Carrying amount of pension provisions as of Dec. 31 (IFRS) [1]
Lars Wagner	**2023**	**474,533**	**1,685,142** [2) 3)]	**5,074,706**
	2022	320,096		2,264,977
Peter Kameritsch	**2023**	**169,433**	**223,116** [2)]	**5,593,686**
	2022	149,132		4,593,904
Michael Schreyögg	**2023**	**158,430**	**297,777** [2)]	**6,427,521**
	2022	133,115		5,300,916
Total	**2023**	**802,396**	**2,206,035**	**17,095,913**
Total	**2022**	**602,343**		**12,159,797**

[1] Where appropriate, the provisions include obligations relating to claims arising from the individual employee-funded capital accounts ("Pension Capital Aufbaukonto") from previous service periods.
[2] In the reporting period, the IFRS pension expenses (IAS 19) were influenced by past service costs in connection with the adjustment of the basic compensation as of January 1, 2024, which determines the respective pension commitment.
[3] In the reporting period, the IFRS pension expenses (IAS 19) were influenced to a large extent by past service costs in connection with the adjustment of the basic compensation due to appointment as CEO effective January 1, 2023.

The defined benefit obligations (DBO) for former members of the Executive Board, measured in accordance with International Financial Reporting Standards (IFRS), amount to €22,113,042 (previous year: €9,542,940).

Severance payments on premature termination of contracts of service with members of the Executive Board

If the appointment of an Executive Board member is terminated by MTU for cause and termination of the contract takes place with immediate effect, the STI or RSP / LTI will not be paid for that fiscal year. If the contract of service is terminated by MTU or the Executive Board member subject to the period of notice, the Executive Board member is entitled to a pro-rata STI or RSP / LTI payment for the remaining term of the contract.

If, before the end of the holding period for shares under the RSP, the Executive Board member's contract of service ends as a result of extraordinary termination by MTU for cause pursuant to Section 626 (1) of the German Civil Code (BGB) or due to the resignation of the Executive Board member without reaching mutual agreement, or if the appointment is revoked by the Supervisory Board for cause pursuant to Section 84 (3) of the German Stock Corporation Act (AktG) before the end of the holding period, or if the Executive Board member resigns before the end of the holding period, the Executive Board member must refund the (gross) value of the RSP that has been paid out.

Severance payments on premature termination of contracts of service with members of the Executive Board in the event of a change of control or changes of shareholders of MTU Aero Engines AG

Under the contracts of service for members of the Executive Board in effect since January 1, 2021, a change of control is deemed to have occurred if a shareholder, alone or on the basis of the voting rights attributable to him or her pursuant to Section 33 et seq. of the German Securities Trading Act (WpHG), acquires the majority of the voting rights and this results in material disadvantages for the Executive Board. Material disadvantages are, in particular, if the Executive Board member is removed, if the member's responsibilities and duties are significantly altered, or if the Executive Board member is asked to accept a reduction in employment benefits or to agree to premature termination of the respective contract of service. In such case, each member of the Executive Board shall have a special right of termination, which is to be exercised within a period of six months, with a period of notice of three months to the end of a month. If a member of the Executive Board makes use of the special right of termination, or if the Executive Board member's contract of service is terminated by mutual consent within nine months of the change of control (CoC), the Executive Board member receives a severance payment corresponding to the benefits still to be awarded up to the end of the contract term originally agreed. For the calculation of the severance payment, 100% target fulfillment is agreed for the variable compensation components.

Severance payments made to a member of the Executive Board as a result of early termination of their contract, including in the event of a change of control (CoC), are always limited to two years' total annual compensation or the compensation due for the remaining term of the contract, whichever is lower (cap on termination benefits).

Compensation of the Supervisory Board

The rules governing Supervisory Board compensation are laid down in the articles of association of MTU Aero Engines AG. The compensation is relative to the size of the Group and the duties and responsibilities of the Supervisory Board members.

Pursuant to Article 12 of the current articles of association of MTU Aero Engines AG, members of the Supervisory Board receive fixed annual compensation of €80,000, payable after the end of the fiscal year. The chair of the Supervisory Board receives three times and the deputy one-and-a-half times the amount of fixed compensation. In addition to this compensation, members serving on one of the Supervisory Board's committees receive an additional €20,000 for the fiscal year and a further €40,000 for the fiscal year if they chair a committee. Furthermore, members of the Supervisory Board receive an attendance fee of €3,000 per meeting of the Supervisory Board and its committees, limited to €3,000 per day. Expenses incurred in connection with the exercise of their office are reimbursed, as is any value-added tax payable on compensation. The members of the Supervisory Board do not receive any share-based compensation.

The following table contains an individualized breakdown of the compensation of each Supervisory Board member in the reporting period (figures exclude value-added tax). The fixed annual payment and compensation for committee membership are disclosed as compensation owed and comprise the compensation for the reporting period paid out at the start of the following year.

The attendance fees are disclosed as compensation granted and are the amounts paid to each member in the reporting period.

[T16] Compensation granted and owed to the Supervisory Board for 2023

Supervisory Board members	Fixed annual payment		Compensation for membership in committee		Attendance fees		Total compensation	
	in €	in %	in €	in %	in €	in %	in €	in %
Gordon Riske (Chairman of the Supervisory Board, Personnel Committee and Nomination Committee)	240,000	66%	90,000	25%	33,000	9%	363,000	100%
Josef Mailer (Deputy Chairman of the Supervisory Board) [1) 4) 9)]	120,000	60%	40,000	20%	39,000	20%	199,000	100%
Dr. Joachim Rauhut (Chairman of the Audit Committee) [2) 8)]	80,000	40%	79,167	39%	42,000	21%	201,167	100%
Dr. Christine Bortenlänger [4)]	80,000	59%	20,000	15%	36,000	26%	136,000	100%
Thomas Dautl (until May 11, 2023)	29,111	83%			6,000	17%	35,111	100%
Kai Eisenblätter (since May 11, 2023) [9)]	51,111	74%			18,000	26%	69,111	100%
Daniele Frijia (since August 17, 2022) [1) 9)]	80,000	65%	20,000	16%	24,000	19%	124,000	100%
Dr.-Ing. Jürgen M. Geißinger (until May 11, 2023) [3) 7)]	29,111	59%	10,917	22%	9,000	18%	49,028	99%
Dr. Marc Haltrich (since May 11, 2023)	51,111	74%			18,000	26%	69,111	100%
Anita Heimerl [9)]	80,000	77%			24,000	23%	104,000	100%
Heike Madan (until May 11, 2023) [6) 9)]	29,111	60%	7,278	15%	12,000	25%	48,389	100%
Dr. Rainer Martens	80,000	77%			24,000	23%	104,000	100%
Claudia Sowa-Frank (since May 11, 2023) [5) 9)]	51,111	60%	12,778	15%	21,000	25%	84,889	100%
Univ.-Prof. Dr. Marion A. Weissenberger-Eibl	80,000	77%			24,000	23%	104,000	100%
Michael Winkelmann (until May 11, 2023) [9)]	29,111	83%			6,000	17%	35,111	100%
Ute Wolf (since May 11, 2023)	51,111	74%			18,000	26%	69,111	100%
Total	**1,160,889**		**280,139**		**354,000**		**1,795,028**	

1) Member of the Personnel Committee.
2) Member of the Personnel Committee since May 11, 2023.
3) Member of the Personnel Committee until May 11, 2023.
4) Member of the Audit Committee.
5) Member of the Audit Committee since May 11, 2023.
6) Member of the Audit Committee until May 11, 2023.
7) Member of the Nomination Committee until May 11, 2023.
8) Member of the Nomination Committee since May 11, 2023.
9) These employee representatives have declared that they will donate their Supervisory Board compensation to the Hans-Böckler-Stiftung, in accordance with the guidelines of the Confederation of German Trade Unions.

Independent Auditor's Report

To MTU Aero Engines AG, München

Report on the audit of the remuneration report

We have audited the attached remuneration report of MTU Aero Engines AG, München, for the financial year from 1 January to 31 December 2023, including the related disclosures, prepared to meet the requirements of Section 162 AktG [Aktiengesetz: German Stock Corporation Act].

Responsibilities of Management and the Supervisory Board

The management and the Supervisory Board of MTU Aero Engines AG are responsible for the preparation of the remuneration report, including the related disclosures, in accordance with the requirements of Section 162 AktG. The management and the Supervisory Board are also responsible for such internal control as they have determined necessary to enable the preparation of the remuneration report that is free from material misstatement, whether due to fraud or error.

Auditor's responsibilities

Our responsibility is to express an opinion on this remuneration report, including the related disclosures, based on our audit. We conducted our audit in accordance with the German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW). Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the remuneration report, including the related disclosures, is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts, including the related disclosures, in the remuneration report. The procedures selected depend on the auditor's professional judgement. This includes an assessment of the risks of material misstatement, whether due to fraud or error, in the remuneration report, including the related disclosures. In assessing these risks, the auditor considers the internal control system relevant for the preparation of the remuneration report, including the related disclosures. The objective is to plan and perform audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management and the Supervisory Board, as well as evaluating the overall presentation of the remuneration report, including the related disclosures.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Opinion

In our opinion, on the basis of the knowledge obtained in the audit, the remuneration report for the financial year from 1 January to 31 December 2023, including the related disclosures, complies in all material respects with the financial reporting requirements of Section 162 AktG.

Other matter – formal examination of the remuneration report

The substantive audit of the remuneration report described in this independent auditor's report includes the formal examination of the remuneration report required by Section 162 (3) AktG, including issuing an assurance report on this examination. As we have issued an unqualified opinion on the substantive audit of the remuneration report, this opinion includes the conclusion that the disclosures pursuant to Section 162 (1) and (2) AktG have been made, in all material respects, in the remuneration report.

Limitation of liability

The terms governing this engagement, which we fulfilled by rendering the aforesaid services MTU Aero Engines AG, are set out in the General Engagement Terms for Wirtschaftsprüfer and Wirtschaftsprüfungsgesellschaften [German Public Auditors and Public Audit Firms] as amended on 1 January 2017. By taking note of and using the information as contained in this auditor's report, each recipient confirms to have taken note of the terms and conditions laid down therein (including the limitation of liability of EUR 4 million for negligence under Clause 9 of the General Engagement Terms) and acknowledges their validity in relation to us.

Munich, 19 March 2024

KPMG AG
Wirtschaftsprüfungsgesellschaft
[Original German version signed by:]

Huber-Strasser	Hanshen
Wirtschaftsprüferin	Wirtschaftsprüfer
[German Public Auditor]	[German Public Auditor]

Combined management report

Combined management report

The management report of MTU Aero Engines AG and the Group management report for the fiscal year 2023 have been combined in accordance with Section 315 (5) of the German Commercial Code (HGB) in conjunction with Section 298 (2) of the German Commercial Code (HGB). Content of internet sites referred to in the combined management report are not components of the combined management report and are not audited; such references are for information purposes only.

The MTU Group

Business activities and markets

MTU's portfolio covers the entire lifecycle of commercial and military aircraft engines and aero-derivative industrial gas turbines. The company's activities range from development, manufacturing and marketing to maintenance.

MTU has technological expertise in low-pressure turbines, high-pressure compressors and turbine center frames, and in repair techniques and manufacturing processes. Through risk- and revenue-sharing partnerships, it is involved in important national and international technology programs and cooperates with the top names in the industry (GE Aerospace, Pratt & Whitney and Rolls-Royce).

The Group also provides maintenance services for commercial aircraft engines. In the military sector, it has been the leading industrial partner to the German armed forces for decades.

MTU operates in two segments: the OEM business (Original Equipment Manufacturing) and MRO business (Maintenance, Repair and Overhaul). The OEM segment covers new commercial engines, including spare parts, and the whole of the military sector. The MRO segment comprises the commercial maintenance activities.

Group structure, locations and organization

Through its subsidiaries, joint ventures and equity investments, MTU has a presence in all key markets and regions worldwide. Further information on MTU's shareholdings is provided in the *Notes to the consolidated financial statements in section I. Accounting policies and principles*.

[T17] MTU Aero Engines worldwide

MTU Maintenance Canada

MTU Aero Engines North America

MTU Maintenance Dallas

MTU Maintenance do Brasil

MTU Aero Engines

MTU Maintenance Hannover

MTU Maintenance Berlin-Brandenburg

MTU Maintenance Lease Services

MTU Aero Engines Polska

MTU Maintenance Serbia

EME Aero[1]

AES Aerospace Embedded Solutions[1]

Pratt & Whitney Canada Customer Service Centre Europe[1]

Ceramic Coating Center[1]

MTU Maintenance Zhuhai[1]

Airfoil Services[1]

[1] Joint Ventures.

[T18] MTU's global workforce

Number of employees	Dec. 31, 2023	Dec. 31, 2022	Change against previous year Employees	in %
Locations in Germany	9,783	9,155	628	6.9
Locations outside Germany	2,387	2,118	269	12.7
Total workforce	**12,170**	**11,273**	**897**	**8.0**

Corporate strategy

MTU's corporate strategy is geared to profitable growth, customer satisfaction and sustainability. In addition to financial indicators, it therefore takes ecological and social aspects into account. The four target areas of MTU's growth strategy are:

A balanced product portfolio – Participation in rapidly growing new programs

MTU focuses on rapidly growing and high-volume commercial and military engines and works with various partners. It optimizes its risk profile and growth opportunities through continuous participation in varying thrust classes and fields of application. MTU Aero Engines is currently focusing on ramping up production of Geared Turbofan™ engines for regional and medium-haul jets, which it has developed together with partners, the ongoing development of this engine as the Geared Turbofan "Advantage" and on preparing the market launch of GE Aerospace's GE9X engine program for the Boeing 777X widebody aircraft, which is scheduled for 2025. There will also be a cargo version of the Boeing 777X. MTU's solid positioning in the MRO segment is partly due to these programs, as the company has secured itself a share of the future aftermarket service business through its stakes in these engine programs.

In the commercial maintenance business, the company is driving forward the expansion of its portfolio of products and services, including digital services, to enhance customer satisfaction and continuously broaden its customer base.

In the military business, extensive work started on the new FCAS (Future Combat Air System), following placement of the order at the end of 2022. On the engine side, MTU has embarked on the development of the necessary technologies with its partners Safran Aircraft Engines (Paris, France) and IPT Aero (Zamudio, Spain) and the first progress reviews with the customer were successfully completed. Belgium now wants to join the European cooperation program alongside Germany, France and Spain and make a financial contribution.

The development of the new digital engine control & monitoring unit (DECMU) for the EJ200 program is proceeding on schedule. Initial tests should be performed in 2024, with certification expected in 2025. DECMU will replace the previous technology and therefore help to secure the future of this engine and support the future development of the aircraft and engine as part of the long-term evolution (LTE) of the Eurofighter.

Cutting-edge technologies – Maintaining and expanding technological leadership

MTU is currently extending its technological leadership by focusing on the ongoing development of gas turbines for aircraft, for example, using new materials such as sixth generation monocrystals and modern manufacturing technologies such as additive processes. In combination with optimized cyclic processes, the aim for the mid term is to raise the efficiency of MTU's core modules – the low-pressure turbine, high-pressure compressor and turbine center frame – and reduce their weight, in order to increase profitability and environmental friendliness.

In line with the overriding objective of the Paris Agreement on Climate Change, specific targets are being defined for aviation. One example is ACARE Flightpath 2050 "Fly the Green Deal." Alongside a specific CO_2 target, this sets targets for non-CO_2 effects, for example, due to emissions of nitrogen oxides and the formation of condensation trails. MTU published a revised version of its Claire (Clean Air Engine) technology agenda in 2022. The declared aim is to bring onto the market products that enable climate-neutral or emission-free flying well before 2050. MTU is therefore stepping up research into future-oriented propulsion concepts, together with its partners in industry, science and research. Claire therefore defines time horizons, targets and possibilities for implementation for the three areas of aviation: short-, medium-, and long-haul flights. The water-enhanced turbofan (WET), a revolutionary gas turbine-based propulsion concept, can significantly reduce all emissions that impact the climate. In addition, MTU is working on the Flying Fuel Cell (FFC) for full electrification of the powertrain. A fuel cell converts liquid hydrogen into electricity, which is used to drive electric motors.

The aim is to develop demonstration versions of both concepts as part of the national aviation research program and, in a European context, through Clean Aviation.

In addition to alternative propulsion systems, on the road to climate-neutral aviation, sustainable aviation fuels (SAFs) play an important role. They have the potential to significantly reduce the climate impact of aviation with the engines currently used in aircraft. MTU is therefore playing a part in this field, for example, as a founding member of the association aireg (Aviation Initiative for Renewable Energy in Germany e.V.) and as a strategic partner in several projects to set up SAF production facilities. Alongside technical improvements to products, the digitalization of products, services and value-creation processes is growing in importance. Here, MTU's activities are geared primarily to reducing lead times and expenses, for example in development by making extensive use of simulation techniques in all disciplines through to full integration in the virtual engine.

Enhanced competitiveness – Increased productivity accompanied by a reduction in capital tie-up

MTU encourages a culture of continuous improvement in order to secure its competitiveness and further increase customer satisfaction. The focus here is on optimizing structures, processes and capital tie-up in all areas of the company. Digitalization and automation technologies play a key role here.

MTU's most important task is fulfilling its delivery obligations. To this end, in the Technology division it has introduced a lean matrix organization based on material flows to achieve a further improvement in collaboration, smooth processes and greater efficiency.

The goal is to continuously optimize MTU's supply chain and its production and service network in terms of delivery capability, quality and costs. Profitability and competitiveness are to be enhanced further by high investment in maintenance and repair shops in countries where wage costs are low.

In addition to its production activities, MTU is also increasingly building up support activities and processes at its locations in Poland and Serbia. In addition, this gives it extended access to skilled employees.

Along with measures to improve productivity and customer satisfaction, MTU is also concentrating on its ambitions to reduce CO_2 emissions at its production locations. The "ecoRoadmap" climate strategy was initially introduced at the Munich location in 2021. Since 2023, it has been applied globally at all production sites in Germany and abroad. The goal is to reduce CO_2 emissions by 60% compared with 2019.

MTU regards responsible economic activity as an important criterion in its competitiveness, and acts in harmony with its sustainability strategy.

Employees and corporate culture – Networked teams in a creative environment

Highly motivated, skilled workers are crucial to the successful development of the MTU Group. MTU's corporate culture places emphasis on personal development and achievement coupled with a strong sense of social responsibility.

The trend toward digitalization is set to change the work environment and tried-and-tested management methods. More scope and greater responsibility for employees as well as short decision paths are key elements of an effective corporate culture. All employees are encouraged and empowered to contribute their own ideas and translate them collaboratively into new products and services, innovative business models and improved processes.

The company promotes cultural and individual diversity, flexible working conditions and high-quality basic and further training opportunities for its workforce.

The roadmap for the ongoing development of the corporate culture sets the following focal areas for the coming years: greater diversity and internationality, entrepreneurial action at all levels, a digital mindset, networking and collaboration, and alignment with the hybrid world of work. The development of this corporate culture is supported by targeted tools and methods. The HR strategy was updated in 2023 and comprises six core elements, which aim to keep MTU on a profitable growth track: strategic human resources planning, talent management and management development, attractiveness as an employer, and adaptation of the HR organization and IT systems. The continuous development of the leadership values, innovation management and innovative corporate culture strengthens MTU's overarching corporate vision: "We shape the future of aviation."

Last year, the top management defined the long-term strategy for the MTU Group up to 2030. The overarching areas that form the backbone of this strategy are human resources, digitalization and a global presence. They are long-term success factors in a constantly changing environment:

- Human resources: The global structure of the MTU team, combined with a strong employer brand and contemporary talent and skills management ensure the necessary capacity and competencies.
- Digitalization: Scalable and resilient IT networks the entire company and facilitates smooth global business processes and collaboration.
- Global presence: Establishing and extending locations, especially on a best-cost basis, and the adapted management structure support MTU's growth options.

Key performance indicators

The implementation of MTU's corporate strategy, which is focused on profitable growth, customer satisfaction and sustainability, is managed through key financial and non-financial performance indicators adopted by the Executive Board. These performance metrics are derived from corporate planning and provide guidance for management of the company in its focus on sustainable and profitable growth of the company. Specific attention is paid to ecological and social aspects. To facilitate decisions that create a suitable environment for implementing the corporate strategy, the manufacturing and support functions are supported by a central risk management, internal control and compliance management system. Based on agreement between the Executive Board and Supervisory Board, the central financial performance indicators, supplemented by focused non-financial performance indicators, are incentivized as part of a value-based compensation system for the Executive Board and senior executives.

[T19] Financial Performance indicators

in € million	2023	2022	Change against previous year in € million	Change against previous year in %
Revenue	5,363	5,330	33	0.6
Adjusted revenue	6,326	5,330	996	18.7
Adjusted EBIT	818	655	163	24.9
Adjusted EBIT margin (in %)	12.9	12.3		
Adjusted net income	594	476	118	24.8
Adjusted earnings per share adjusted (in €)	10.96	8.91	2.05	23.0
Free cash flow	352	326	25	7.8

The value-driving financial KPIs adjusted EBIT, adjusted EBIT margin, revenue, adjusted revenue, adjusted net income, adjusted earnings per share and free cash flow are MTU's most important performance metrics and define the financial range within which it operates in terms of profitability, growth and liquidity.

For a definition of adjusted EBIT, which is the central financial indicator of operational profitability, please see the *reconciliation to adjusted key performance figures in the Results of operations section*. Another indicator monitored by the company is the adjusted EBIT margin, which shows the relationship between adjusted EBIT and adjusted revenue.

For a definition of the free cash flow KPI, which MTU calculates from a combination of the cash flow from operating activities and investing activities, adjusted for non-recurring cash flows, please see the liquidity analysis in the *Financial situation section*.

MTU's key performance indicators will be revised from 2024 onwards. Alongside the financial KPIs outlined above, they now include adjusted earnings per share and the non-financial KPIs defined below.

Adjusted earnings per share is a ratio of adjusted net income to the weighted average number of shares in circulation.

Non-financial KPIs

For a definition of the KPIs "CO_2 abatement through sustainable measures" and "remaining CO_2 emissions," which form a central non-financial criterion in the management of the climate impact of MTU's production activities, please see the *section Short-term incentive (STI) in Development of performance-related components in the Management compensation report.* The performance period for CO_2 abatement is longer than for the financial KPIs.

For a definition of the KPI "number of days training per employee," which forms a central non-financial management criterion for developing and upholding the innovative capability of the workforce and employee satisfaction, please see the *section Short-term incentive (STI) in Development of performance-related components in the Management compensation report*.

Research and development

Framework conditions and goals

The Paris Agreement initiated a paradigm shift in aviation. While previous goals such as those set out by the Advisory Council for Aviation Research and Innovation in Europe in Flightpath 2050 focused exclusively on the direct CO_2 effects on the climate, in the future, the entire climate impact of aviation will be taken into consideration. That includes non-CO_2 effects such as the climate impact of emissions of nitrogen oxides and water, as well as the impact of condensation trails, which increase cloud formation. As an intermediate step towards meeting the goal of the Paris Agreement, the European Green Deal defines a 55% reduction in greenhouse gas emissions by 2030 and the achievement of climate neutrality by 2050. In July 2021, the European Commission presented the “Fit for 55” package containing measures to help achieve these targets. Examples are revising the European emissions trading system and the introduction of a minimum quota for the use of sustainable aviation fuels. Alongside such measures, there is a need, above all, for innovative solutions for aircraft and engines.

MTU has established technological leadership in its core competencies of low-pressure turbines, high-pressure compressors, turbine center frames, and high-tech manufacturing processes and repair techniques. This is the basis for continued systematic development of the present gas turbine-powered engines and for revolutionary new propulsion systems.

MTU's main area of activity in the evolutionary development of gas turbine-powered engines is raising efficiency in order to minimize climate and health-related emissions. This will be achieved, on the one hand, by a further reduction in the fan pressure ratio, thereby increasing thrust efficiency. On the other hand, thermal efficiency will be increased by improving the efficiency of components and higher temperature and overall pressure ratios. Weight and dimensions also have a major influence on energy consumption. Here too, continuous improvement is the goal.

MTU's mid- and long-term targets for the development of new commercial engines are aligned to the European Green Deal as an intermediate step towards achieving the overarching goal of the Paris Agreement. The MTU technology agenda Claire (Clean Air Engine) translates these into targets at the level of drive systems and serves as the guide for technology and innovation.

Stage 1 is the Geared Turbofan (GTF), which was developed in partnership with Pratt & Whitney and entered series production in early 2016 for the Airbus A320neo. The GTF reduces fuel consumption and hence CO_2 emissions by around 16% compared with the IAE V2500 (see also *Commercial engine programs*). The improved product, the Pratt & Whitney GTF Advantage, reduces CO_2 emissions even further.

Stage 2 of Claire aims to achieve a considerable improvement in the climate impact of aviation through revolutionary gas turbine-based concepts and electric propulsion systems based on fuel cells. One of the most promising gas turbine concepts is the water-enhanced turbofan engine, a system developed by MTU that considerably reduces all climate-related emissions. A second system being developed as part of Claire stage 2 is the Flying Fuel Cell (FFC), a fully electric system based on a hydrogen fuel cell. This system is almost entirely emission-free and could be used in an initial product for smaller aircraft within the scheduled timeframe of 2035+.

Claire stage 3 concentrates on two areas: the use of the revolutionary concepts in the widest possible range of applications and optimization of energy consumption. Although these concepts are largely climate-neutral, minimizing energy consumption is vital to reduce pressure on resources and cut costs.

Technologies for engines of the future

Commercial engine programs

The most significant innovation in the area of aircraft engines in recent decades is the Geared Turbofan (GTF) engine developed by MTU in cooperation with Pratt & Whitney. Unlike conventional turbofans, in which the fan and low-pressure turbine run at the same speed on a single shaft, the GTF links the two components using a reduction gear. This allows the fan with its larger radius to rotate more slowly, while the low-pressure turbine rotates faster. Consequently, lower fan pressure ratios (high bypass ratios) are achieved, thereby improving thrust efficiency, increasing the efficiency of the fan and the low-pressure turbine, while cutting fuel consumption and carbon dioxide emissions by 20% each and reducing the noise level by 20 EPNdB, bringing it well below the requirement of certification. What is more, the engine is lighter because the low-pressure turbine and low-pressure compressor require fewer stages.

In the GTF project, MTU is responsible for developing and manufacturing the high-speed low-pressure turbine, the front half of the high-pressure compressor and four brush seals. Furthermore, MTU is responsible for final assembly of one-third of the serially produced engines for the Airbus A320neo – which is performed in Munich – and carries out the acceptance tests for these engines. It is also a partner in the MRO network.

As of November 2023, the engines in the Geared Turbofan family had clocked up more than 26 million flight hours. Arithmetically, they had avoided over 14 million metric tons of CO_2 compared with comparable use of the previous model.

The next development stage of this product is already under way. From 2025, Pratt & Whitney and MTU will offer the Pratt & Whitney GTF Advantage for the A320neo, an even more efficient PW1100G-JM engine with higher thrust, which will increase range and loading capacity. The increased efficiency is attributable to improvements in the MTU components.

For the next generation of the Geared Turbofan, the aim is to achieve a further increase in the lifecycle of components as well as a further reduction in fuel consumption. The reduction in fuel consumption should be achieved primarily by a further increase in the efficiency of the components, combined with higher overall pressure ratios. To achieve this, for example, highly complex 3D blade designs need to be implemented in a very small space. An increase in the lifecycle of components should be achieved, for example, through new coatings and optimized design concepts. Key technologies are therefore also required for production and assembly.

When it comes to engines of the highest thrust class for long-haul aircraft, MTU is participating in GE Aerospace's GE9X for the new Boeing 777X by developing and manufacturing the turbine center frame.

Military engine programs

The EJ200 engine powers the Eurofighter and is in service with numerous air forces. In 2023, MTU successfully continued the development of a new digital engine control & monitoring unit (DECMU) which it embarked on in 2021 to secure the future of this engine.

The first DECMU-NG for further start-up and integration activities was assembled in 2023. The validation round for the flightworthy standard (FWS) is planned for mid-2024. An engine test is planned for early 2025.

Germany, France and Spain are planning to introduce the new Future Combat Air System (FCAS) from 2040. A key component in this system is a new fighter jet, which is scheduled to come into service as from 2040. A central element in this new jet is the Next European Fighter Engine, for which MTU and Safran will be the joint lead for development, production and after-sales support. Two design phases involving MTU, Safran, ITP, Dassault and Airbus GmbH (Germany) / Airbus SAU (Spain) were successfully completed by the end of 2021. In the reporting period, work continued on the design studies and an intensive technology preparation phase started.

New areas of business

The WET (water-enhanced turbofan) is a further development of the conventional gas turbine engine. It can reduce all climate-related emissions, thereby further reducing the overall climate impact. SWITCH (Sustainable Water-Injected Turbofan Comprising Hybrid electrics), a project funded through the Clean Aviation initiative, was launched in the reporting period. In this project, MTU will be developing technologies for the hybrid-electric water-enhanced turbofan with the industrial partners Pratt & Whitney, Airbus, Collins and GKN as well as academic partners.

Fuel cells powered by green hydrogen have the potential to enable almost emission-free flying in the longer term. Propulsion systems based on the Flying Fuel Cell (FFC) that are suitable for aircraft are not yet available. All known demonstration platforms are based on solutions from the automotive sector. Unlike aircraft applications, weight and parasitic load play a secondary role in the automotive sector.

A positive decision was received from the Clean Aviation initiative on the project application HEROPS (Hydrogen-Electric Zero Emission Propulsion System). This project will develop and assemble a demonstration unit for ground testing. In addition, MTU has acquired eMoSys GmbH, an innovative developer of electric motors based in Starnberg, Germany.

Digitalization

In the context of its digitalization strategy, MTU is examining the entire product lifecycle and the entire value chain from development to manufacture and maintenance. Interdisciplinary working groups have translated the company-specific needs and requirements of the manufacturing and support units into digitalization roadmaps and consolidated and prioritized them for the group. The roadmaps for individual units and topics define the specific areas of work, divided into time horizons of three, five and ten years. Establishing internal structures ensures efficient management and processing of the topics. One example is the Digi Board, a central body whose role is to prioritize the right projects from a strategic viewpoint on the basis of a cross-functional definition of requirements so that they can be completed efficiently.

Further technology projects have been implemented through digitalization initiatives, leading ultimately to what is known as the "virtual engine."

One sub-aspect of this is the "digital twin," a purely digital reproduction of the actual components in a real engine. The main focus here is on networking data, interdisciplinary cooperation and automated design optimization. Working with a model-based value chain is a key basis for this. As well as speeding up the development phase by providing more robust predictions, these modules principally aim to reduce production and maintenance costs and increase the quality of components.

New design methods were developed, in particular, for revolutionary engine concepts, where conventional design methods can no longer be used. The highly interdisciplinary nature of these concepts requires a far more detailed overview of the interaction between the aircraft and engine because the key to leveraging their potential essentially lies in intelligent integration and the use of artificial intelligence. To this end, MTU has acquired new insights and capabilities, especially in the field of system engineering.

Materials

Robust, advanced materials and the protective coatings required for them are key technologies that MTU is steadily driving forward for use in the next generation of the Geared Turbofan.

For the development of the Next European Fighter Engine, there is a need for new materials that can withstand high stress levels throughout operation. The future focus will be on polymer-based fiber-reinforced composites and powder metallurgy materials.

Based on this, new technology projects were launched with universities, research institutes and industrial partners in the reporting period.

The revolutionary water-enhanced turbofan (WET) and Flying Fuel Cell (FFC) concepts require greatly modified or completely new materials and coatings. For example, these have to be suitable for conditions where there is a high vapor content (in the case of WET) or for the use of hydrogen (in the case of FFC). MTU is already working on these topics in cooperation with universities and industrial partners.

In parallel with this, MTU is extending its capabilities to simulate the manufacture of materials and on the correlation of their properties. This requires modern material database structures and fundamental material models.

Manufacturing and maintenance technologies

Additive manufacturing processes are opening the way to new methods of production. In this area, MTU is focusing on laser powder bed fusion, where the component is built up by fusing very thin layers of a powder material. MTU uses additive manufacturing to produce the borescope eyepieces for PW1100G-JM engines, making it one of the first companies to use this technique for series production of aviation components. Preparations are under way to introduce this type of process to manufacture complex components such as bearing housings. The longer-term plan is to create new designs that would be either impossible or very costly to implement using traditional technology.

Further optimization of the entire additive manufacturing process chain was successfully implemented in 2023. For example, depowdering processes were automated, online process control was introduced and a new surface treatment process was established.

MTU uses state-of-the-art manufacturing processes and machinery: To meet the high demand for titanium compressor blisks (blade integrated disks, which combine the blade and disk in a single component), it has built a highly automated center of excellence in Munich with a smart regulation and logistics system. For these blisks, which are made of nickel-based alloys, which are extremely difficult to process and are used in the aft stages of high-pressure compressors, MTU has developed a new electrochemical material-removal process (Precise Electrochemical Machining – PECM). By working with an extremely small inter-electrode gap, in the micrometer range, PECM accomplishes much greater reproduction precision. There are also plans to use this technology in fields with very complex geometries. This applies, above all, to future high-pressure compressors, which have increasingly small dimensions as the overall pressure ratios are constantly increasing. Innovative technologies for the cathode design, novel generators, a newly developed type of machine and more efficient and more environmentally friendly electrolyte preparation are to be used.

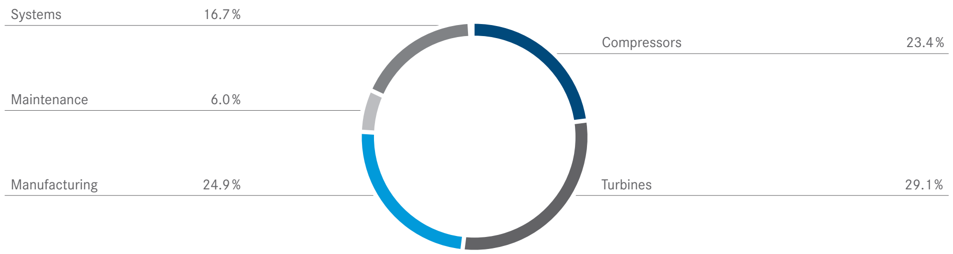
So far, profile grooves for turbine disks have been produced by broaching. Since turbine disks are also made of materials with high heat resistance that are time-consuming to process and cause heavy wear, MTU aims to transfer PECM technology from compressor blisks to turbine disks. A production line is currently being installed in a dedicated production building. In parallel, proof of readiness for series production is being established. Series production of GTF turbine blisks using PECM technology is scheduled to start in the second quarter of 2024 and should greatly enhance the profitability of the GTF program.

In the commercial maintenance business, engine trend monitoring has been continuously enhanced. The aim is to use AI-supported algorithms and cloud solutions to considerably increase the capabilities of this program.

Protecting technology assets (intellectual property)

As of November 2023, MTU's patent portfolio contained 724 patent families (2,542 individual patents). A patent family is a set of identical patents registered in various countries. As of the reporting date, this portfolio covered the following fields of technology:

[T20] Breakdown of MTU's patent portfolio by field of technology



Cooperation in science and research

For decades, cooperation with universities and research institutes has been a fixed element of research and development work at MTU. For instance, specimen engines are made available to universities and colleges, MTU experts give lectures or supervise students writing internship reports, theses and dissertations. Furthermore, students are given support with assignments and final reports. In addition, MTU honors outstanding achievements by awarding the annual Heilmann prize to a young scientist meriting recognition for achievements in engine technology.

Strategic alliances are established with research partners in order to strengthen ties between universities and industry, and to safeguard MTU's innovative capabilities. Cooperation with leading German universities and research institutes was stepped up during the past years. In specific areas of research, cooperation with MTU competence centers is continuously being extended.

To complement its own technological focus, MTU is supporting the ramp-up of sustainable aviation fuels, for example, through the signature in the reporting period of a memorandum of understanding on a research cooperation for power-to-liquid fuels.

Bauhaus Luftfahrt, which is based in Munich, is a visionary think tank with an international dimension that pursues unconventional, holistic and interdisciplinary research. It brings industry and science together under one roof, focusing primarily on exploring the socioeconomic, political and ecological aspects of aviation, designing visionary aircraft and engine systems, unearthing promising technologies for the future and carrying out knowledge management.

Investment in research and development

[T21] Research and development

in € million	2023	2022	Change against previous year in € million	in %
Commercial engine business (OEM)	239	216	23	10.6
Military engine business (OEM)	58	35	23	65.9
Commercial maintenance business (MRO)	10	15	–5	–35.1
Total research and development expenses	**306**	**265**	**40**	**15.2**
Refund of research and development expenses	–83	–65	–18	–28.3
Research and development expenses – own contribution	**223**	**201**	**22**	**11.0**
Expenditure meeting recognition criteria for intangible assets				
Commercial and military engine business (OEM)	–77	–66	–11	–17.1
Amortization of previously capitalized development costs	32	93	–61	–65.7
Research and development expenses – effect on profit or loss	**178**	**228**	**–51**	**–22.1**
thereof: in gross profit	64	123	–59	–48.0
thereof: in functional costs – research and development	114	106	8	7.8

Research and development expenses amounted to 5.7% of revenue, above the previous year's level of 5.0%.

Refund of research and development expenses principally comprises public grants for research and development for quieter and more fuel-efficient aircraft engines.

The Group funds its share of the research and development expenses. If the criteria for capitalization are met, the development expenses are recognized as internally generated intangible assets or as other assets if consideration is paid (acquired development work), and subsequently amortized through revenue or the cost of goods sold. Information on capitalized research and development expenses for self-generated development work can be found in *Note 14. Intangible assets and goodwill* and information on acquired development work can be found in *Note 17. Acquired program assets, development work and other assets* in the Notes to the consolidated financial statements.

Investment in intangible assets in the OEM segment (commercial and military engine business) which meets the capitalization criteria relates principally to the engine programs in the Pratt & Whitney GTF family of engines and the PW800 program.

The amortization of capitalized development costs recognized through revenue or the cost of goods sold mainly relates to the Pratt & Whitney GTF engine family. No impairment losses were recognized for internally generated intangible assets and acquired development work in the reporting period (in the previous year, impairment losses were recognized for the PW1400G-JM engine program for the Russian Irkut MC-21 and the T408 engine program for the heavy duty cargo helicopter Sikorsky CH-53K). Further information on the special items in the impairment losses can be found in *Note 12. Additional disclosures relating to the income statement*.

Economic report

Macroeconomic conditions

Following a good start to 2023 as a result of low energy prices and the reopening of China, global economic growth slowed. The main factor holding back growth was the tight monetary policy required to check inflation. In October, the IMF predicted that global GDP would grow by 2.5% in 2023, compared with 3.0% in the previous year. Monetary policy is now having an effect. Higher interest rates and falling international raw material prices reduced the global inflation rate from 8.7% in 2022 to 6.9% in 2023 (source: IMF).

In 2023, Europe posted the lowest growth of the three major economic regions. In the euro zone, the GDP growth slowed significantly, from 3.3% in 2022 to 0.7% in 2023. The region had to contend with high energy prices and record interest rates in the euro zone, as well as an export slowdown. By contrast, GDP growth in the USA remained stable at 2.1% in 2023. Money saved by households during the pandemic enabled strong consumer demand. In China, economic growth increased from 3% in 2022 to 5% during 2023, driven by the reopening of the country. Nevertheless, the recovery from the pandemic was below expectations. Consumer spending only improved slowly and the Chinese economy faced a crisis in the real estate sector.

Sector-specific conditions within the aviation industry

Despite the global economic challenges, the broadly based post-pandemic upswing in air traffic continued. Globally, revenue passenger kilometers (RPKs) rose by 36% in 2023 to 94% of the pre-crisis level of 2019 (source: IATA). China reopened earlier than had been anticipated and this accelerated the growth in traffic in Asia by 96% compared with the previous year, bringing the region to 86% of the 2019 level. The recovery in North America and Europe is more advanced: In these two regions, passenger travel grew by 15% and 20% respectively year-on-year and was already back at 102% and 95% of the pre-crisis level.

The recovery was also reflected in the number of passenger flights in 2023. Worldwide, the number of flights by commercial passenger aircraft increased by 24% between 2022 and 2023 to around 97% of the 2019 level (source: Flightradar24). In line with this, there was increased demand for maintenance – especially at MTU's MRO locations. Capacity was increased to meet the rising demand.

Unlike the passenger markets, the tense macroeconomic and trade policy developments had a negative effect on global demand for air cargo. Cargo tonne kilometers decreased by 1.9% in 2023. However, cargo-only aircraft, which account for the majority of global air freight by volume and make up 9.7% of the total fleet, continued to post good figures. The number of flight movements was 27% higher than in 2019 (source: Flightradar24). That is particularly positive for MTU because the company has a strong presence in the cargo aircraft market (14.4% of MTU's fleet).

Driven by the strong recovery of demand for passenger travel and lower fuel prices, total revenue in the airline sector increased by 21.7% to U.S.$896 billion in 2023 and the sector returned to profit for the first time since 2019. Following cumulative losses of around U.S.$180 billion in the three years of the pandemic, the sector posted a net profit of U.S.$23.3 billion in 2023. The price of crude oil dropped from U.S.$100 per barrel in 2022 to U.S.$84 in 2023 and contributed to the improvement in profitability. Weak global economic activity and rising oil output in the USA had a greater impact on the oil price than the geopolitical risks and the production cuts by Russia and Saudi Arabia.

Annual deliveries by Airbus and Boeing increased by 10% in 2023, from 1,141 to 1,263 commercial aircraft (source: Cirium). Looking at the commercial aircraft programs in production of importance to MTU, annual deliveries of the A320neo family rose from 516 to 571 aircraft, while Boeing more than doubled deliveries of the 787 from 31 in 2022 to 73 in 2023. The combined order backlog of these two manufacturers increased from 11,817 aircraft in 2022 to 14,224 in 2023. MTU/ benefited greatly from the new orders in 2023. Aircraft orders were linked to orders for MTU's engine programs in both the narrowbody and the widebody sectors.

In view of the delivery bottlenecks throughout supply chain and the fleet management plan for GTF engines, which started in the fourth quarter, airlines are continuing to reactivate older aircraft or postponing taking them out of service. The GTF fleet management plan resulted from a rare production defect in powder metal components manufactured by Pratt & Whitney. The present shortage of new aircraft in the 737 and A320neo ranges has increased demand for aftermarket services for older aircraft and engines (for example, the V2500 and CFM56). While the GTF fleet management plan is a financial burden, the continued operation of older MTU engines constitutes an opportunity through additional demand for maintenance and spare parts. The parked fleet of Airbus and Boeing aircraft contracted from 4,411 (16.5% of the fleet) in 2022 to 2,899 aircraft (10.5%) in 2023 (source: Cirium). Only 443 aircraft were taken out of service in 2023. That was 1.6% of the fleet, which was a historically low level compared with the average of 2.4% in the period from 2010 to 2022.

Financial situation

The following explanatory comments and analyses are based on the audited MTU consolidated financial statements for the fiscal years ending December 31, 2023 and 2022. The consolidated financial statements were drawn up in accordance with the International Financial Reporting Standards (IFRSs) issued by the International Accounting Standards Board (IASB), to the extent that these have been adopted by the European Union.

In accordance with IFRS requirements, new and revised standards and interpretations were applied for the first time in the financial statements for 2023. This did not have a material impact on the net assets, financial position and results of operations of the Group. They are described in detail in the Notes to the consolidated financial statements under *Accounting standards, interpretations and amended standards and interpretations applied for the first time in fiscal year 2023*.

The exchange rates used for translating the MTU Group's key foreign currencies into euros are the following official rates set by the European Central Bank:

[T22] Foreign currency exchange rates

Currency	ISO code	Rate at reporting date		Average rate	
		Dec. 31, 2023 € 1 =	Dec. 31, 2022 € 1 =	**2023 € 1 =**	2022 € 1 =
U.S. dollar	USD	1.1050	1.0666	1.0813	1.0530
Canadian dollar	CAD	1.4642	1.4440	1.4595	1.3695
Chinese renminbi	CNY	7.8509	7.3582	7.6600	7.0788
Polish zloty	PLN	4.3395	4.6808	4.5420	4.6861
Serbian dinar	RSD	117.1737	117.3224	117.2491	117.4588

Results of operations

Group

[T23] Consolidated income statement

in € million	2023	2022	Change against previous year in € million	in %
Revenue	**5,363**	**5,330**	**33**	**0.6**
Cost of goods sold	-5,245	-4,475	-769	-17.2
Gross profit	**118**	**855**	**-737**	**-86.2**
Function costs	-364	-360	-4	-1.1
Other operating income/expenses	-14	-50	35	71.5
Profit/loss of companies accounted for using the equity method and of equity investments	99	62	37	59.5
Earnings before interest and taxes (EBIT)	**-161**	**508**	**-668**	**<-100**
Net financial income/expense	-45	-45	1	1.4
Earnings before income taxes	**-205**	**463**	**-668**	**<-100**
Income taxes	108	-130	238	>100
Net income	**-97**	**333**	**-430**	**<-100**
Basic earnings per share (in €)	-1.90	6.21	-8.11	<-100
Diluted earnings per share (in €)	-1.90	6.06	-7.97	<-100
Earnings before interest and taxes, depreciation and amortization (EBITDA)	**171**	**865**	**-695**	**-80.3**

Revenue

The increase in revenue is entirely attributable to the development of the commercial maintenance business (MRO). Here, revenue (before consolidation) rose by €608 million, from €3,616 million in the previous year to €4,225 million, driven principally by the high level of additional maintenance work for the PW1100G-JM engine type and the continued recovery of the engine leasing business, while there was a slight drop in maintenance work on the V2500 engine type. The rise in revenue in U.S. dollars was countered to some extent in euros by the weaker average U.S. dollar exchange rate compared with the previous year.

In the commercial and military engine business (OEM), revenue (before consolidation) fell by €582 million from €1,831 million to €1,249 million. The considerable drop in revenue in the OEM segment was due to the exceptional charges for the Geared Turbofan fleet management plan, which reduced revenue by €917 million. The operating business before this special item continued to develop positively (see "Reconciliation to adjusted key performance figures"). This was principally due to the positive business development of new engine business for the GTF and GEnx programs, growth in the aftermarket business with the PW2000, GEnx, GP7000 and CF6-80 and the delivery of engines for business jets. The development of revenue was also negatively affected by valuation effects resulting from the technology- and business-induced reassessment of refund liabilities for invoice corrections in connection with risk-and-revenue-sharing consortia, which impacted, in particular, the revenue from/expenses for the GTF engine programs (OEM). Considering the fact that billing in U.S. dollars is customary in the aviation sector, revenue development was held back by the development of the U.S. dollar exchange rate, which averaged U.S.$1.08 per euro in 2023 compared with U.S.$1.05 per euro in the previous year. In contrast, the measurement of refund liabilities within the scope of stakes in commercial engine programs on the basis of the closing rate had a positive effect as a result in the change in the exchange rate prevailing at the closing date from U.S.$1.07 per euro on December 31, 2022, to U.S.$1.11 per euro at year-end 2023.

Cost of goods sold and gross profit

The cost of goods sold increased as a result of the higher business volume. Due to the revenue impact of the Geared Turbofan fleet management plan, the increase in the cost of goods sold was well above the rise in revenue. While inflation effects increased costs, the U.S. dollar exchange rate and economies of scale realized in relation to the utilization of production and service capacities took pressure off the cost of goods sold and gross profit compared with the previous year.

Analogously to revenue, exceptional charges of €15 million in connection with the Geared Turbofan fleet management plan (see *Reconciliation to adjusted key performance figures*) had to be recognized in the cost of goods sold. In the previous year, the cost of goods sold was dominated by impairment losses of €77 million (in connection with the Russia-Ukraine war and the business development of the T408 program). All in all, the developments outlined above resulted in a considerable drop in the gross profit, and the gross margin, which is defined as the ratio of revenue less cost of goods sold to revenue, fell from 16.0% in the previous year to 2.2 % in the reporting period.

Reconciliation to adjusted key performance figures

The reconciliation of the consolidated income statement serves to factor special items, especially those amounts recognized in operating results that are material – measured using the internal materiality criterion for external reporting (see section *I. Accounting principles and policies / Consolidated group / Materiality criterion – Non-material investments*) – and, above all, refer to other periods, out of the key earnings figures of the Group and its segments. The aim is to measure the success of managing operating activities in the reporting period and, at the same time, to provide information as a further point of reference for efficient comparison with different periods and companies.

Following its standard practice, the central earnings indicators reported by MTU as key performance indicators are:

/ adjusted earnings before interest and taxes (adjusted EBIT), the adjusted EBIT margin and
/ adjusted net income.

Given the considerable impact of the adjusted earnings contributions factored out as a special item in connection with the "other significant non-period earnings impacts" in connection with the accrual of the expected charges for the PW1100G-JM "Geared Turbofan fleet management plan", in order to ensure the meaningfulness of the adjusted EBIT margin and provide information on organic business growth in the reporting period, the following supplementary indicator was calculated for the first time:

/ adjusted revenue.

The adjusted figures do not come under the provisions of the International Financial Reporting Standards (IFRSs); they are to be seen as an addition to the key financial indicators reported pursuant to IFRS.

It is standard practice for the CEO to classify items and the corresponding earnings contributions as special items to be eliminated in the reconciliation to the adjusted figures in consultation with the CFO, the Chairman of the Supervisory Board and the members of the Supervisory Board's Audit Committee.

Adjusted revenue

With a view to consistent reporting, in the reporting period revenue was adjusted for the "significant non-period earnings impacts" in connection with the Geared Turbofan fleet management plan described in the *section on adjusted EBIT*, the impact of the "major consortial litigation and claims," which also affect revenue, and the "effects from the increase in the stake in IAE-V2500."

Adjusted revenue was €6,326 million in the reporting period (for details, see the *table Reconciliation of the consolidated income statement*). The prior-year revenue figure has not been amended because adjusted revenue was not reported in the previous year for materiality reasons because there was no relevant influence on the adjusted EBIT margin.

Adjusted EBIT

Following its standard practice, MTU adjusted the EBIT calculated in accordance with the IFRSs for the following categories of special items:

Adjusted special items comprising recurring effects – to enhance the comparability of financial reporting within the sector:

- "Effects of the purchase price allocation": As of January 1, 2004, MTU passed into the ownership of Kohlberg Kravis Roberts & Co. Ltd. (KKR), following the latter's purchase of 100% of the MTU shares from the then DaimlerChrysler AG. In the context of the acquisition, assets, liabilities and contingent liabilities were identified in accordance with IFRS 3 and measured at fair value. Since then, the identified intangible assets, in particular, have resulted in substantial amortization. The resulting earnings impacts are eliminated as special items in the reconciliation to adjusted EBIT.
- "Effects from the increase in the stake in IAE-V2500": The increase in MTU's stake in the Pratt & Whitney IAE-V2500 program in 2012 was accounted for as the addition of a program asset. Since then, this asset has been amortized over the expected remaining useful life of the program, thereby reducing revenue, and the corresponding earnings impact is eliminated as a special item in the reconciliation to adjusted EBIT.

Special items comprising non-period effects – to enhance measurement of the Group's operating performance and the comparability of financial reporting, especially over time:

- "Impairment losses": Significant earnings impacts resulting from asset impairment losses, especially in accordance with IAS 36, are eliminated as special items in the reconciliation to adjusted EBIT. In the previous year, the impact of impairment losses in connection with the termination of business relationships with Russian partners as a consequence of the Russia-Ukraine war was eliminated in adjusted EBIT. In 2022, earnings were impacted by impairment losses on assets relating to the stake in the PW1400G-JM program and, to a smaller extent, the stake in the PW1100G-JM and the commercial maintenance business (MRO segment).

  Claims to insurance compensation payments for materialized damage from the leasing of engines to Russian customers, which were impaired in the previous year, were realized in the reporting period. The corresponding other operating income was eliminated as a special item in the reconciliation to adjusted EBIT and adjusted net income in the reporting period.

  In 2022, the earnings impact of impairment losses in connection with changes in forecast sales of the GE T408 program – the engine for the Sikorsky CH53-K cargo helicopter – was eliminated in the calculation of adjusted EBIT.
- "Restructuring expenses": Earnings impacted by restructuring measures within the meaning of IAS 37. No such effects had to be recognized in the reporting period or the previous year.
- "Changes in the consolidated group": Earnings impacts result from the acquisition, divestment or discontinuation of material investments and processes of a comparable nature. No such effects had to be recognized in the reporting period or the previous year.
- "Other significant non-period earnings impacts": In keeping with the objective of the adjusted earnings parameters (see above), analogously to the categories specified in previous periods, adjustments were made for the earnings impacts of non-period transactions, i.e., transactions that impact earnings across periods. In the reporting period, this category comprised the considerable earnings impact of the **accrual for the expected charges for the PW1100G-JM "Geared Turbofan fleet management plan".** Further details can be found in *section I. Accounting principles and policies / PW1100G-JM Geared Turbofan fleet management plan (powder metal issue)"* in the Notes to the consolidated financial statements.

  In addition, in the reporting period this category also contained the earnings impact of the provisions for "**major consortial litigation and claims**" in connection with the stake in a GTF program. The resulting reduction in earnings in the reporting period was €26 million. This was eliminated as a special item in the reconciliation of adjusted EBIT.

  Furthermore, MTU reports contingent liabilities of €228 million in connection with this in the reporting period; these do not have any impact on profit or loss.

  These effects have been eliminated as a special item in the reconciliation to adjusted revenue and adjusted EBIT.

Adjusted net income

Similarly, the effect of the special items outlined above is eliminated from earnings before income taxes. To establish adjusted earnings before income taxes, only net interest income/expense and the interest shares in other financial income/expense, which are mainly connected with provisions for pensions and liabilities from pensions and plan assets, are added to adjusted EBIT. None of the other components of financial income/expense, especially those that are influenced by the U.S. dollar exchange rate, such as the effects of exchange-rate hedging, are taken into account.

Adjusted net income is derived from adjusted earnings before income taxes. The normalized income taxes are calculated on the basis of the expected average tax rate for the Group derived in each case from the current operational planning for the Group. This is 27% (previous year: 26%). The profit/loss of companies accounted for using the equity method does not form part of the tax base.

[T24] Reconciliation of the consolidated income statement

in € million	2023 As reported	2023 Non-recurring items	2023 After adjustment	2022 As reported	2022 Non-recurring items	2022 After adjustment
Revenue [1]	**5,363**	**963**	**6,326**	**5,330**		**5,330**
thereof: special item "Other material aperiodic contribution to earnings" - "Geared Turbofan fleet management plan"		917	917			
thereof: special item "Other material aperiodic contribution to earnings" – "consortial major litigation and claims"		23	23			
thereof: special item "effects from increase in the stake in IAE/V2500"		23	23		23	23
Cost of goods sold [1]	–5,245	34	–5,211	–4,475		–4,475
thereof: special item "effects of purchase price allocation"		19	19		20	20
thereof: special item "Other material aperiodic contribution to earnings" - "Geared Turbofan fleet management plan"		15	15			0
thereof: special item "impairment losses" – "program GE T408"			0		24	24
thereof: special item "impairment losses" – "Russia-Ukraine war"			0		63	63
Gross profit	**118**	**997**	**1,115**	**855**	**129**	**984**
Research and development expenses	–114		–114	–106		–106
Selling expenses	–141		–141	–143		–143
thereof: special item "impairment losses" – "Russia-Ukraine war"			0		12	12
General administrative expenses	–109		–109	–111		–111
Other operating income and expenses	–14		–14	–50		–50
thereof: special item "impairment losses" – "Russia-Ukraine war"		–21	–21			0
Profit/loss of companies accounted for using the equity method and of equity investments	99		99	62		62
thereof: special item "impairment losses" – "Russia-Ukraine war"		–0	–0		6	6
Special item "Other material aperiodic contribution to earnings" – "consortial major litigation and claims"		3	3			
Earnings before interest and taxes (EBIT)	**–161**	**979**	**818**	**508**	**147**	**655**
Net interest income/expense	–12		–12	–22		–22
Other financial income – interest included in the measurement of pensions	–29		–29	–11		–11
Other financial income/expense – miscellaneous (e.g. measurement of foreign currency holdings)	–4	4	0	–12	12	0
Earnings before income taxes	**–205**	**983**	**777**	**463**	**159**	**622**
Income taxes	108		108	–130		–130
Adjustment based on normalized income taxes		–292	–292		–16	–16
Net income	**–97**	**691**	**594**	**333**	**143**	**476**

[1] Prior year revenues and cost of sales were not adjusted because the key figure revenue adjusted had not been reported in prior year. For informational purposes the adjustments are allocated to prior year's revenue respectively cost of goods sold.

[T25] Reconciliation of EBIT to adjusted EBIT, depreciation/amortization expense and non-recurring items

in € million	2023	2022
Earnings before interest and taxes (EBIT)	**-161**	**508**
thereof: special item "effects of purchase price allocation"	19	20
thereof: special item "effects from increase in the stake in IAE-V2500"	23	23
thereof: special item "Other material aperiodic contribution to earnings" - "Geared Turbofan fleet management plan"	932	0
thereof: special item "impairment losses" – "program GE T408"	0	24
thereof: special item "impairment losses" – "Russia-Ukraine war"	-21	81
thereof: special item "Other material aperiodic contribution to earnings" – "consortial major litigation and claims"	26	0
Adjusted earnings before interest and taxes (adjusted EBIT)	**818**	**655**

Earnings before interest and taxes (EBIT) / adjusted EBIT

The clearly negative development of EBIT compared with the previous year corresponds, in particular, with the development of the gross profit. This was driven primarily by the establishment of provisions for the Geared Turbofan fleet management plan, which became necessary in the reporting period. The very negative impact on earnings was only offset to a small extent by a business-driven increase in the profit/loss of companies accounted for using the equity method. The other function costs increased slightly. The business-driven increase, exacerbated by the effect of inflation, was almost offset by the absence of the very high provisions recognized in the previous year for credit default risks in connection with the Russia-Ukraine war. Other operating income and expenses improved. Compared with the previous year, the main influences here were the income from insurance cases and the more moderate development of the expenses that had to be recognized for the risk of legal action and lawsuits.

Overall, earnings before interest and taxes (EBIT) clearly deteriorated year-on-year. As a consequence of the adjustments relating to the reporting period and the previous year, especially the effects of the Geared Turbofan fleet management plan, the adjusted EBIT of both the Group and its two segments improved. The adjusted EBIT margin was 12.9% (previous year: 12.3%).

Net financial income/expense

Net financial income/expense was unchanged from the previous year. In particular, the increase in interest income from financial investments and improved foreign currency measurement effects were reduced by the year-on-year increase in interest expense for pension provisions due to the change in the discount rate and the OCI recycling of the V2500 hedge.

Earnings before taxes (EBT)

The very negative development of EBT in the reporting period compared with the previous year corresponds to the negative development of EBIT.

Income taxes

As a consequence of the negative earnings before taxes, tax income of €108 million was registered in the reporting period (previous year: tax expense of €130 million). The high expenditures for the Geared Turbofan fleet management plan resulted in deferred tax income of €300 million (previous year: €0 million). The effective Group tax rate, calculated on the basis of earnings before taxes, was 52.8% (previous year: 28.1%). Information on the reconciliation of the expected tax expense to the effective tax expense is provided in *Note 10. Income taxes* in the Notes to the consolidated financial statements.

Net income

Net income decreased significantly by €430 million to €-97 million (previous year: €333 million). By contrast, adjusted net income increased by €118 million to €594 million (previous year: €476 million).

Consolidated statement of comprehensive income

In the consolidated statement of comprehensive income, net income is reconciled with the total comprehensive income for the period of -€50 million (previous year: €466 million).

The income and expenses recognized directly in other comprehensive income in the reporting period, net of deferred taxes, mainly comprised an increase of €91 million (previous year: decline of €34 million) in the fair value of hedging instruments. This was partly compensated by actuarial losses of €34 million (previous year: actuarial gains of €151 million) on pension obligations and plan assets, and exchange rate losses from the translation of foreign businesses amounting to €10 million (previous year: exchange rate gains of €16 million).

Earnings per share

Analogously with the very negative development of net income, basic earnings per share were €-1.90 (previous year: €6.21).

Diluting effects arose from the shares that could potentially be issued through the convertible bonds issued by MTU. In view of the loss in the reporting period, the diluted earnings per share measured in accordance with IAS 33.41 were also €-1.90 (previous year: €6.06).

Order backlog

MTU's order backlog consists of firm customer orders that commit the Group to delivering products or providing services, plus the contractual value of service agreements. As of December 31, 2023, the order backlog (after consolidation) amounted to €24.4 billion (previous year: €22.3 billion). Compared with the previous year, the order backlog increased in both the MRO segment and the OEM segment. By contrast, the order backlog was decreased by the change in the year-end exchange rate from U.S.$1.07 per euro in the previous year to U.S.$ 1.11 per euro in the reporting period.

OEM-segment

Revenue

In the commercial and military engine business (OEM), revenue (before consolidation) fell by €582 million from €1,831 million to €1,249 million. The considerable drop in revenue in the OEM segment was due to the exceptional charges for the establishment of provisions in connection with the Geared Turbofan fleet management plan, which reduced revenue by €917 million. Excluding the effects of the Geared Turbofan fleet management plan (special item), which significantly reduced revenue, the operating business continued to develop positively. Adjusted revenue was €2.212 million. This was principally due to the positive business development of new engine business for the GTF programs (excluding the effects of the GTF fleet management plan) and the GEnx program, growth in the spare parts and aftermarket business with the PW2000, PW1500/1900, GEnx, V2500 and GP7000 and the delivery of engines for business jets. The development of revenue was also negatively affected by valuation effects resulting from the technology- and business-induced reassessment of refund liabilities for invoice corrections within the commercial engine programs (risk-and-revenue-sharing consortia), especially the PW1100G-JM and V2500 engine programs (OEM). Considering the fact that billing in U.S. dollars is customary in the aviation sector, revenue development was held back by the development of the U.S. dollar exchange rate, which averaged U.S.$1.08 per euro in 2023 compared with U.S.$1.05 per euro in the previous year. In contrast, the measurement of refund liabilities within the scope of stakes in commercial engine programs on the basis of the closing rate had a positive effect as a result of the change in the exchange rate prevailing at the closing date from U.S.$1.07 per euro on December 31, 2022, to U.S.$1.11 per euro at year-end 2023.

Revenue in the commercial engine business decreased by €623 million (46.7%) to €711 million, mainly due to the impact of the Geared Turbofan fleet management plan. By contrast, adjusted revenue in the commercial engines business developed positively. In all, it increased to €1,675 million. After adjustment for the charges of €917 million for the Geared Turbofan (PW1100G-JM) fleet management plan, the main driver of adjusted revenue in the commercial engine business was the PW1100G-JM engine for the A320neo.

Revenue in the military engine business was €538 million, an increase of €41 million (8.3%) from the previous year's level of €496 million. Here, the main sources of revenue in the reporting period were the EJ200 engine for the Eurofighter and the RB199 for the Panavia Tornado.

[T26] Adjusted revenue and adjusted EBIT – OEM

in € million	2023	2022	Change against previous year in € million	Change against previous year in %
Revenue	**1,249**	**1,831**	**-582**	**-31.8**
Cost of goods sold	-1,515	-1,331	-184	-13.8
Gross profit	**-266**	**500**	**-766**	**<-100**
Gross margin (in %)	-21.3	27.3		
Adjusted revenue	**2,212**	**1,831**	**381**	**20.8**
Adjusted EBIT	**488**	**387**	**102**	**26.3**
Adjusted EBIT margin (in %)	22.1	21.1		

Earnings before interest and taxes

After elimination, in particular, of the effects of the Geared Turbofan fleet management plan, which amounted to €932 million, adjusted EBIT benefited from growth in the commercial spare parts and aftermarket business and the series business, as well as from the realized product mix and the resulting improvement in margins. Revenue rose and there was a significant increase in earnings from stakes in commercial engine programs, after adjustment for the Geared Turbofan fleet management plan. Another positive earnings driver was the revenue growth in the military engine business. Adjusted EBIT was also supported by the stronger U.S. dollar hedging rate in the reporting period compared with the previous year. A further positive effect came from the U.S. dollar exchange rate at year-end, especially its impact on the refund liabilities for invoice corrections relating to stakes in commercial engine programs (risk- and revenue-sharing partnerships). Overall, adjusted EBIT was higher than in the previous year.

By contrast, there was a significant downward trend in EBIT: In the reporting period, EBIT was affected by the impact of Geared Turbofan fleet management plan in the amount of €932 million and provisions for major consortial litigation and claims in the amount of €23 million. EBIT was €-508 million in 2023, compared with €268 million in the previous year. The previous year's figure was also affected by special items, especially impairment losses of €53 million in connection with the Russia-Ukraine war and €24 million in connection with the stake in the T408 engine program. Information on adjusted earnings is provided in the *Reconciliation to adjusted key performance figures in the Results of operations section*.

Capital expenditure

Capital expenditure on intangible assets came to €78 million (previous year: €58 million) and essentially related to the capitalization of self-generated development work for the Pratt & Whitney GTF engine family and the PW800 engine program. Capital expenditure on property, plant and equipment amounted to €218 million (previous year: €157 million) and related principally to construction in progress to expand production capacity and to other equipment, operational and office equipment. Expenditure on program assets and acquired development work was €25 million (previous year: €26 million) and mainly related to the Pratt & Whitney GTF engine family. Information about investments in financial assets is provided under *Financial position*.

Employees

The average number of employees in the OEM segment increased by 615 to 7,366 (previous year: 6,751).

MRO segment

Revenue

In the commercial maintenance business, revenue (before consolidation) increased by €608 million year-on-year to €4,225 million (previous year: €3,616 million). There was an increase in both revenue from the MRO segment's core business that is not tied to OEMs and revenue from orders placed by OEMs for the PW1100G-JM program, including for long-term maintenance business. The ratio was roughly 70% to 30%. The most important sources of revenue in the core MRO business were the V2500 engine type for the classic A320 family, despite a slight decline, and the CF34 engine program. This segment also benefited from growth in engine leasing. The rise in revenue in U.S. dollars was countered to some extent in euros by the weaker average U.S. dollar exchange rate compared with the previous year. By contrast, support came from the stronger U.S. dollar hedging rate compared with the previous year.

[T27] Revenue and adjusted EBIT – MRO

in € million	2023	2022	Change against previous year in € million	Change against previous year in %
Revenue	**4,225**	**3,616**	**608**	**16.8**
Cost of goods sold	–3,842	–3,259	–583	–17.9
Gross profit	**383**	**357**	**26**	**7.2**
Gross margin (in %)	9.1	9.9		
Adjusted EBIT	**329**	**268**	**61**	**22.6**
Adjusted EBIT margin (in %)	7.8	7.4		

Adjusted earnings before interest and taxes (adjusted EBIT)

The cost of goods sold increased faster than revenue due to the product mix, and the gross margin therefore dropped to 9.1% in the reporting period, compared with 9.9% in the previous year. EBIT nevertheless improved significantly to €346 million, compared with €239 million in the previous year. Alongside an improvement in the profit/loss of companies accounted for using the equity method, the main driver in the reporting period was other operating income in connection with insurance claims for compensation payments in connection with the special item "impairment losses (Russia-Ukraine war)", in the previous year, the corresponding compensation payments were recognized in other operating expenses. The income recognized for this special item in the reporting period and the expenses recognized in the previous year, together with further impairment losses contained in the special item "impairment losses (Russia-Ukraine war)" were eliminated when calculating adjusted EBIT and the adjusted EBIT margin, so the increase in these indicators was less marked. Information on adjusted earnings is provided in the Reconciliation to adjusted key performance figures in the *Results of operations* section.

Capital expenditure

Capital expenditure on intangible assets and property, plant and equipment was €17 million lower at €215 million (previous year: €232 million). This was mainly due to lower capital expenditures to build up the new MTU Maintenance Serbia repair facility, because this is now operational. At the same time, MTU continued to invest in the growing engine leasing business, expansion of MTU Maintenance Hannover, and further capacity-related expansion and replacement measures. Information about investments in financial assets is provided under *Financial position*.

Employees

The average number of employees in the MRO segment increased by 325 to 4,523 (previous year: 4,198).

Financial position

Initially, the company had the same financing instruments in the reporting period and the previous year. However, since the convertible bond issued in 2016 matured in 2023, the remaining bonds were redeemed or converted in the reporting period.

Principles and objectives of financial management

The main objectives of financial management are efficiently ensuring that the Group has adequate liquidity or financing to avoid financial risks and safeguard financial flexibility. The Treasury department at MTU Aero Engines AG issues policies for managing interest rate, currency management and counterparty risks, financing, investing surplus liquidity and selecting suitable banks centrally for the Group.

As a rule, the cash flow from operating activities in the business segments represents the Group's main source of liquidity. Liquidity forecasts are based on the Group's operational and strategic planning, flanked by a monthly rolling (short-term) liquidity forecast. Except where there are conflicting regulatory or tax requirements, MTU Aero Engines AG provides the necessary financing for its subsidiaries and subsidiaries invest their surplus liquidity with MTU Aero Engines AG. A central cash pooling system is in place for the German Group companies. This reduces the need for external borrowing and thus cash outflows for interest payments.

The limits set for counterparties are based on their long-term credit rating, their historical probability of default derived from this, and the size of the company. The limits set also support risk-based diversification of the credit default risk in connection with the investment of funds and the use of derivatives. The minimum requirement for treasury counterparties is an investment-grade rating. Funds are invested primarily in euro-denominated sight and time deposits, money market funds and commercial paper. Foreign currency investments are only permitted up to the level of the surplus liquidity in the respective currency; speculative investment to improve the interest yield is not permitted. The term of investments is determined by liquidity planning. The investment policy is geared to preserving value and the liquidity of the investments. The risk of changes in interest rates is negligible due to the very short nature of such investments.

MTU's financing strategy basically aims to ensure an appropriate balance sheet structure in order to maintain the investment-grade credit rating with rating agencies.

To achieve this target, MTU uses a variety of internal and external financing instruments, including occupational pension plans, bonds, credit facilities and leasing models. For information on the Group's capacity to raise funds through authorized and contingent capital, please refer to *Note 24. Equity* in the Notes to the consolidated financial statements.

The *Risk report* and *Note 35. Financial risk* in the Notes to the consolidated financial statements provide information on MTU's approach to the financial risks inherent in financing and measurement, the methods used to hedge interest rate and currency risks, and price, default and liquidity risks.

Financing instruments

[T28] Material external financing sources

Type of financing	Maturity date	Currency	Interest rate
Registered bond	June 12, 2028	€	Fixed interest rate
Corporate bond	July 1, 2025	€	Fixed interest rate
Convertible bond 2016	May 17, 2023	€	Fixed interest rate
Convertible bond 2019	March 18, 2027	€	Fixed interest rate
Revolving credit facility	June 29, 2028	€	Euribor rate for relevant period + margin
Lease liabilities	Various	€	Fixed interest rate

The €500 million revolving credit facility concluded in 2021 originally ran until June 29, 2027. In the reporting period, the first of two extension options was exercised (until June 29, 2028). The credit facility had not been drawn down as of the reporting date (previous year: €0 million). As in previous years, MTU did not engage in any off-balance-sheet financing transactions in the reporting period, such as the sale of receivables in connection with asset-backed securities or obligations toward special-purpose entities.

Net financial debt

Net financial debt serves as an indicator of the MTU Group's financial situation and is defined as the difference between gross financial debt and current, interest-bearing financial assets. Net financial debt was lower than on December 31, 2022. Alongside the increase in the cash flow from operating activities due to the dividend payment, this was attributable to conversions of the convertible bond 2016 and the reduction in financial liabilities in connection with the acquisition of stakes in engine programs (miscellaneous other financial liabilities).

[T29] Net financial debt

			Change against previous year	
in € million	Dec. 31, 2023	Dec. 31, 2022	in € million	in %
Bonds and notes	607	605	1	0.2
Convertible bonds	489	531	-42	-7.9
Other financial liabilities to banks	7	0	7	0.0
Lease liabilities	170	166	4	2.2
Miscellaneous other financial liabilities (financing component)	294	333	-39	-11.8
thereof: arising from acquisition of stakes in engine programs	73	114	-42	-36.4
thereof: from compensation payments due to program participations	221	219	2	1.0
Gross financial debt	**1,566**	**1,635**	**-69**	**-4.2**
less:				
Cash and cash equivalents	883	823	60	7.3
Loans to third parties	52	60	-8	-12.6
Financial assets	**935**	**882**	**53**	**6.0**
Net financial debt	**631**	**753**	**-122**	**-16.2**

Convertible bonds

The convertible bond issued by MTU in 2016 matured on May 17, 2023. The nominal amount of €46 million still outstanding on December 31, 2022 was converted, with the exception of a nominal amount of €100,000, which was repaid on the maturity date.

Miscellaneous other financial liabilities (financing component)

Financial liabilities arising from acquisition of stakes in engine programs

The purchase price agreement signed by MTU in the fiscal year 2012 in order to increase its stake in the V2500 engine program by 5 percentage points to 16% made it necessary, among other things, to recognize a deferred financial liability contingent upon the number of flight hours performed over the next 15 years by the fleet of V2500 engines in service at the time of the stake increase.

The liability matures in 2027 and, as of the closing date, reflects a nominal amount of U.S.$80 million (previous year: U.S.$122 million). Translated at the closing rate, that was €72 million (previous year: €114 million). The carrying amount of the purchase price liability was €69 million as of December 31, 2023 (previous year: €108 million).

Contingent liabilities and other financial obligations

As of the reporting date, contingent liabilities amounted to €406 million (previous year: €185 million) and mainly related to the risk of expenses for legal action and lawsuits in connection with stakes in commercial engine programs, and the assumption of guarantees and warranties. In addition, as of the reporting date, there were unutilized financing commitments for equity investments in the form of committed capital contributions or shareholder loans totaling €141 million (previous year: €142 million) and further commitments to OEM customers relating to shares in sales financing commitments in respect of commercial engine programs. As of the reporting date, the unutilized nominal amount of such financing commitments was €831 million (previous year: €776 million). As part of its ordinary activities, the Group furthermore incurred other financial liabilities comprising purchase commitments and future cash outflows for leases. These are additional to the liabilities reported in the consolidated balance sheet at the end of the reporting period. They relate to contractual obligations to acquire intangible assets, property, plant and equipment, and leased items.

Please refer to *Note 37. Contingent liabilities and other financial obligations* in the Notes to the consolidated financial statements for detailed information on contingent liabilities and other financial obligations.

Liquidity analysis

Reconciliation to adjusted free cash flow

One of MTU's key performance indicators is free cash flow. MTU determines its free cash flow by combining its cash flow from operating activities with its cash flow from investing activities and eliminating components of the latter (non-recurring cash flows) that lie outside the operational management of the core business. To arrive at the free cash flow, these non-recurring cash flows were therefore eliminated from the cash flow from investing activities. Following its standard practice, MTU identified non-recurring cash flows

in connection with:

- the acquisition of stakes in OEM engine programs and MRO programs
- interest-bearing sales financing arrangements
- interest bearing financial investments with maturities of more than six months at the date of conclusion for the purpose of liquidity management
- the acquisition and divestment of material equity investments.

To arrive at the free cash flow in the reporting period, adjustments were made for the following non-recurring cash flows: cash inflows in connection with interest-bearing sales financing arrangements in the form of aircraft and engine financing totaling €5 million (previous year: €0 million). In the previous year, the adjustments comprised compensation payments (€12 million) in connection with the acquisition of the stakes in engine programs in the OEM segment (PW812) and net cash inflows of €-14 million in connection with the sale of a material equity investment (Vericor Power Systems).

[T30] Consolidated cash flow statement (abridged)

in € million	2023	2022	Change against previous year in € million	in %
Cash flow from operating activities	777	728	49	6.8
Cash flow from investing activities	-420	-400	-20	-5.0
+ Adjustment for non-recurring cash flows	-5	-2	-4	<-100
Free cash flow	**352**	**326**	**25**	**7.8**
– Reverse effect of adjustment for non-recurring cash flows	5	2	4	>100
Cash flow from financing activities	-294	-224	-70	-31.3
Translation differences	-3	-3	-0	-8.9
Change in cash and cash equivalents	**60**	**101**	**-41**	**-40.4**
Cash and cash equivalents at the beginning of the reporting period	823	722		
Cash and cash equivalents at the end of the reporting period	883	823		

Cash flow from operating activities

The cash flow from operating activities in the reporting period was higher than in the previous year. This positive development was driven by the cash-effective business growth and a year-on-year reduction in cash outflows for working capital. Negative factors were higher income tax payments and the unfavorable development of the U.S. dollar exchange rate in the reporting period. The Geared Turbofan fleet management plan that started in the reporting period, and especially the related compensation payments to customers of the PW1100G-JM engine program, hardly affected the cash flow from operating activities in the reporting period. Based on current knowledge, the cash-effective charges are mainly expected in the period 2024 through 2026. For further information on the Geared Turbofan fleet management plan see *section I. Accounting principles and policies – PW1100G-JM Geared Turbofan fleet management plan (powder metal issue)* in the Notes to the consolidated financial statements.

Cash flow from investing activities

Capital expenditure on intangible assets amounted to €80 million (previous year: €59 million) and mainly comprised capital expenditure on development work for the Pratt & Whitney GTF engine family, the GE9X and the PW800 program. Capital expenditure on property, plant and equipment, excluding the proceeds from asset disposals, amounted to €302 million, compared with €306 million in the previous year. The capital expenditure relates to the growth in the engine leasing business, especially the purchase of used engines by the location in the Netherlands, MLS (Amsterdam), and MTU's expansion and replacement measures, especially at its German locations. The net result of cash inflows and outflows relating to the financial assets mainly results from the acquisition of the electric motor developer eMoSys GmbH, loans and capital contributions to finance the expansion of Ceramic Coating Center SAS, a joint venture with Safran Aero Engines, and the capital increase at MTU Maintenance Dallas (not consolidated). In the previous year, in addition to the capital contributions outlined above, there were cash outflows for the capital increase at EME Aero sp. z. o. o, a joint venture with Lufthansa Technik, and subsequent cash inflows in connection with the sale of Vericor Power Systems in 2021. Expenditure on program assets and acquired development work was €21 million (previous year: €21 million) and mainly related to the Pratt & Whitney GTF engine family.

Cash flow from financing activities

The cash outflow in the reporting period was mainly due to the dividend payment of €171 million (previous year: €112 million) and payments for lease liabilities totaling €81 million (previous year: €64 million).

Change in cash and cash equivalents

The increase in cash and cash equivalents results from the fact that the cash inflows from operating activities more than offset the cash outflows for investing and financing activities in the reporting period.

Net assets

Changes in balance sheet items

[T31] Consolidated balance sheet of the MTU Group

	Dec. 31, 2023		Dec. 31, 2022		Change against previous year	
in € million	in € million	in %	in € million	in %	in € million	in %
Assets						
Non-current assets						
Intangible assets & goodwill	1,200	11.8	1,151	12.5	49	4.3
Property, plant and equipment	1,501	14.7	1,384	15.0	117	8.5
Financial assets	775	7.6	728	7.9	47	6.5
Acquired program assets, development work and other assets	800	7.8	800	8.7	0	0.0
Deferred tax assets	328	3.2	84	0.9	245	>100
Total non-current assets	**4,604**	**45.1**	**4,146**	**44.9**	**459**	**11.1**
Current assets						
Inventories	1,629	16.0	1,514	16.4	115	7.6
Receivables/other assets	3,087	30.3	2,748	29.8	339	12.3
Cash and cash equivalents	883	8.7	823	8.9	60	7.3
Total current assets	**5,599**	**54.9**	**5,085**	**55.1**	**514**	**10.1**
Total assets	**10,204**	**100.0**	**9,230**	**100.0**	**973**	**10.5**
Equity and liabilities						
Equity	**2,933**	**28.7**	**3,107**	**33.7**	**-174**	**-5.6**
Non-current liabilities						
Provisions	741	7.3	714	7.7	27	3.8
Liabilities	1,517	14.9	1,630	17.7	-113	-6.9
Total non-current liabilities	**2,258**	**22.1**	**2,343**	**25.4**	**-86**	**-3.7**
Current liabilities						
Provisions/income tax liabilities	196	1.9	333	3.6	-137	-41.2
Liabilities	4,817	47.2	3,447	37.3	1,370	39.7
Total current liabilities	**5,013**	**49.1**	**3,780**	**41.0**	**1,233**	**32.6**
Total equity and liabilities	**10,204**	**100.0**	**9,230**	**100.0**	**973**	**10.5**

Capital expenditure

[T32] Capital expenditure by class of asset

in € million	2023	2022	Change against previous year in € million	in %
Intangible assets	82	60	22	37.1
Property, plant and equipment	429	387	42	10.9
Financial assets	144	117	27	23.1
Program assets and acquired development work	25	26	-1	-3.6
Total capital expenditure	**680**	**589**	**90**	**15.3**

More information can be found in *Note 39. Consolidated segment report in the Notes to the consolidated financial statements*.

Capital expenditure on intangible assets

€57 million (previous year: €53 million) of the capital expenditure on intangible assets relates to self-generated development work in connection with stakes in engine programs, especially the Pratt & Whitney GTF engine familiy, the GE9X and the PW800 program. Detailed information on capital expenditure on intangible assets is provided in *Note 14. Intangible assets in the Notes to the consolidated financial statements*.

Capital expenditure on property, plant and equipment

Additions in the fiscal year 2023 mainly comprised advance payments and construction in progress totaling €155 million (previous year: €185 million) and other equipment, operational and office equipment totaling €197 million (previous year: €180 million). The capital expenditures mainly relate to expansion and replacement measures, especially at the sites in Munich, Hanover and Ludwigsfelde in Germany and Amsterdam in the Netherlands. Further, additions to right-of-use assets for leased items amounted to €96 million in the reporting period (previous year: €63 million). For further information on capital expenditure on property, plant and equipment and leases, please refer to *Note 15. Property, plant and equipment* or *Note 36. Leases in the Notes to the consolidated financial statements*.

Investment in financial assets

The additions to financial assets, which amounted to €144 million, included €112 million (previous year: €87 million) resulting from the income effects of subsequent measurement of companies accounted for using the equity method. Additionally, they include loans and capital contributions made in the reporting year for the expansion of Ceramic Coating Center SAS, a joint venture with Safran Aero Engines. Further, in the reporting period, the electric motor developer eMoSys GmbH (not consolidated) was acquired and there was a capital increase at MTU Maintenance Dallas (not consolidated). Additional information on financial assets is included in *Note 16. Financial assets in the Notes to the consolidated financial statements*.

Capital expenditure on program assets and acquired development work

Capital expenditure on other assets due to acquired program assets and acquired development work relates mainly to the Pratt & Whitney GTF engine family. Additional information on financial assets is included in *Note 17. Acquired program assets, development work and other assets in the Notes to the consolidated financial statements*.

Assets

In the fiscal year 2023, intangible assets and goodwill increased by €49 million (previous year: increased by €22 million). The main drivers were additions of capitalized, self-created development expenses for the Pratt & Whitney Geared Turbofan engines.

Property, plant and equipment increased by €117 million (previous year: €132 million). This was mainly due to capital expenditure for construction in progress for the expansion and replacement of production capacities in Germany and the increase in other equipment and operational and office equipment in connection with the growing engine leasing business.

The development of financial assets was supported by the positive business development at companies accounted for using the equity method, which led to an increase in their carrying amounts.

The increase in deferred tax assets was mainly due to the expenses for the Geared Turbofan fleet management plan, which were recognized as refund liabilities. For further information on the Geared Turbofan fleet management plan see *section I. Accounting principles and policies – PW1100G-JM Geared Turbofan fleet management plan in the Notes to the consolidated financial statements*.

Within the inventories, there was a business-driven increase of €67 million of raw materials and supplies to €785 million in the reporting period (previous year: €719 million), while work in progress rose by €51 million to €552 million (previous year: €501 million). By contrast, finished goods were virtually stable at €243 million (previous year: €247 million). The calculated sales to inventory ratio was 3.4 (previous year: 3.7).

Trade receivables decreased by €12 million year-on-year to €1,010 million (comparative figure for the previous year restated – more precise distinction between contract assets and trade receivables from stakes in commercial engine programs). Contract assets, net of the associated contract liabilities, amounted to €1,248 million, an increase of €23 million compared with December 31, 2022 (comparative figure for the previous year restated - more precise distinction between contract assets and trade receivables from stakes in commercial engine programs). There were also receivables from tax authorities in respect of tax refunds amounting to €81 million (previous year: €34 million).

Cash and cash equivalents increased from €823 million in the previous year to €883 million. Cash and cash equivalents accounted for 8.7% (previous year: 8.9%) of total assets at the reporting date. For information on the cash flow statement, please refer to the section titled Financial position – Liquidity analysis.

Equity

[T33] Changes in equity

in € million	2023	2022
As of Jan. 1	**3,107**	**2,760**
Other comprehensive income		
Financial instruments designated as cash flow hedges	91	–34
Actuarial gains/losses on pension obligations and plan assets	–34	151
Translation differences arising from the financial statements of foreign entities	–10	16
Net income	–97	333
Dividend payment to shareholders of MTU Aero Engines AG/dividend payment to non-controlling interests	–174	–124
Issue of shares due to conversion of the convertible bonds	46	2
Sale of treasury shares under the Restricted Stock Plan (RSP)	2	3
Granting of remuneration claims in the form of equity instruments (LTI / RSP)	3	
Changes in equity due to portfolio transactions [1]	–1	0
Total change in Group equity	**–174**	**347**
As of Dec. 31	**2,933**	**3,107**

[1] MTU subsumes here purchases and sales of participations or capital measures.

Positive changes in equity

Equity increased in 2023, mainly due to an increase of €91 million in the fair value of hedging instruments (previous year: reduction of €34 million). A further increase of €46 million (previous year: €2 million) came from the conversion of the convertible bond 2016.

Negative changes in equity

Negative changes in equity resulted principally from the dividend payment of €171 million to shareholders of MTU Aero Engines AG for 2022 (dividend payment for 2021: €112 million), the net loss of €97 million (previous year: net income of €333 million), which was mainly due to the effects of the Geared Turbofan fleet management plan, actuarial losses of €34 million (previous year: actuarial gains of €151 million) and translation differences arising from the translation of the financial statements of foreign entities, which reduced equity by €10 million (previous year: increased equity by €16 million).

Liabilities

Within non-current liabilities, non-current pension provisions increased by €52 million in the reporting period, from €661 million in the previous year to €713 million. This was due, in particular, to a lower actuarial discount rate.

Non-current liabilities mainly contain the gross financial debt of €1,396 million (previous year: €1,478 million) and other provisions of €28 million (previous year: €53 million). The reduction in the gross financial debt in the reporting period was attributable to the conversions of the convertible bond 2016 which matured on May 17, 2023 and to the decrease in other financial liabilities from the acquisitions of stakes in programs. Non-current liabilities represented 22.1% of total equity and liabilities as of December 31, 2023, which was lower than in the previous year.

Total equity and non-current liabilities decreased by €260 million in the reporting period to €5,190 million (previous year: €5,450 million). Furthermore, 112.7% (previous year: 131.5%) of the Group's non-current assets are financed through available non-current funds.

The current provisions recognized under current liabilities are pension provisions amounting to €30 million, below the previous year's level of €46 million, income tax liabilities, which decreased from €70 million to €37 million, and other provisions, which declined by €88 million to €129 million. This was principally attributable to the reclassification of certain components of provisions for personnel obligations to personnel-related financial liabilities. Current liabilities also include refund liabilities, which increased sharply to €3,242 million (previous year: €2,041 million) due to the Geared Turbofan fleet management plan, trade payables of €325 million (previous year: €284 million), contract liabilities totaling €735 million (previous year: €708 million), current financial liabilities of €395 million (previous year: €319 million), and a large number of other individual obligations. For further information on the Geared Turbofan fleet management plan see *section I. Accounting principles and policies – PW1100G-JM Geared Turbofan fleet management plan* in the Notes to the consolidated financial statements.

The equity ratio was 4.9 percentage points lower than in the previous year at 28.7% (previous year: 33.7%).

Financial performance indicators

At its Capital Market Day in November 2022, the MTU Group provided an initial outlook on its expected business development in the reporting year. This was confirmed on February 14, 2023, in connection with the announcement of the preliminary results for 2022.

[T34] Forecast and actual results

in € million	Actual 2023	Change 2023 - 2022 in %	Forecast for 2023 as of Oct. 27, 2023	Forecast for 2023 as of July 26, 2023	Forecast for 2023 as of Feb. 14, 2023	Actual 2022
Adjusted revenue	6,326	18.7	between 6,100 and 6,300	between 6,100 and 6,300	between 6,100 and 6,300	5,330
Adjusted EBIT	818	24.9	slightly higher than 800	slightly higher than 800	Growth in line with revenue	655
Adjusted EBIT margin	12.9%	5.2	slightly over the prior year	slightly over the prior year	Stable	12.3%
Free cash flow	352	7.8	slightly higher than in the prior year	slightly higher than in the prior year	Significant positive free cash flow on prior year level [1]	326

[1] Published as part of the Annual report 2022 on March 29, 2023.

Revenue forecast

On February 14, 2023, the Executive Board forecast that revenue would rise to a range of between €6,100 million and €6,300 million in 2023 (revenue 2022: €5,330 million). The revenue forecast was confirmed when the half-year financial report was published on July 26, 2023. When the figures for the third quarter were published on October 27, 2023, the revenue forecast was confirmed, after adjustment for the charges for the Geared Turbofan fleet management plan. The adjusted revenue as of year-end 2023 (adjusted, in particular, for the effects of the Geared Turbofan fleet management plan) was €6,326 million, which was marginally above the forecast range of between €6,100 million and €6,300 million.

Earnings forecast

On February 14, 2023, the Executive Board forecast a stable adjusted EBIT margin for 2023. This guidance was specified in more detail when MTU reported its half-year figures: it was anticipated that the adjusted EBIT margin would be slightly over the previous year and that adjusted EBIT would be slightly higher than €800 million. After the third quarter, the forecast for adjusted EBIT was confirmed – after adjustment for the published effects of the Geared Turbofan fleet management plan. At year-end, after adjustment, in particular, for the effects of the Geared Turbofan fleet management plan, adjusted EBIT was €818 million (previous year: €655 million) and the adjusted EBIT margin was 12.9% (previous year: 12.3%), which was in line with the corresponding forecast calculated on this basis.

Free cash flow

On February 14, 2023, MTU set a target for 2023 of a significant positive free cash flow on the prior-year level. This forecast was revised upward when the company presented its half-year report on July 26, 2023. It was expected that the free cash flow would be slightly higher than the previous year's figure. This guidance was confirmed when the third-quarter figures were published on October 26, 2023. This target was met as of December 31, 2023, with a free cash flow of €352 million (previous year: €326 million).

Overall assessment of business performance in 2023

MTU's business performance in 2023 was characterized by a further recovery in the operating business despite the Russia-Ukraine war. However, this was countered by the massive earnings impact of the Geared Turbofan fleet management plan. Reported revenue was €5,363 million (previous year: €5,330 million) and thus remained around the previous year's level despite a revenue reduction of €917 million for the establishment of provisions for the Geared Turbofan fleet management plan. Before intersegment consolidation, the MRO segment contributed revenue growth of 16.8%. By contrast, revenue in the OEM segment was 31.8% lower due to the Geared Turbofan fleet management plan. The Group's adjusted revenue (adjusted, in particular, for the revenue-reducing impact of the Geared Turbofan fleet management plan) was €6,326 million, an increase of 18.7% compared with the previous year (in the previous year, revenue was not adjusted for materiality reasons).

Despite the setbacks in connection with the Geared Turbofan fleet management plan, MTU was able to continue its investment and growth phase in 2023. Capital expenditure in the reporting period was dominated by development activities for engines in all commercial thrust classes and the expansion of production capacity at locations in Germany and other countries.

In 2023, MTU increased adjusted EBIT (adjusted, in particular, for the effects of the revenue-reducing impact of the Geared Turbofan fleet management plan) in both the OEM and the MRO segment. Adjusted EBIT was €818 million (previous year: €655 million). The adjusted EBIT margin was 12.9% (previous year: 12.3%).

There was a corresponding increase in the free cash flow. Despite high investment in development assets, capacity expansion at sites in Germany and abroad, the free cash flow increased to €352 million (previous year: €326 million). At present, the Geared Turbofan fleet management plan is expected to impact the cash flow in period 2024 through 2026 and to significantly reduce free cash flow in these years.

In the management's view, the forecasts published in mid-year and specified in more detail during the year, especially taking into account adjustment for the massive charges arising from the Geared Turbofan fleet management plan, were essentially met and in some cases slightly exceeded as a result of the good operating performance.

Non-financial performance indicators

The high priority given to climate protection is shown by the fact that reducing CO_2 emissions is an important environmental, social and governance (ESG) target. The ESG-related KPI CO_2 is a climate-oriented parameter that affects the variable compensation of the Executive Board and senior executives. The goal of reducing CO_2 emissions is being implemented on the basis of the climate protection strategy set out in the ecoRoadmap, Green Global, which aims to reduce emissions at MTU's global production and maintenance locations in Munich, Hanover, Ludwigsfelde, Rzeszów, Vancouver and Nova Pazova. The objective of Green Global is to reduce MTU's CO2eq footprint (measured by material Scope 1 and 2 emissions) by 60% by 2030 compared with the reference base (2019) by introducing energy-saving measures, extending in-house emissions-free energy generation and stepping up the use of green energy by purchasing green electricity. In addition, it applies the gold standard to compensate for unavoidable CO_2 emissions at the Munich location. As a result, operation of this location has been climate-neutral since 2021. The long-term objective of Green Global is climate-neutral production and maintenance by 2045.

In the period under review (December 2022 to November 2023), CO2eq emissions from the MTU Group's production sites totaled 49,063 metric tons (t) CO2eq (previous period: 47,125 t). The MTU Group's Scope 1 emissions were 39,428 t CO2eq (previous period: 37,738 t). Scope 2 emissions were 9,635 t CO2eq (previous period: 9,387 t). The change was attributable to the business-related increase in production, especially at the location in Serbia. Arithmetically, emissions from electricity consumption in Serbia (Scope 2) are offset by the purchase of allowances. The remaining CO2eq emissions from the operation of the Munich location are offset using the gold standard, so this location had a climate-neutral footprint in 2023.

The achievement of the ecoRoadmap (Green Global) targets is measured by the remaining CO_2 emissions as "maximum remaining CO_2 emissions in kt CO_2 absolute" and the realized "CO_2 abatement through sustainable measures in kt CO_2 absolute" compared with the baseline year 2019 (excluding the site in Serbia because it was not operational in 2019). The twelve-month performance period used for this is December 1, 2022 through November 30, 2023 and thus differs from the reporting period. Thanks to reduction in CO_2 emissions and the additional purchase of green power, the "maximum remaining CO_2 emissions in CO_2 kt absolute" for the relevant performance period of the reporting period were just 49 kt CO_2, which was less than the target of 54 kt CO_2. Moreover, as a result of operational measures and investments in the reporting period and previous periods, a calculated reduction of 4.52 kt CO_2 was achieved in the performance period for the component "Realized CO_2 abatement through sustainable measures," so the target saving of 3.54 kt CO_2 was exceeded.

MTU AG (disclosures in accordance with the German Commercial Code [HGB])

The management report of MTU AG and the Group management report for the fiscal year 2023 have been combined in accordance with Section 315 (5) in conjunction with Section 298 (2) of the German Commercial Code (HGB). The annual financial statements of MTU AG were prepared in accordance with the provisions of the German Commercial Code (HGB) and are published together with the combined management report in the Unternehmensregister [German Company Register].

The business environment of MTU AG corresponds for the most part with that of the Group as described earlier under "Economic report."

In the reporting year, in light of the development of commentaries on German commercial accounts and in view of standard practice in consolidated financial statements prepared in accordance with the International Financial Reporting Standards (IFRSs), a more differentiated definition of the cost of goods sold and revenue and, as a result, the definition of other operating income/expense was used. Further information can be found in the annual financial statements of MTU Aero Engines AG as of December 31, 2023, prepared in accordance with the German Commercial Code (HGB), *Section Principles and methods*.

Business activities

MTU AG develops and manufactures components for commercial and military aircraft engines and aero-derivative industrial gas turbines. The company also carries out maintenance of military engines. MTU has technological expertise, in particular, in low-pressure turbines, high-pressure compressors and turbine center frames, and in repair techniques and manufacturing processes. It is involved in important national and international technology programs and cooperates with the top names in the engine industry (known as OEMs) – GE Aerospace, Pratt & Whitney and Rolls-Royce.

Disclosures relating to results of operations

[T35] Income statement of MTU Aero Engines AG

in € million	2023	2022 adjusted*	2022 as reported	Change against previous year (adjusted) in € million	Change against previous year (adjusted) in %
Revenue	**2,738**	**2,908**	**4,194**	**–170**	**–5.8**
Cost of goods sold	–3,283	–2,537	–3,912	–746	–29.4
Gross profit	**–545**	**371**	**282**	**–916**	**<-100**
Selling expenses	–97	–98	–98	1	1.0
General administrative expenses	–58	–64	–64	6	9.4
Net other operating income/expenses	65	–30	59	95	>100
Net financial income/expense	229	216	216	13	6.0
Earnings before tax	**–406**	**395**	**395**	**–801**	**<-100**
Tax expense	151	–128	–128	279	>100
Net profit for the year	**–255**	**267**	**267**	**–522**	**<-100**
Withdrawal from other retained earnings	363			363	–0
Allocation to other retained earnings		–96	–96	96	100.0
Net profit available for distribution	**108**	**171**	**171**	**–63**	**–36.8**

* In the reporting period, the definition of cost of goods sold/revenue and other operating income/expense in the accounts prepared in accordance with the German Commercial Code (HGB) was sharpened; this had no impact on profit/loss. Further information can be found in the annual financial statements of MTU Aero Engines AG as of December 31, 2023, in the section on the principles and methods used.

Revenue

Revenue decreased by €170 million, from €2,908 million (restated) to €2,738 million in the reporting period. The considerable drop in revenue was due to the exceptional charges for the establishment of provisions in connection with the PW1100G-JM Geared Turbofan fleet management plan, which reduced revenue by €955 million. Excluding the effects of the Geared Turbofan fleet management plan (special item), which significantly reduced revenue, the operating business continued to develop positively. This is due, on the one hand, to demand from fleet operators for serially produced engines and spare parts for the GTF engine family and, on the other hand, to the positive development of demand for passenger flights, which was reflected in higher demand for spare parts for programs that have been established on the market for many years. Revenue from spare parts for military applications also contributed to revenue growth in the reporting period. The development of revenue was negatively affected by valuation effects resulting from the technology- and business-induced reassessment of refund liabilities for invoice corrections in connection with commercial engine programs (risk- and revenue-sharing partnerships), especially the PW1100G-JM and V2500 programs (OEM). Considering the fact that billing in U.S. dollars is customary in the aviation sector, revenue development was reduced by the development of the U.S. dollar exchange rate, which averaged U.S.$1.08 per euro in 2023 compared with U.S.$1.05 per euro in the previous year.

Cost of goods sold and gross profit

The cost of goods sold increased as a result of the higher business volume. Due to the revenue impact of the PW1100G-JM Geared Turbofan fleet management plan, the increase in the cost of goods sold was well above the rise in revenue. While inflation effects increased costs, the U.S. dollar exchange rate and economies of scale realized in relation to the utilization of production and service capacities took pressure off the cost of goods sold and gross profit compared with the previous year.

Analogously to revenue, exceptional charges of €15 million in connection with the PW1100G-JM Geared Turbofan fleet management plan had to be recognized in the cost of goods sold. In the previous year, the cost of goods sold was dominated by impairment losses of €39 million (after reclassification; in connection with the Russia/Ukraine war).

The gross profit dropped from €371 million in the previous year (restated) to €-545million in the reporting period.

Selling expenses

In 2023, selling expenses were stable relative to the previous year. Within general administrative expenses, material and personnel expenses were reduced by €6 million to €58 million.

Net other operating income/expense

In the reporting period, this item was mainly influenced by net income from currency translation, principally due to the euro/U.S. dollar exchange rate, which changed from U.S.$1.07 per euro to U.S.$1.11 per euro as of the reporting date, gains on the valuation of currency holdings and hedging transactions amounting to €34 million (previous year, restated: losses of €97 million) and income of €21 million (previous year: €60 million) from the reversal of provisions, which impacted the cost of goods sold.

Net financial income/expense

Net financial income/expense for the reporting period contains investment income of €209 million (previous year: €224 million). Of this amount, €152 million (previous year: €201 million) comprises profit transfers from MTU Maintenance Hannover GmbH, Langenhagen, Germany, MTU Maintenance Berlin-Brandenburg GmbH, Ludwigsfelde, Germany, and MTU Versicherungsvermittlungs- und Wirtschaftsdienst GmbH, Munich, Germany.

Furthermore, income from investments contains dividend payments of €57 million (previous year: €23 million) from foreign investments, especially €29 million from MTU Aero Engines Polska sp. z. o.o., Rzeszów, Poland, and €28 million from MTU Maintenance Zhuhai Co. Ltd., Zhuhai, China.

Tax expense

Income from income taxes, which was attributable to the recognition of deferred tax assets in connection with the establishment of provisions for the PW1100G-JM Geared Turbofan fleet management plan, amounted to €152 million in the reporting period (previous year: income tax expense of €127 million). The current tax expense included in this figure amounted to €125 million (previous year: €182 million), including tax income of €3 million (previous year: tax expense of €18 million) relating to prior periods. The compensatory effect of net deferred tax receivables of €277 million (previous year: €54 million) includes €3 million (previous year: €15 million) relating to prior periods.

Net profit for the year and net profit available for distribution

As a consequence of the establishment of provisions for the expected expenses for the PW1100G-JM Geared Turbofan fleet management plan, MTU AG posted negative income before taxes of €406 million (previous year: positive earnings of €395 million) and a net loss of €255 million (previous year: net profit of €267 million).

Based on the Executive Board's resolution on the appropriation of the profit, €363 million will be withdrawn from the other retained earnings in the reporting period (previous year: €96 million allocated to other retained earnings in accordance with Section 58 (2) of the German Stock Corporation Act [AktG]), giving a net profit available for distribution to shareholders of MTU Aero Engines AG of €108 million in 2023 (previous year: €171 million).

Determination of the net profit available for distribution takes account of amounts excluded from distribution: €269 million (previous year: €245 million) from the capitalization of internally generated intangible assets (Section 248 (2) of the German Commercial Code [HGB]) and €5 million (previous year: €17 million) from the measurement of pension obligations (Section 253 (2) of the German Commercial Code [HGB]), taking into account, in both cases, the related deferred taxes. Taking into account the withdrawal from other retained earnings, these were matched in full by free reserves pursuant to Section 268 (8) of the German Commercial Code (HGB) and Section 253 (6) of the German Commercial Code (HGB) as of the reporting date.

Subject to the approval of the Supervisory Board, a proposal will be put to the Annual General Meeting that the entire net profit available for distribution be used to pay a dividend of €2.00 per share (previous year: €3.20 per share). Subject to approval by the Annual General Meeting, the dividend for 2023 will be paid on May 13, 2024, the third working day following the resolution of the Annual General Meeting, in accordance with Section 58 (4) sentence 2 of the German Stock Corporation Act (AktG) and the total dividend payment will be €108 million (previous year: €171 million).

Disclosures relating to net assets and financial position

[T36] Balance sheet of MTU Aero Engines AG

	Dec. 31, 2023		Dec. 31, 2022		Change against previous year	
in € million	in € million	in %	in € million	in %	in € million	in %
Assets						
Intangible assets and property, plant and equipment	1,856	21.4	1,761	22.6	95	5.4
Financial assets	1,400	16.1	1,377	17.7	23	1.7
Non-current assets	**3,256**	**37.5**	**3,138**	**40.3**	**118**	**3.8**
Inventories	742	8.5	738	9.5	4	0.5
Receivables and other assets	3,352	38.5	2,923	37.6	429	14.7
Securities	527	6.1	496 *	6.4	31	6.3
Cash and cash equivalents	267	3.1	230 *	3.0	37	16.1
Current assets	**4,888**	**56.2**	**4,387**	**56.4**	**501**	**11.4**
Prepaid expenses	**29**	**0.3**	**20**	**0.3**	**9**	**45.0**
Deferred tax assets	**527**	**6.1**	**231**	**3.0**	**296**	**>100**
Total assets	**8,700**	**100.0**	**7,776**	**100.0**	**925**	**11.9**
Capital						
Subscribed capital	54	0.6	53	0.7	1	1.9
Capital reserves	712	8.2	667	8.6	45	6.7
Retained earnings	1,084	12.5	1,445	18.6	-361	-25.0
Net profit available for distribution	108	1.2	171	2.2	-63	-36.8
Equity	**1,958**	**22.5**	**2,336**	**30.1**	**-378**	**-16.2**
Pension provisions	754	8.7	762	9.8	-8	-1.0
Other provisions	3,475	39.9	2,346	30.2	1,129	48.1
Provisions	**4,229**	**48.6**	**3,108**	**39.9**	**1,121**	**36.1**
Liabilities						
Bonds	1,110	12.7	1,155	14.9	-45	-3.9
Liabilities to banks	7	0.1			7	
Advance payments received	488	5.6	406	5.2	82	20.2
Trade payables and other liabilities	728	8.4	610	7.8	118	19.3
Liabilities	**2,333**	**26.8**	**2,171**	**27.9**	**162**	**7.5**
Deferred tax liabilities	**180**	**2.1**	**161**	**2.1**	**19**	**11.8**
Total equity and liabilities	**8,700**	**100.0**	**7,776**	**100.0**	**924**	**11.9**

* Restated

In fiscal year 2023, intangible assets in the amount of €75 million were capitalized (previous year: €77 million). €50 million (previous year: €47 million) was invested in internally generated development assets and €21 million (previous year: €14 million) was invested in acquired development work for the GTF engine family and the Pratt & Whitney Business Jet engine programs.

Property, plant and equipment increased, principally as a result of expansion and modernization of the Munich site and the purchase of new and replacement machinery and tools/fixtures.

Financial assets increased by €23 million to €1,400 million (previous year: €1,377 million). This was principally attributable to the acquisition of eMoSys GmbH, a capital increase of €9.5 million at this company, and capital contributions of €5 million in each case to the affiliated companies MTU Maintenance Serbia d. o. o. and MTU Maintenance Dallas Inc. In addition, a loan of €3 million was granted to MTU Maintenance Dallas in the reporting period. Furthermore, the stake in the joint venture Ceramic Coating Center S.A.S. was increased by €1 million and a loan of €5 million was granted to this company. By contrast, capital repayments of €1 million in each case were received from AES Aerospace Embedded Solutions and EPI Europrop International GmbH.

Inventories were virtually stable compared with the previous year, with a more unfavorable development compared to revenue, based on hypothetical adjustment for the revenue-reducing effect of the PW1100G-JM Geared Turbofan fleet management plan.

Receivables and other assets increased by €429 million year-on-year (previous year: €2,923 million), representing a slower growth than for revenue, based on hypothetical adjustment for the revenue-reducing effect of the PW1100G-JM Geared Turbofan fleet management plan. Within this item, there was a business-induced increase in trade receivables to €871 million (previous year: €760 million), which was in line with revenue, based on hypothetical adjustment for the revenue-reducing effect of the PW1100G-JM Geared Turbofan fleet management plan. Since the commercial OEM activities are billed in U.S. dollars, the change in the U.S. dollar exchange rate prevailing on the reporting date from U.S.$1.07 per euro to U.S.$1.11 euro reduced this item.

The increase in receivables from affiliated companies from €878 million to €1,026 million relates to claims under profit and loss transfer agreements and the financing of subsidiaries. The receivables from investments decreased from €934 million to €838 million. This change is consistent with the development of the ordinary business activities in the reporting period, the maturity structure/scope for netting and the change in the exchange rates prevailing on the reporting date, which affects foreign currency balances as of the reporting date.

The €266 million increase in other assets to €617 million (previous year: €351 million) is mainly attributable to the development of capitalized compensation payments for advance work in the aftermarket business, which MTU AG participates in through its stake in the consortium for the GTF programs. Other factors contributing to the increase were claims to refunds of income taxes and input taxes.

Securities, which were previously aggregated in the line item bank deposits, are now presented separately in the line item securities. The change in bank deposits was due to the operating performance; in particular, it was not affected by the considerable financial burden expected from the PW1100G-JM Geared Turbofan fleet management plan, which is expected to have an impact in the period 2024 through 2026.

Equity comprises the capital stock less the nominal amount of treasury shares, capital reserves, retained earnings, and the net profit available for distribution. The main changes result from the use of the net profit available for distribution in 2022 to pay a dividend and the presentation of net profit available for distribution in 2023, which takes into account withdrawals from other retained earnings and the increase in capital reserves following conversion of the convertible bond 2016, which matured in the reporting period.

The development of pension provisions was influenced by the increase in the discount rate set by the regulator.

The increase in miscellaneous provisions was mainly due to the establishment of provisions for the PW1100G-JM Geared Turbofan fleet management plan. Furthermore, the increase was driven by the rise in operating revenue in 2023, accompanied by an increase in accruals for invoice corrections in connection with stakes in commercial engine programs. The increase in this item was reduced by the change in the closing exchange rate for the U.S. dollar at year-end from U.S.$1.07 per euro to U.S.$1.11 per euro.

The €162 million increase in liabilities to €2,333 million in the reporting period (previous year: €2,171 million) mainly resulted from an increase of €126 million in miscellaneous liabilities. This was principally attributable to the reclassification of personnel-related obligations from other provisions as the valuation uncertainty relating to such provisions decreased. The other liabilities contain total personnel-related obligations of €166 million (previous year: €91 million). In the reporting period, they also included obligations from the granting of performance-related compensation (previous year: miscellaneous provisions of €59 million).

Furthermore, advance payments received for orders increased by €82 million and liabilities to affiliated companies in connection with Group financing operations increased by €15 million.

Financial position

Initially, the company had the same financing instruments in the reporting period and the previous year. However, since the convertible bond issued in 2016 matured in 2023, the remaining bonds were redeemed or converted in the reporting period.

Principles and objectives of financial management

The main objectives of financial management are efficiently ensuring that the company has adequate liquidity or financing to avoid financial risks and safeguard financial flexibility. The Treasury department at MTU Aero Engines AG issues policies for managing interest rate, currency management and counterparty risks, financing, investing surplus liquidity and selecting suitable banks centrally for the Group.

As a rule, the cash flow from operating activities in the business segments represents the company's main source of liquidity. Funds are invested primarily in euro-denominated sight and time deposits, money market funds and commercial paper.

Change in cash and cash equivalents

The increase in cash and cash equivalents is due to the fact that the cash inflows from operating activities, which contain cash inflows from the positive operating business, and dividend distributions and profit transfers from associates, more than offset the cash outflows for investing and financing activities in the reporting period.

Further details of the cash flow can be found in the management report in the *section Financial position*.

Other disclosures

The opportunities, risks and future development of MTU AG essentially correspond to the opportunities, risks and future development of the MTU Group as described below in the *sections Forecast* and *Risk and opportunity report*.

As the Group's parent company, MTU AG is integrated in the Group-wide risk management system that is described in detail in the *Risk and opportunity report*. The description of the internal control system of MTU AG required under Section 289 (4) of the German Commercial Code (HGB) can be found in the *section Internal control and risk management system for the Group accounting process*.

For further information on the use of financial instruments, please refer to the *Notes to the consolidated financial statements* and to the explanations in the *section Use of financial instruments*.

Due to the allocation of business within the Group, the outlook for MTU AG corresponds closely with the outlook for the commercial and military engine business (OEM) and, in view of the profit and loss transfer agreements with the German subsidiaries, with the outlook for the commercial maintenance (MRO) business, which are presented in the *section headed Future performance of MTU*.

Based on the operational planning for the Group and, in this context, the expected distribution of business between the Group companies and their dividend plans, the Executive Board expects that in 2024 the annual financial statements for MTU Aero Engines AG prepared in accordance with HGB will show a year-on-year increase in revenue and earnings before tax in the low-double-digit percentage range compared with a reporting year after hypothetical adjustment of the net assets, financial position and results of operations for the special items relating to the PW1100G-JM Geared Turbofan fleet management plan.

Forecast

Macroeconomic conditions

The International Monetary Fund (IMF) forecasts that GDP growth will remain slow in 2024. It anticipates that the global economy will grow by 2.4% in 2024, following growth of 2.5% in 2023. Growth is likely to be held back by high interest rates, which are still necessary to check inflation. In this context, the IMF forecasts that global inflation will slow from 6.9% in 2023 to 5.8% in 2024. In the developed economies, consumer price inflation should drop from 4.6% to 3.0%.

Economic growth in the United States will probably decline from 2.1% in 2023 to 1.5% in 2024. Consumer spending will weaken as savings have been spent and this can no longer be offset by tighter fiscal conditions. In China, too, growth is expected to drop in 2024, with domestic and the real estate market remaining weak. Asia's largest economy expected to grow by 4.2% in 2024, compared with 5.0% in 2023. In the euro zone, where demand was already subdued in 2023, GDP growth is expected to rise from 0.7% to 1.2% in 2024. The downside impact of high inflation on real incomes should decline.

Sector-specific conditions within the aviation industry

In December 2023, IATA forecast that demand for air travel and airline revenue would return to pre-crisis levels in 2024. Global passenger traffic should increase by 9.8% in 2024 to 104% of the 2019 level. Cargo traffic should stabilize at the 2023 level. For the airlines, this means global revenue of U.S.$964 billion in 2024 (2019: U.S.$838 billion) and a further improvement in net profit to U.S.$25.7 billion. The IATA forecast is based on an oil price of U.S.$87.5 per barrel.

Airbus and Boeing started 2024 with a record order backlog of 14,224 aircraft, which, at current production rates, equates to a production period of 11 years. This is a reflection of airlines' capacity to invest in the next generation of energy-efficient aircraft and engines. To meet the high demand from airlines for aircraft capacity, Airbus and Boeing are planning to increase deliveries in 2024. Airbus intends to raise the production rate of its best-selling A320neo family from 46 aircraft per month in 2023 to 65 per month. The mid-term target is 75 per month in 2026. By contrast, Boeing intends to increase deliveries of the 737 family from 36 per month in 2023 to 50 per month in 2025 / 2026. Following Alaska Airlines incident with a 737 Max 9 in January 2024, however, the Federal Aviation Administration (FAA) in the USA first has to approve expansion of production of the MAX range. The production target for the 787 is 120 units a year by 2025-2026, compared with 73 deliveries in 2023. The 777-9 powered by the GE9X is still scheduled to come into service in 2025.

Challenges in 2024 will remain extending capacity and stabilization of supply chains. That applies for the availability of aircraft, production and maintenance. Investment in infrastructure must continue – with the continued goal of meeting rising passenger numbers. Operation of the fleet in service will have to be extended instead of taking aircraft out of service and the value of used aircraft will remain high. There will be high demand for the corresponding aftermarket services.

Future performance of MTU

The forward-looking performance indicators published for the forecast financial indicators are based on data generated in the planning process. The method used to calculate the forecast key financial indicators is consistent with the accounting policies applied and the calculation logic for the alternative performance indicators outlined in *Note 12. Additional disclosures relating to the income statement*.

In view of the impact of the Covid-19 pandemic, the general economic situation and, in particular, the geopolitical developments, especially in connection with Russia's invasion of Ukraine, there could be problems or delays affecting development work, supply chain and demand-induced changes or postponements in series production and maintenance of engines on the aftermarket, which could affect the forecast for the principal financial KPIs.

Expenditure on new products and services

The recovery of the aviation sector is continuing and by year-end 2023 global flight movements were also back at the 2019 level. While this positive trend is expected to continue, with flights resuming their continuous growth path, it is being held back by ongoing restrictions on flights as a result of the Russia-Ukraine war. Overall though, the aviation sector is steadily recovering, not least due to the change in China's pandemic policy, and it is expected that flights will return to the pre-crisis level in 2024.

The recent ramp-up of engine production should continue in 2024. Similarly, there should be corresponding growth in market demand for spare parts and the MRO business.

Development work should also continue to grow in 2024, not least because of the participation in the next generation fighter aircraft, the Future Combat Air System (FCAS).

For the start of the ramp-up of engine production rates and to secure its long-term competitiveness, MTU is investing a substantial amount to expand the highly productive manufacturing and logistics capacity at its headquarters in Munich, Germany.

Moreover, expansion of capacity will continue, especially in China.

Outlook for 2024

Target

MTU's targets for the fiscal year 2024 are as follows:

[37] Outlook for 2024

in € million	Forecast for 2024	Actual 2023
Adjusted revenue	Between €7.3 billion and €7.5 billion	6,326
Adjusted EBIT margin	12% - 13%	12.9%
Adjusted EBIT	Growth follows revenue adjusted and margin	818
Adjusted net income	Growth in line with adjusted EBIT	594
Adjusted earnings per share (in €)	Growth in line with adjusted EBIT	10.96
Free cash flow	Low three-digit million amount	352

Revenue by operating segment

Within the OEM business, MTU assumes that organic revenue growth in the commercial series business will be in the low- to mid twenty percentage range. In the commercial spare parts business, organic revenue growth is expected to be in the low-teens percentage range.

Revenue growth in the military engine business is expected to be in the low- to mid-teens percentage range. Rising revenue in connection with development work for the FCAS will contribute to this.

For the commercial maintenance business, MTU forecasts growth in the mid- to high-teens percentage range on a U.S. dollar basis. In this business, the proportion of revenue from the PW1100G-JM is expected to increase. Its share of MRO revenue should be between 40% and 45%. Execution of the GTF fleet management plan will play a significant role in this.

In view of this, the adjusted total revenue of the MTU Group in euros is expected to be between €7.3 and €7.5 billion.

This estimate is based on an average exchange rate of the U.S.$1.10 to the euro.

Operating profit

In 2024, MTU expects adjusted EBIT to grow in line with the growth in adjusted revenue and the development of the adjusted EBIT margin. MTU expects an adjusted EBIT margin (relative to revenue) between 12% and 13%.

Adjusted net income is expected to develop essentially in line with adjusted EBIT.

Free cash flow

Capital expenditure will remain high in 2024. Moreover, higher working capital reserves will be held to safeguard delivery capability. Nevertheless, MTU plans to offset these charges through its operating business. However, the charges arising from the GTF fleet management plan will reduce the free cash flow. Overall, free cash flow is expected to be in the low three-digit million range.

Adjusted earnings per share

Adjusted earnings per share are expected to develop essentially in line with adjusted EBIT in 2024.

Future dividend

MTU's dividend policy envisages the payment of an attractive dividend. In view of the exceptional circumstances resulting from the GTF fleet management plan, the company is compelled to reduce the dividend for 2023, contrary to its target. For the fiscal years affected, it is therefore suspending the target of continuously raising the payout ratio towards 40% of adjusted net income.

Employees

An increase in personnel capacity is expected in both operating segments in 2024. This affects personnel capacity in IT, engineering capacity for the development of the Next Generation Fighter Engine and personnel to safeguard continuous growth.

Research and development

In 2024, MTU's research and development activities again focused on engine efficiency – concentrating on the ongoing development of its key components: low-pressure turbines, high-pressure compressors and turbine center frames. In addition, the company is working on new technologies for long-term projects aimed at decarbonizing aviation. The focus is on the water-enhanced turbofan (WET) and the Flying Fuel Cell (FFC). The aims are to reduce fuel consumption and emissions and extend repair cycles. In addition, development work in the military business is dominated by work on the Next European Fighter Engine. Detailed information on research and development activities, including the targeted medium- and long-term reductions in fuel consumption and emissions, is provided under *Research and development*.

Overall forecast of future business performance in 2024

The Executive Board anticipates that business will develop positively: There should be a further significant rise in revenue and MTU should continue to post strong adjusted EBIT. Stepping up development activities and capital expenditure again in 2024 will provide a sound basis for the sustained long-term growth of MTU's business. In this context, the operational challenges resulting from the GTF fleet management plan will be a focus of activity.

MTU is monitoring the possible effects of the macroeconomic situation and the global crises on its business performance and will revise its guidance during the year if necessary.

Risk and opportunity report

Risk report

Risks are an inherent part of any entrepreneurial activity. To enable it to take best advantage of market opportunities and to identify and manage the risks involved, MTU has an integrated opportunity and risk management system. This is linked to the Group's value-oriented performance indicators and its organizational structure. The system is based on the internationally recognized COSO II Enterprise Risk Management Framework. To assist in implementing risk management in the MTU Group, the central risk management function provides the risk owners with a variety of information and tools. These include the MTU risk guidelines and extensive checklists, which provide guidance and operational support in the risk management process.

The systematic consideration of significant risk factors serves as a fundamental basis for value-oriented management of the MTU Group and ensures lasting business success. MTU identifies risks early on, analyzes their possible consequences and devises appropriate risk mitigation measures.

Strategy and risk management system

Control environment

MTU regards a suitable control environment as being essential for a functioning risk management system. The main elements of this are:

- management style and philosophy,
- integrity and ethical values,
- no-blame culture,
- staff training and development.

The MTU Principles require a constructive approach to mistakes, and the company's leadership values include a commitment to actively driving change, creating an atmosphere of trust, and ensuring continuous improvement. This is supported by lean management in all areas of the company, which also aims to create a culture that ensures a functioning risk management system.

Risk management objectives and risk strategy

The objectives of MTU's risk management system are to create transparency with regard to all risks and opportunities, to ward off risks to MTU's status as a going concern and to safeguard the company's future business success.

The company does not limit itself to ensuring compliance with statutory requirements. Rather, it seeks to integrate its opportunity and risk management system into all processes in the company, from financial planning, control and reporting processes right through to monthly reporting to the Executive Board and the Supervisory Board. Risk management also takes place in other areas of the company; for instance, it is a key component of project management.

Identification, analysis and management of risks

MTU regards risk management as a continuous process that ensures responsible behavior when dealing with specific risks to organizational units and general risks affecting several units or the entire Group.

The Group's risk inventory, which encompasses all organizational units and all risk factors to which MTU is exposed, forms the basis for identifying risks. In the interests of a more detailed assessment of risks, MTU has divided this framework into 13 risk categories covering all organizational units. These include the following significant risk categories:

- Program & project risks,
- Development & technology risks,
- Country risks,
- Financial risks,
- ESG risks (environmental, social, governance),
- Structural risks,
- Competition & market risks,
- IT risks,
- Personnel risks,
- Communication risks,
- Procurement risks,
- Manufacturing, repair & maintenance risks,
- Compliance risks.

Operational risk management takes place at the level of the individual, organizationally separate units and in the subsidiaries. These are responsible for identifying, assessing, controlling and monitoring the risks in their specific areas, and documenting them in a central risk management tool. To this end, the organizational units use a general risk checklist derived from the risk inventory. The mandatory threshold for reporting quantitative risks to the central risk management function is €5 million for adjusted EBIT and liquidity (cash) over the defined three-year assessment period. The establishment of risk maps and risk reporting take place in parallel with the quarterly financial statements. Risks occurring during the year that could threaten the company's status as a going concern are reported immediately to the central risk management function. Risks are assessed as a possible deviation in the Group performance indicators "adjusted EBIT" and "liquidity" (cash) compared with current operational planning figures and using four defined levels for probability of occurrence:

- Almost certain (80 % – 100 %)
- Likely (50 % – 80 %)
- Possible (20 % – 50 %)
- Unlikely (0 % – 20 %)

Risk exposure is presented by comparison with the target amounts used in the company's current operational planning. Therefore, risks for which provisions have been recognized on the balance sheet due to their high probability of occurrence are not included in the risk exposure. In addition to these quantitative, financial risks, risk management explicitly includes qualitative, non-financial risks. The four levels of probability of occurrence are the same for these qualitative risks. Qualitative risks are assessed using four impact classes:

- Critical: risk could affect the ability of MTU Aero Engines AG to continue as a going concern
- High: risk could have a material strategic impact on MTU Aero Engines AG
- Medium: risk could have an impact of relevance for how MTU Aero Engines AG is managed
- Low: risk has no material or management-related impact on MTU Aero Engines AG

The central risk management function aggregates and consolidates the reported risks. It also provides assistance with the risk management process, prescribes uniform methods and tools, and evaluates the Group's overall risk position. Furthermore, it supports the work of the cross-organizational Risk Management Board, which performs central control and monitoring functions for the Group. At its quarterly meetings, the Risk Management Board discusses the interactions between individual risks, ensures that all risks have been reported in full, and discusses the risk exposure of the Group as a whole.

Risk reporting and risk communication

MTU's Executive Board is informed quarterly of the Group's current risk situation. The report to the Executive Board is agreed with the Risk Management Board and is structured on the basis of the segments. This report presents the company's Top Risk Map, which covers all risks and opportunities exceeding €20 million adjusted EBIT or liquidity (cash) over a three-year period. A risk assessment is then performed in this context, taking account of the amount of damage, the probability of occurrence and the identification of compensatory countermeasures.

The Supervisory Board's Audit Committee is also given an update of the MTU Group's risk position on a quarterly basis. The most important issues from the previous risk review are also presented in monthly reports to the Executive Board and the Supervisory Board.

Monitoring the risk management process

Monitoring the risk management process is crucial to ensure its proper functioning and ongoing development. The system used for the early recognition of risks is audited by the auditor.

In addition to this, the risk management system is monitored and verified by other functions and Group bodies:

- peer-group comparisons and benchmarking,
- process reviews by the Risk Management Board in the form of a self-assessment,
- regular process and effectiveness audits by Internal Audit,
- monitoring by the Audit Committee and/or Supervisory Board.

Macroeconomic and strategic risks

Macroeconomic risks

(Structural risks, country risks)
Within the aviation industry, MTU is exposed to competition in the development, production and maintenance of engines, engine modules and engine components. This business is cyclical and reacts sensitively to demand for passenger and cargo traffic. It is influenced by the general macroeconomic situation (GDP and trading volumes, exchange rates and raw material prices).

Demand from airlines for new aircraft and MTU's commercial engine products (new engines and spare parts) and their financing capability are heavily influenced by passenger numbers. A deterioration in the macroeconomic situation and the related demand for air traffic reduces use of the existing fleet of aircraft and demand for new aircraft. This represents a risk for MTU's business. Moreover, high competitive pressure among airlines could have a negative effect on individual airlines, which are potential direct or indirect MTU customers.

Compared with the previous year, the geopolitical risks have increased and in some cases intensified. The risk classification of short-term market-related risks is currently as follows:

- Risk classification "likely"/"high": Possible employment restrictions resulting in staff shortages in the aviation sector.
- Risk classification "likely"/"high": Climate change-related and natural catastrophes resulting directly or indirectly in a change in market structure and thus a reduction in demand and flights.
- Risk classification "possible"/"high": Possible escalation of the political conflict and trade restrictions between the USA/Europe and China, resulting in a global recession.
- Risk classification "possible"/"high": Higher interest rates resulting in negative (global) economic trends and thus lower demand.

The company's ability to make appropriate predictions and plans for its business, especially in the short- and mid-term, is still hampered by the unprecedented situation and the complex interaction of geopolitics, the climate crisis, economic development and pandemics. Although MTU consults with government agencies, industry associations and external aviation analysts at national and international level, there is a certain amount of uncertainty affecting its ability to adequately forecast the impact of these risk factors on its business. Incorrect forecasts could have a considerable negative effect on the company's business activity, cash flows, results of operations and financial position.

MTU could be affected by disruption of supply chains. Some suppliers to MTU or its program partners might have to temporarily suspend operations due to state-imposed restrictions to combat risks, for example, as a result of a pandemic or in connection with sanctions resulting from the geopolitical situation, or be unable to meet delivery obligations due to staff shortages, confronting MTU with further short- or mid-term challenges and business disruption. Therefore, MTU could be exposed to risks in respect of costs that are necessary to meet its contractual commitments as well as risks to its product supply schedules. Moreover, in some cases MTU's customers and downstream operations are still affected by staff shortages.

As a mid- to long-term effect of these risk factors, MTU could face more rapid changes in usage patterns or aviation regulations, which could adversely affect its business model. There is already a public debate about the social, economic and ecological implications of air travel and air cargo driven by the ongoing global climate debate. This has heightened personal and corporate awareness of travel and consumption behavior. Potential changes in usage patterns and the applicable regulations could be intensified and given new momentum by experience during the Covid-19 pandemic, e.g., online video conferencing as a substitute for business trips. If a reduction in travel and altered consumer spending patterns are regarded as socially desirable by the general public, this could have a significant negative impact on MTU's business model.

In particular, purely economic aspects will play their customary central role for air traffic alongside the consequences of the global debate on climate policy. In its World Economic Outlook of October 2023, the International Monetary Fund (IMF) warns that there is a risk the real estate crisis in China could deepen and of persisting high inflation, with continuing high interest rates on the capital market. Both could cause a global recession. The IMF estimates that the impact of the monetary policy tightening by the U.S. central bank to combat high inflation will be felt worldwide, with the strength of the U.S. dollar versus the currencies of emerging and developing countries increasing inflationary and debt pressures. In view of the rising cost of servicing debt, more than half of low-income developing countries are affected or threatened by a high debt risk.

A deterioration in the economic situation has the potential to reduce future growth in air traffic and thus demand for commercial engine products. Protectionist measures taken in some countries even before the pandemic are a further risk factor. These include the trade conflict between the USA and China. Protectionist measures hold back the volume of trade and countries' economic output and therefore reduce cargo and passenger traffic.

Political crises and restrictions on air traffic as a result of wars, terrorist attacks or natural catastrophes are a constant risk to air traffic and to MTU's engines business. Following Russia's military attack on Ukraine, the international community, especially the EU and the USA, imposed extensive economic sanctions on Russia. As a matter of course, MTU supports all sanction regulations and is in full compliance with them. For example, all deliveries and data transfers to Russia have been halted and payments to Russia and Russian recipients have been suspended. Furthermore, MTU has halted the signing of any new contracts with Russian involvement for an indefinite period of time. Contract negotiations that were already underway were halted with immediate effect. Generally speaking, MTU had only very limited MRO business with customers in Russia and no presence in the region. In the OEM business, it is involved in the PW1400G-JM engine program, which was intended for use in a Russian mid-haul jet (Irkut MC-21). This program has also been halted. Regardless of this, the company is constantly monitoring the situation, including its effects on global material supplies. Potential impacts to MTU's supply chain are being assessed continually and factored into the procurement strategy. The direct impact of the war in Ukraine on global air traffic and supply chains is limited at present. However, further escalation of the conflict, for example, beyond the borders of Ukraine and Russia, could very quickly result in a significant drop in air traffic and demand for commercial engine products in the countries and regions affected, which could adversely affect MTU's future business performance.

The outbreak of war between Israel and Hamas in October 2023 has exacerbated the geopolitical situation. The Economist Intelligence Unit in the UK considers that a further escalation of the conflict is unlikely, but that it increases the risk of a severe oil price shock. According to the World Bank, however, the global economy is now better positioned to deal with a supply-side shock than it was in October 1973. At present, the conflict does not have any significant impact on international air traffic. There is a significant impact on air traffic in Israel, but this accounts for less than 0.5% of global air traffic. The direct risk arises from factors that could reduce demand for travel, for example, if the USA or other nations were to issue general travel warnings for their citizens. Escalation of the present conflict to a broader Middle East war in which Iran is involved would, however, have a significant negative impact on global aviation because airlines are dependent on major airport hubs such as Dubai and Doha and the region is an important corridor for global flights.

Risks arising from corporate strategy

(Competition & market risks, development & technology risks)
The main forms of strategy risk are misjudgments when taking decisions about investment in engine programs, the establishment of new sites and possible M&A activities. During the decision-making phase of a program, highly qualified specialists perform cost-benefit analyses based on set procedures that include the obligation to carry out a risk analysis on the basis of different scenarios. MTU's business model is based on long-term processes, particularly in the OEM segment. Many years of development, preproduction and volume production may lie between the decision to invest in a new commercial engine and the breakeven point. The risk is that the original economic and technological parameters might change over time, hence the need for frequent reassessments that take into account the most recent economic and technological developments. A decisive factor in this regard is, in particular, the success of the aircraft platforms on which the engines are deployed. MTU counters such strategy risks through a broad portfolio. This means that the company limits the impact of an individual program or aircraft platform by holding an interest in a wide range of products across all thrust classes.

In the longer term, a further identifiable risk, in addition to that arising from MTU's strategic decisions, is the arrival on the market of new competitors, e.g. from Russia or China. However, given the high financial and technological barriers to market entry, this risk is currently not regarded as critical. Changes in expectations of growth in air traffic and the aircraft industry, climate-related regulation and price increases or a reduction in the number of aircraft sold could lead to considerable negative impacts or further adjustments of the assumptions and estimates underlying the assessment of MTU's assets and liabilities and the presentation of MTU's financial position.

The engine industry is dominated by high investment both as development compensation payments to the engine OEMs and as development work by MTU at the start of a new engine program. The long product lifecycles of both aircraft and engine programs have to be taken into account when assessing the return on these investments. Empirical observation indicates that the lifecycle of successful engine programs for commercial aircraft is well over 30 years from the initial purchase until the end of the program. In view of the long product lifecycle, the estimation requirements outlined above relate to long-term developments. Therefore, updated assumptions (for example, changes in the competitive situation, or expectations of growth in air traffic and the aircraft industry, or a deterioration in the number of aircraft sold, which could affect the creditworthiness of the Group's customers) have a considerable impact on MTU's systematic estimates and thus on its key financial indicators.

Given the after-effects of the Covid-19 pandemic, the impact of the Russia-Ukraine war and the resulting influence on the macroeconomic environment, demand for passenger flights remained below the pre-crisis level in 2023. Nevertheless, MTU's commercial business posted a significant upward trend both in the sale of new engines and in the aftermarket business. The commercial MRO business also reported a strong increase in demand. The impact of the Covid-19 pandemic and the war in Ukraine, especially in the form of supply chain problems and capacity constraints, as well as macroeconomic developments make it difficult for the company to make estimates and assumptions. The estimates and judgments are derived from assumptions based on the currently available information and effects of dynamic macro- and microeconomic factors on the aviation industry as a whole and on the business partners of relevance for MTU. Changes to these assumptions and estimates could have a highly negative impact on MTU's business activities, cash flow, results of operations and financial position.

Substitution risks arising from disruptive technologies

(Competition & market risks, development & technology risks, environmental risks, structural risks)
New aircraft and propulsion systems are currently being investigated in order to make a contribution to meeting the ambitious climate targets. In 2021, Airbus presented three aircraft concepts that could facilitate emission-free commercial flights, with an increased focus on hydrogen. Modified engines should allow direct combustion of this volatile gas. According to Airbus, this technology could come into use from 2035. While combustion of hydrogen in modified engines would hardly alter MTU's present business model, electric propulsion systems are in principle a substitution risk for conventional engine technologies. However, they do not yet come anywhere near the performance required to power a large passenger or freight aircraft. Together with its

research partners, MTU is conducting studies to examine all the conceivable concepts in order to factually assess the opportunities arising from alternative engine concepts and make use of them as appropriate. Among the key results from these studies are:

- Propulsion systems based on electric batteries are suitable today for applications requiring low performance and short duration of use, such as general aviation and urban mobility. At the moment, there are no known battery concepts with sufficient capacity for short- and medium-haul aircraft, let alone for long-haul aircraft, which together represent an important market for MTU at present.
- Hybrid propulsion systems combine various power generation and fuel systems, for example, a kerosene-fired gas turbine and a battery-powered electric engine. Potential benefits are additional freedom in the design of aircraft and propulsion systems and integration of the engine. The focus is generally on reducing energy consumption and less on the climate impact. However, the targets of the Paris Agreement already cover all climate-related emissions. To identify the potential of further hybrid architectures as early as possible, MTU is involved in studies to evaluate such concepts. However, as yet they have not shown any major benefits compared with conventional propulsion systems in terms of energy consumption or climate impact.
- Considerable progress has been made in the development of fuel cells in recent years. However, their present performance potential is not sufficient for commercial aviation. In the long term, however, in conjunction with liquid hydrogen fuel, they have far greater potential for use in aviation than batteries. A positive decision was received on a coordinated application for funding under the EU Clean Aviation program submitted by a consortium of international partners led by MTU. The aim is to develop and assemble a demonstration unit for ground testing. In addition, MTU has acquired eMoSys GmbH, an innovative developer of electric motors based in Starnberg, Germany.
- CO_2 is used as the starting product for the production of synthetic fuels. This significantly improves CO_2 performance by 80% or more, depending on the production process. The big advantage of sustainable aviation fuel (SAF) is that it is a “drop-in” fuel, in other words, no technical modifications to the aircraft, engine or airport infrastructure are necessary. In initial trials, SAF has also shown considerable potential to reduce condensation trails and their climate impact. SAF is therefore the technology that could bring a direct improvement in the climate impact of the present fleet. MTU Aero Engines is involved in research into SAF through its membership of the Bauhaus Luftfahrt research institute in Munich and aireg – Aviation Initiative for Renewable Energy in Germany e.V., which is based in Berlin. This not-for-profit initiative, where MTU leads the Fuel Utilization Working Group, is promoting the availability and use of renewable energies in aviation. In addition, MTU has signed a memorandum of understanding on a research cooperation for power-to-liquid fuels. Together with its partners, Lufthansa, Airbus, Munich airport and the German Aerospace Center (DLR), the aim is to use and evaluate SAFs based on green energy.

From today's perspective, the fields in which MTU currently operates will not be affected by actual substitution risks in the foreseeable future. Nevertheless, MTU will continue to keep a close eye on developments in alternative propulsion concepts and compile further studies so it can react and, above all, participate in a timely fashion. In parallel, MTU is permanently working to improve the efficiency of conventional engines, thus continuously raising the ecological and economic access barriers for any substitute products. In addition to the substitution risks, risks could arise from climate-related regulations in the future. At present, there are no indications of specific activity by the regulatory authorities. Nevertheless, MTU is carefully monitoring developments in its field and will examine any emerging regulatory activities to identify potential strategic risks. All in all, in light of the measures taken to control them, MTU considers its macroeconomic and strategic risks to be manageable, even taking into consideration the short-term geopolitical risks outlined separately above.

Market, program and cooperation risks

Market and program risks

(Competition & market risks, program & project risks)
The production of engine modules and components for aircraft is characterized by intensive competition between market participants. MTU is exposed to this competition in all aspects of its two operating segments: the commercial and military engine business (OEM) and the commercial maintenance business (MRO).

In its OEM segment, MTU participates in programs to develop and build new engines, which its OEM partners offer to manufacturers of commercial and military aircraft, airlines and governments. Some of these programs compete with other engine programs for installation in the same aircraft type. Therefore, MTU's success depends partly on the ability of its OEM partners to secure orders from manufacturers, airlines and governments for the engine programs that MTU is involved in. In addition, through its stakes in engine programs, MTU also competes with other producers of engine modules and components (some of which are highly specialized and may offer directly competing technology) as well as with the OEMs, which may possibly decide to source development work, components and parts internally rather than from MTU.

As well as competition in the new engines business, MTU's competitive situation in the OEM segment includes the sale of engine parts and components in the aftermarket business. The aftermarket business is highly significant for MTU because the success of its participation in engine programs over the entire lifecycle depends to a large extent on this business. MTU's commercial business is cyclical and sensitive to demand for air transport as well as to the financial situation of the commercial aviation industry.

MTU's customers in the military engine business are national and international agencies. Therefore, political changes have an almost immediate effect on MTU. Given the tight national budgets that can be observed at present, especially in Europe, there is always the risk that countries may postpone or cancel orders. Due to the budget situation, it may be necessary to renegotiate the scope of contractually agreed deliveries. In the military engine business, MTU is firmly embedded in international cooperative ventures. This tends to limit risks because the partners work together to protect their common interests. Furthermore, the terms of existing contracts in the military sector are generally defined to cover a prolonged period of time, thus largely ruling out price risks.

Even though the company assumes that defense budgets are likely to rise in the future, MTU's military business is principally dependent on the sustained commitment of the German and other European governments and the U.S. administration to their military procurement programs.

MTU is also exposed to competition in its MRO segment, which comprises commercial maintenance, repairs and overhauls. MTU is an independent provider of MRO services and therefore competes with airlines' internal MRO service providers, which have links to many of its potential customers. MTU's other major competitors are OEMs' maintenance operations. OEMs can link their service contracts with airlines to the sale of engines, which initially gives them a competitive advantage over MTU in this field. Worldwide, there are also many independent engine maintenance shops that, like MTU, are endeavoring to expand their market position.

In the present geopolitical and macroeconomic conditions, the commercial maintenance market is still affected by different speeds of recovery. The narrowbody business is recovering far faster than the widebody business and large domestic markets such as China, the USA, India are leading the way in the revival of regional traffic.

Furthermore, it is evident that scheduled engine overhauls are being postponed (e.g., for engines with a remaining lifecycle) or are heavily budget-driven, e.g., to avoid expenditure by undertaking short-term optimization with lower MRO requirements.

Conditions are tough in some areas of the commercial MRO market in which MTU operates. The market conditions may remain challenging in the future as a result of factors that the company is unable to influence. The following factors could prove detrimental to the success of MTU's MRO business:

- Demand for MRO services depends on the capacity utilization of aircraft and could decline significantly if there is a reduction in passenger traffic
- The client base in the MRO segment is characterized by a few large individual customers, so losing one of these customers could have a negative impact on revenue from this business.
- Some of the engine programs in the MRO business are at an advanced stage in their lifecycle, so the MRO product portfolio could be too strongly focused on aging products and technologies.
- OEMs strive, and could continue to strive, to negotiate agreements where a large proportion of maintenance work is performed by internal units, especially because some of these units have links to their potential customers. A considerable shift towards such in-house units would reduce the competitive opportunities for third-party suppliers such as MTU.
- MTU is a contracting party in "fly by the hour" and "power by the hour" agreements which obligate it to perform maintenance work on engines at flat-rate, usage-based prices. Under these agreements, MTU therefore effectively assumes the risk of higher maintenance and overhaul costs. MTU may incur losses in connection with these agreements because the underlying price models require a complex analysis of the performance conditions (including assumptions on future engine use and shop visit rates) when submitting offers for long-term agreements. If the assumptions made by MTU prove incorrect, its margins could be negatively affected.

Dependence on cooperation

(Program & project risks, governance risks, competition & market risks)
MTU has long-term cooperation and collaboration agreements with various OEMs and other market participants. These can be terminated at short notice in certain circumstances, e.g., if there is a change in the company's shareholder structure. All these scenarios are beyond the company's influence. The loss of a major customer could have a severely negative impact on MTU's business activities, financial position or results of operations. For information on customer cluster risks, please refer to the *Segment report in the Notes to the consolidated financial statements*.

In its commercial business, MTU is involved in a number of risk- and revenue-sharing contracts (RRSP contracts) with OEMs, which relate to the development, production, sale and, in some cases, maintenance of commercial aircraft engines. The OEMs with which MTU has RRSP contracts include Pratt & Whitney, GE Aerospace, IAE LLC and IAE AG. Through RRSP contracts, MTU participates in the development, production and maintenance of new engine programs. In return, MTU is entitled to a share of the revenues from the sale of engines, components and spare parts.

RRSP contracts are an important business base for MTU. They enable it to build up long-term relationships with OEMs and to participate in the major engine manufacturers' sector-leading engine programs. Furthermore, MTU's RRSP contracts entail considerable risks, including a lack of control over the activities covered and losses arising from pricing of program activities or upfront financing of design and development costs, cost overruns, guarantees, warranties and penalties. The following overview highlights these risks:

- The respective OEM controls the end-customer relationship throughout the entire term of the program, including setting the price of engines and spare parts, granting concessions (including financing of engine and aircraft sales in a manner that could ultimately include recourse to MTU through the RRSP contract), granting guarantees, and defining and amending guarantee and other service guidelines for the aftermarket business.
- The RRSPs give MTU only limited inspection rights. As a result, it is not in a position to fully monitor whether the OEMs fully meet their obligations or exercise their rights fairly.
- OEMs can perform repair processes on MTU components or work with second-hand spare parts, which would have a negative effect on MTU's sales of spare parts.
- MTU has to undertake considerable advance work for the design and development of the engine components, for which it has been allocated design and development responsibility. This upfront work has to be performed before a single engine has been sold. Therefore, future revenue from the engine program is not certain.
- Similarly, MTU may be required to make advance payments ("entry fees") to OEMs to enable it to participate in programs, as compensation for development or other work already undertaken by the OEMs.
- Aircraft manufacturers may require OEMs to make advance payments for participation in new aircraft programs and to cover a percentage of the manufacturer's R&D expenses. The OEMs generally pass some of the costs for such payments on to their RRSP partners.
- The value of MTU's contribution to RRSPs (in the form of work on the design, development and production of engine modules and components) is generally set on the basis of cost assumptions made when the contract is signed (with limited adjustments for changes in design or extraordinary changes in raw material costs). In the event of cost overruns in the development and production of parts for which MTU is responsible, MTU may therefore not be able to recoup such costs from its share of the program. As a result, its profits from the engine program could be reduced.

In the commercial maintenance business, MTU's interests in the Asian market include a 50:50 joint venture, MTU Maintenance Zhuhai Co. Ltd., Zhuhai, China. In jointly controlled entities, where decisions have to be made collectively, there is always a risk of differences of opinion. Similarly, participation in international joint ventures often reveals cultural and political differences (for instance payment morale). Moreover, changes in the geopolitical situation can adversely affect cooperation in joint ventures.

From today's standpoint, MTU believes its collaborative business model stands it in good stead to effectively manage market and program risks, in particular in respect of the challenges associated with the development, production and market introduction of new engine programs and architectures. All in all, MTU considers the risks arising from market and program risks, and the dependence on cooperations to be manageable, especially in light of the measures taken to control them.

Development and manufacturing risks

Research and development risk

(Development & technology risks)
MTU's success depends, among other things, on its research and development activities (R&D), which are performed both in the OEM segment and in the MRO segment. MTU finances its R&D spending from its own funds, state funding and, to a limited extent, through corresponding external orders. There is a risk that R&D activities might not meet customers' or market requirements cost-effectively or on schedule or might not meet the targets set. Therefore, the company cannot give any assurance that the capital used for these R&D activities will lead to opportunities for commercialization or result in productivity improvements commensurate with the resources invested. Furthermore, MTU is developing specific technologies and capabilities for its programs with a focus on reducing emissions and thus the climate impact of engines. If one of these programs should be halted or only be continued with a considerable delay, there is a possibility that MTU might not recoup the R&D costs and related investment expenditures incurred in the expectation of such programs.

Some of MTU's development activities are carried out within the scope of cooperative ventures. Each stake in such ventures and in RRSPs spreads the R&D-related risks beyond the company and therefore reduces its control over them. If one of MTU's cooperation partners has development and production risks, these could have a significant negative economic effect on MTU. In connection with RRSP and similar agreements, MTU's potential inability to deliver the necessary technology or design contribution could result in additional costs in order to fulfill its obligations, or MTU could be forced to make considerable compensation payments under the RRSP agreement instead of the technology or design contribution. In addition, MTU may be required to make penalty payments to its RRSP partners if it fails to meet delivery schedules or certain development targets.

The risks are reduced by systematic, professional project management and risk diversification among the various development partners.

All in all, MTU considers its research and development risks to be manageable, especially in light of the measures taken to control them.

Manufacturing risks/shop floor risks

(Manufacturing, repair & maintenance risks, program & project risks)
Highly sophisticated components and new materials are needed to meet the requirements of OEMs and other consortium partners with respect to engine weight, fuel consumption and noise emissions. In order to efficiently produce and process such components, MTU develops – and gains official approval for – innovative new manufacturing techniques. This can lead to delays in the start of production, a temporary increase in unit costs or a temporary reduction in delivery volumes compared to the agreed level. A further risk is that customers might impose penalties in the event that deliveries are delayed. It could also happen that the new manufacturing processes are not yet sufficiently mature to fully meet requirements when volume production is due to start. MTU counters this risk in technology projects by providing systematic support for the development and implementation process. All in all, MTU considers the manufacturing/shop floor risks to be manageable, especially in light of the measures taken to control them.

Procurement and purchasing risks

(Procurement risks)
MTU sources individual parts and components, finished products, specific services and raw materials from suppliers and third-party vendors. MTU is exposed to a risk of inadequate availability of such products. Disruption can be caused by factors such as cross-border supply chain problems caused by the geopolitical situation, for example, the Russia-Ukraine conflict and the Israel-Gaza conflict, and technical problems or bottlenecks in production capacity. MTU considers the probability of occurrence as possible and the potential impact as high. Moreover, crisis-driven price hikes (inflationary impact) could result in higher procurement costs. Given the structure of the RRSP agreements with its partners, MTU is only able to pass unexpected cost increases on to partners and customers to a limited extent in individual cases. Therefore, MTU takes the extensive measures outlined below to minimize the risks insofar as possible. MTU plans production requirements at regular intervals in close consultation with the supply chain to avoid unexpected procurement bottlenecks. Wherever it makes sense, products are validated and sourced from several suppliers. To limit inflation insofar as possible, there are multi-year supply contracts for many products. Regular supplier risk assessments, established purchasing and procurement processes, and close relationships with suppliers also help to minimize purchasing and procurement risks. All in all, MTU considers the procurement and purchasing risks to be manageable, especially in light of the measures taken to control them.

Liability risks

(Program/project risks, compliance risks, governance risks)
Product liability claims, including defects in products produced by cooperation partners, and insurance costs could adversely affect MTU's financial position.

MTU operates in markets where its products and services could expose it to liability for personal injury, death or property damage. Liability could arise, in particular, due to failure of an engine or engine component designed, developed, manufactured, supplied or installed by MTU or one of its RRSP partners, in both the new engines business and the spare parts and aftermarket business.

In the commercial business, however, MTU is party to consortia and RRSP contracts. In most of these relationships, liability for third-party claims is borne by the consortium or the partners on the basis of their respective contribution to the consortium or RRSP, irrespective of the fault of the individual partner. In these RRSP programs, the consortium lead generally has the right to settle third-party claims unilaterally on behalf of all program participants. Consequently, MTU may be exposed to substantive liability for defects unrelated to the performance of its products. Furthermore, MTU's ability to negotiate compensation in individual cases may be limited or non-existent. At the same time, the joint liability of engine program consortia constitutes effective transfer of the risk of defects that are attributable to MTU.

In the military engine business, MTU is largely exempt from product risk liability.

Most of the RRSP contracts require MTU to take out insurance to cover potential product liability. Conversely, MTU makes participation in such programs contingent on such agreements. To cover the above risks, MTU has aviation product liability insurance with international aviation insurers (minimum rating of A– from Standard & Poor's or A.M. Best). Overall, such insurance covers the product liability risks discussed here within the value and content limits of such coverage. It is possible that these limits could be exceeded within the RRSP contracts.

Significant risks that should be mentioned are the consortial liability relating to stakes in consortia for commercial engine programs, especially the expected impact of the PW1100TG-JM Geared Turbofan fleet management plan and, further, major consortial and claims risks, for example, as a result of arbitration proceedings.

All in all, MTU considers its liability risks to be manageable, especially in light of the measures taken to control them.

Risks relating to financial instruments

Foreign currency risks

(Financial risks)
More than 85% of MTU's revenue is generated in U.S. dollars. It is currently expected that over 75% of this currency risk of the receipts generated in this currency will be naturally hedged by costs settled in U.S. dollars and deferred invoice corrections. Most other expenses are incurred in euros and, to a lesser extent, in Polish zloty, Chinese renminbi, Serbian dinar and Canadian dollars. In line with the corporate policy of generating profit solely on the basis of operating activities and not through currency speculation, MTU makes use of hedging instruments exclusively for the purpose of controlling and minimizing the effect of U.S. dollar exchange rate volatility on the Group's financial position and results of operations.

The forward foreign exchange contracts concluded by MTU cover a large part of its net exposure to short- and mid-term currency risks. The hedging horizon is up to five years and uses a model where the authorized hedging ratios decline the further in the future the expected net currency exposure is. Thus, only a small portion of the expected net U.S. dollar exposure in the present and following year is exposed to currency risks relative to the Group's reporting currency (the euro).

As of December 31, 2023, MTU held a hedging portfolio comprising forward foreign exchange contracts totaling U.S.$2,920 million (translated at the rate on the reporting date: €2,643 million), with maturities up to 2027.

Detailed information on the financial instruments used to hedge future cash flows is provided in *section IV, Note 35. Financial risk in the Notes to the consolidated financial statements*.

In view of this hedging strategy, MTU considers its foreign currency risks to be manageable.

For a detailed description of MTU's financial management system, please refer to the *Principles and objectives of financial management* section under *Financial situation*.

All in all, MTU considers the foreign currency risks to be manageable, especially in light of the measures taken to control them.

Non-payment risk

(Financial risks, country risks)
Airlines, which are affected by the geopolitical and macroeconomic situation, are major direct and indirect customers of MTU. These companies may find themselves facing financial difficulties that affect the receivables of MTU and its partners.

Due to the pandemic, global airline customers amassed considerable losses in 2020 and 2021 (according to IATA, U.S.$138 billion in 2020 and U.S.$42 billion in 2021). Although the situation improved in 2022 (U.S.$6.9 billion) in line with the development of the pandemic, the macroeconomic context nevertheless has to be taken into consideration. For 2023, IATA is expecting a profit of U.S.$4.7 billion, which reflects the recovery of air traffic to approximately the pre-crisis level prior to 2020.

The consortium leaders in the commercial OEM business have intensive receivables management systems in place. Despite the crises, the credit default risks in the commercial OEM business are still considered to be manageable due to the structures established by the programs and long-standing experience. In the MRO business, the responsible account managers use established and proven concepts to proactively monitor and manage credit risks in short cycles. A risk assessment is carried out before any relevant contract is signed, and systematic compensatory precautions are taken as needed. These include commercial credit insurance, export credit guarantees (Hermes coverage) and the structure of payment terms (prepayments). All in all, MTU continues to consider the risks of non-payment to be manageable, especially in light of the measures taken to control them.

Other risks arising from business operations

Compliance and legal risks

(Compliance risks, governance risks)
Compliance risks arise when managers or employees of the company fail to comply with laws and regulations or fail to observe internal guidelines. These risks can arise in all areas of the company.

MTU has implemented a number of measures with regard to its organizational structures and processes to minimize these risks and to safeguard compliance. In particular, central functions with managerial authority have been set up to monitor and enforce compliance with laws and regulations in the individual divisions (for instance, the Quality division is responsible for compliance with aviation authority regulations, while the Environmental Protection/Occupational Health and Safety division ensures that environmental protection regulations are adhered to).

Above and beyond that, measures have been put in place at the company level to minimize the risks associated with compliance issues:

- binding rules of conduct valid throughout the Group,
- establishment of a central contact for reports of misconduct,
- establishment of a central compliance function (Compliance Officer),
- continuous security checks on employees,
- regular training.

Criminal intent can never completely be ruled out. All in all, MTU considers the compliance risks to be manageable, especially given the measures taken to control them and the management's oversight and regular assessment of their appropriateness and effectiveness.

Complex and in some cases conflicting international foreign trade and tax regulations, especially with regard to cross-border trade in goods and services in the industrial and defense sectors, mean that MTU is particularly exposed to violation of legal provisions. To compensate for relevant legal risks, processes that reinforce control are monitored and driven forward by central functions with technical and managerial authority. Identifiable risks arising from pending tax audits, customs audits, export controls and legal proceedings are managed by the central departments with the support of independent external consultants. The focus lies in particular on targeting process weaknesses and compensating for them.

All in all, MTU considers its compliance and legal risks to be manageable, especially in light of the measures taken to control them.

Environmental risks and climate change

Environmental risks

(Environmental risks, governance risks)
Plants and installations at MTU's sites are subject to local environmental and occupational safety laws and regulations. To prevent or minimize pollution, official operating permits or licenses have to be obtained. In this context, operating concepts are required. Investments and operating expenditures are designed to ensure compliance with the laws and regulations and oversight of their appropriateness and effectiveness is systematically supported by establishing corresponding risk management and internal control systems. Nevertheless, MTU cannot completely preclude individual breaches of the applicable laws and regulations and failure to comply with their at times dynamic development and interpretation. Consequently, there is a risk that considerable fines or penalties could be imposed, including criminal sanctions. In addition, permits or licenses might be revoked or not extended in the future. Some MTU facilities have a long history of industrial operations. In individual cases, newly discovered contamination of sites could result in a risk that MTU could be exposed to claims in excess of the known obligations.

Further information on occupational safety and environmental protection can be found in the *Non-financial statement*. All in all, MTU considers the environmental risks to be manageable, especially in light of the measures taken to control them.

Climate change

(Environmental risks, compliance risks, governance risks)
When setting its own targets, MTU is guided by the EU Green Deal, which is derived from the 1.5°C target of the Paris Agreement and aims for climate neutrality by 2050. The main areas of activity are the transition to climate-neutral aviation and the shift to climate-neutral provision of the products and services. Alongside the relevant societal risks, there is a specific threat to MTU's business due to the loss of market access and growth opportunities, a deterioration in earnings as a result of legally-induced sanction mechanisms, a loss of attractiveness as an employer for present and future generations, and greater difficulty accessing funding, up to including legal requirements to halt production of parts or the entire business operation.

Goals and opportunities geared to sustainable commercial propulsion concepts as part of the transition to emission-free flying are defined in MTU's Clean Air Engine Technology Agenda Claire. This is being implemented as part of MTU's Leading Technology Roadmap, which focuses on two areas: First, the evolutionary development of gas turbines based on the GTF, combined with revolutionary propulsion concepts that greatly improve the cyclic process and significantly reduce all emissions. Second, complete electrification of the powerchain to maximize emission-free flying. Out of all the concepts considered, from MTU's current standpoint the conversion of hydrogen into power with the aid of a fuel cell is becoming most relevant. MTU calls this the Flying Fuel Cell. Alongside these topics, MTU is actively supporting developments to increase the use of sustainable aviation fuel (SAF). Information on alternative propulsion technologies for aircraft is presented in the sections entitled *Substitution risks arising from disruptive technologies* in the risk report and *Research and development*, and in the *Non-financial statement*.

The measures designed to achieve climate-neutral provision of MTU's products and services are set out in the ecoRoadmap, a climate strategy that MTU has been rolling out stepwise since 2021. MTU continuously monitors greenhouse gas emissions in the production and maintenance of engines and modules at its sites using the internationally recognized Greenhouse Gas (GHG) Protocol. MTU strives to achieve a lasting reduction in GHG emissions. To make the climate impact of MTU even more transparent for stakeholders, the company takes part in the annual rating by the international non-profit organization CDP, which collects data on greenhouse gas emissions, climate risks, and climate strategies from companies once a year. All in all, MTU considers the climate change risks to be manageable, especially in light of the measures taken to control them.

IT risks

(IT risks, communication risks)
MTU constantly monitors its risk situation in the area of data processing. The two risks considered to be most critical in this field are system crashes due to technical faults and cyberattacks, resulting in the non-availability of systems, unauthorized disclosure of information, or permanent loss of data. In view of the advanced digitalization of all material business processes at MTU, high availability and integrity of IT systems are crucial for smooth business operation. MTU generates, stores and processes extensive data with special confidentiality requirements – not only, but in particular, in the military business.

MTU constantly invests considerable sums in technical and organizational measures to guarantee the availability, confidentiality and integrity of the IT systems used or operated by the company. Nevertheless, it cannot be ruled out that MTU will be confronted with system failures, unauthorized access to confidential information or the loss of data. Every data theft, unauthorized data manipulation or data loss could negatively affect MTU's relationship to present or potential customers. Incidents like this could expose MTU to liability claims by third parties. All in all, MTU considers the IT risks to be manageable, especially in light of the measures taken to control them.

Personnel risks

(Structural risks, social risks, communication risks)
The quality of MTU's products and services depends to a large extent on the personnel it can recruit and retain, especially engineers and other specialists. MTU seeks to access both young talent and experienced specialists through company training programs, dual-study programs (which combine practical and academic work), attractive working conditions and marketing activities. However, for many key positions within the MTU Group there only a few sources of new staff with the necessary qualifications. The competition for such employees has increased in recent years and could intensify further in the future. Moreover, it is expected that demographic change will greatly exacerbate the shortage of skilled workers and adversely affect the ability to maintain or increase the personnel capacity required for business operations.

In addition to the risk that the MTU might not be able to recruit enough skilled workers, there is a risk of losing staff to other companies. The company is of the opinion that some MTU employees have technological know-how that makes them attractive to competitors or other employers. MTU's success depends on its ability, not simply to employ technically skilled specialists, but also to retain them over the long term, motivate them and support their personal and professional development.

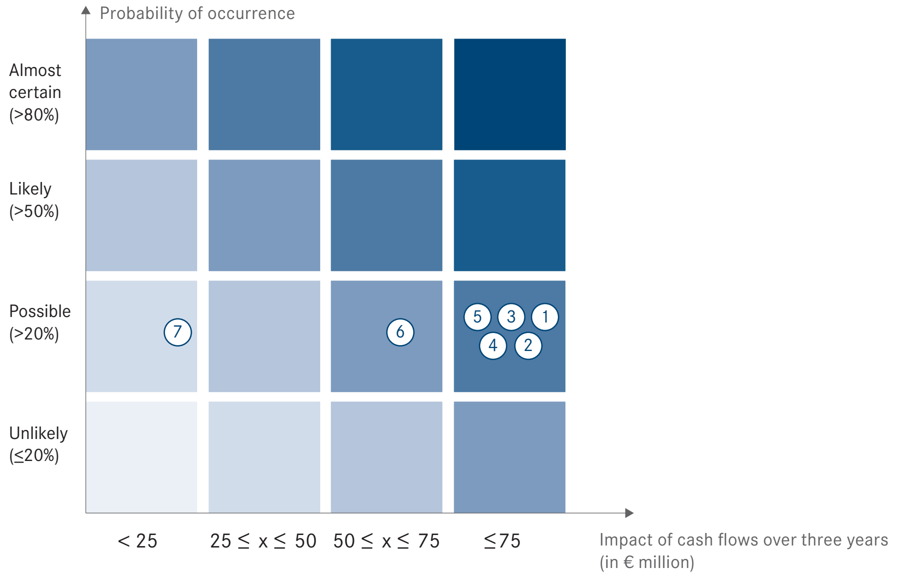
Failure to recruit, retain and drive forward the development of qualified employees could impair MTU's ability to realize its planned business performance.

All in all, despite the present challenging economic situation, MTU considers the human resources risks to be manageable, especially in light of the measures taken to control them.

Overall assessment of MTU's risk exposure

Risks in each of the key areas of exposure described above are monitored and continuously evaluated through a risk assessment for the coming fiscal year on the basis of their probability of occurrence and quantified as a deviation relative to the currently applicable operational planning figures. In MTU's risk management process, risks are assigned to one of four probability levels. Based on quantifiable risks (>€5 million) evaluated in the risk management process, for the fiscal year 2024, MTU derives risk-based earnings exposure based on experience of around €118 million (previous year: €85 million). The OEM segment accounts for around €81 million of this and the MRO segment for the remainder. In addition to the earnings impact, the liquidity impact of the risks is identified, monitored and addressed through the risk management process. In 2024, the identified risk factors could reduce liquidity by approximately €209 million (previous year: €180 million). However, this would be covered by available cash and cash equivalents and by credit lines that have not been drawn down. The OEM segment accounts for €170 million of the liquidity risks and the MRO segment accounts for the remainder.

At the end of the reporting period, the quantified liquidity risks for the three-year assessment period used for the regular reporting process were as follows:



ID	Risk category	Title
1	Program & project risks	Risk relating to contractual penalties (AOG, etc.) and higher maintenance requirements for the GTF programs
2	Program & project risks	Risks relating to enforcement of shorter payment terms
3	Financial risks	Tax risks
4	Program & project risks	MRO volume risks
5	Country risks	Risks arising from the Russia-Ukraine conflict
6	Program & project risks	OEM aftermarket risks
7	Procurement risk	Investment risks

In the OEM segment, the expected impact on MTU of the extended PW1100G-JM Geared Turbofan fleet management plan in connection with risk- and revenue-sharing agreements with Pratt & Whitney (18% program stake) is around €1 billion. This includes a risk of adverse effects on business performance if the capacities and supply of spare parts required to meet the higher maintenance requirements for the GTF fleet cannot be increased sufficiently fast. This risk is compounded by consortial liability for aircraft-on-ground penalty payments to the airlines affected.

The resulting impact on liquidity is expected in the period 2024 through 2026 and has been taken into account in the current corporate planning and forecasts. Possible additional expense in connection with the PW1100GG-JM Geared Turbofan fleet management plan would put further pressure on the liquidity situation.

In the MRO segment, the effects of additional demand resulting from the forecast recovery in the engine maintenance business have to be taken into account as risk drivers.

Al in all, taking into account the compensatory measures, at present MTU has not identified any risks that could jeopardize its status as a going concern. Despite the tough risk situation, especially driven by the extended PW1100G-JM Geared Turbofan fleet management plan, the Executive Board considers the risk situation to be manageable, especially given the measures taken in this respect and the effective and appropriate risk management system that is in place.

Opportunity report

The integrated opportunity and risk management system is embedded in the value-oriented management of the Group and its organizational structures and is based on the leading international standard, the COSO II Enterprise Risk Management Framework.

Market and program opportunities

Basic research and ongoing development of engine technologies, followed by their deployment in end products, have made MTU one of the world's leading manufacturers of engine components. MTU's new products lead the field in terms of efficiency because they save fuel and reduce emissions, noise and costs. The A320neo, Airbus A220 and Embraer E190-E2 with GTF engines are already being used successfully in scheduled service. Since 2018, the PW800 engine family, developed in cooperation with Pratt & Whitney Canada, which is based on the same core engine as the GTF, has powered premium manufacturer Gulfstream's new generation of business jets. In order to balance out its engine portfolio in the long-haul segment, MTU has participated in the development of the GE9X, which will be the sole engine for the Boeing 777X. Thanks to this balanced portfolio, MTU expects to benefit in the decades ahead from the predicted growth in all present market segments: the regional jet, narrowbody and widebody segments. The expected growth relates to both commercial series and new components business and the spare parts and aftermarket business, which should benefit, in particular, from the business performance of the V2500 engine programs and successively from the GTF program family. There is also a chance that the compensation payments in connection with the risk- and revenue-sharing agreements with OEM partners could be below the level of the provisions recognized in the balance sheet.

Among its customers in the military sector, MTU has established a reputation as a highly qualified partner with comprehensive system know-how in product development, manufacturing and maintenance. In particular by driving forward its military-engine maintenance services with the German air force, MTU sees chances to strengthen its ties with Germany's armed forces.

In addition, the official start of the FCAS program and additional new components and aftermarket business – especially for the EJ200 engine for the Eurofighter and the TP400-D6 for the A400M military transporter – open up further business opportunities with national and international customers. These will doubtless receive a further boost from the increase in international defense budgets resulting from the geopolitical developments in the reporting period.

Driven in particular by the T408 engine, the military-program partnership with GE Aerospace could generate further opportunities to participate in transatlantic programs in the future.

The development of the maintenance business in the aviation industry, in which MRO services are increasingly being offered together with engine sales contracts, gives MTU the opportunity, as a consortium partner, to develop customer loyalty in the commercial maintenance segment and soften the impact of risks associated with the spare parts market. This integrated approach to MRO enables program partners to become members of an MRO network, giving them access to the entire volume of MRO work associated with an engine series, in accordance with their share in the program. There is a variety of models for participating. For instance, partners in the MRO network might only perform repairs on their own components, or be allocated a quota of complete shop visits corresponding to their program share. Membership in an MRO network offers more moderate margins than operating as an independent MRO provider.

The independent MRO market for engines such as the GE90 and V2500 continues to offer long-term prospects for MRO providers to participate in this steadily growing market. In particular, the increase in the number of aircraft no longer tied to the OEMs offers independent MRO providers like MTU the opportunity to gain new customers and to assume responsibility for managing the maintenance of large fleets.

Thanks to ongoing investment in automation and focused expansion of capacity, the high demand in the OEM and MRO segments can be met cost-efficiently in the long term.

Through MTU Maintenance Lease Services B. V., Amsterdam, Netherlands, MS Engine Leasing LLC, Rocky Hill, CT, USA, and the partner companies in the PW1100G-JM MRO network, MTU aims to extend its activities in the lucrative leasing business and increase the scope of services provided in the aftermarket.

Research and development opportunities

The risk report describes the risks associated with research and development and manufacturing, but MTU's ongoing technology and development activities also open up new business opportunities. For example, ongoing development of products and the related manufacturing technologies and, in particular, intensive involvement in developing innovative propulsion concepts in collaboration with industrial, public-sector and scientific partners, pave the way for MTU to secure a position as a strategic partner in future engine programs. This could help ensure a balanced portfolio of engines and new propulsion concepts at different life cycle phases both in the series and new components business and in the spare parts and aftermarket business. Attention should be drawn to MTU's participation in the FCAS program in the reporting period as this can also be regarded as an important driver of the ongoing development MTU's technological expertise for commercial aviation applications as well. Moreover, mention should be made of the work that started or was approved as part of the European Clean Air funding program in the reporting period to systematically pursue the WET (water-enhanced turbofan) and the FFC (Flying Fuel Cell) to create the technological basis for emission-free flying in the future.

The risk report refers to the challenges involved in the continued ramp-up of new or relatively new programs; here too, the challenges can be transformed into opportunities. Production processes and systems can be optimized, for example through the use of virtual engine capabilities (target and actual twins [digital twins]), predictive simulation (ICM2E), end-to-end process data management and the forecasts derived from this, and new, cutting-edge manufacturing technologies and processes can be introduced to reduce product and maintenance costs. The risk analyses undertaken to secure the ramp-up of production, backed up by the MRL process and design or process FMEA, result in timely identification of potential problems and the related lasting process improvements. The effects of these improvements are not only felt in new programs; they can also be transposed to existing ones. That leads, for example, to further cost reductions and enhanced delivery reliability. The expansion of, for example, AM (additive manufacturing) and ECM (electrochemical machining) opens up new possibilities for the application-optimized design of components and cost advantages in production.

Through continuous improvements towards operational excellence, methods, processes and leadership behavior are constantly being developed as part of Lean Management@MTU. This results in increased transparency, a focus on value creation, support in achieving ambitious targets, and faster and more sustainable problem-solving and approaches to improvement based on integrated product development (IP4E). Improved preventive approaches, a faster response to deviations from plan and sustainable and structured solutions to problems enable the company to put in place stable processes and optimize resource deployment. For further information, please refer to the *section headed Research and development*.

Other opportunities

As a large part of the company's revenue comes from contracts invoiced in U.S. dollars, especially in the commercial new engines and series business (OEM) and the commercial spare parts and aftermarket business (OEM, MRO), a strengthening of the U.S. dollar against the euro would improve MTU's earnings. If there is a stabilization or short-term drop in inflation, this would have a positive effect on MTU's cost structure and hence on its business results.

See the *Risk report* for information on how the opportunities identified can be exploited and the associated risks avoided.

Overall assessment of opportunities

Unlike the risk situation, as of December 31, 2023, there had not been any significant change in the opportunities compared with the previous year. MTU has taken all the organizational measures necessary to recognize potential opportunities in good time and respond to them adequately. MTU applies the same methods in its assessment of specific opportunities as it does when evaluating risks. As a conservative approach is taken to the identification of risks and opportunities, the opportunities are necessarily low compared with the risks.

Based on the opportunities identified, MTU anticipates that the earnings opportunities in 2024 are around €78 million (prior year: €33 million), with the OEM segment accounting for €64 million of this. The liquidity-related opportunities amount to €85 million (previous year: €50 million), with €71 million of this attributable to the OEM segment. Opportunities to extend MTU's range of products and services may initially lead to a financial burden. In view of the long cycles involved in the business model, these will only generate positive earnings in subsequent fiscal years. MTU does not currently foresee any fundamental changes in its opportunities.

Main features of the internal control and risk management system

Internal control and risk management system

MTU understands an Internal Control System (ICS) to be the principles, procedures and measures introduced at the company by its management that are aimed at the organizational implementation of management decisions.

The risk management system (RMS) is a continuous and systematic process that has to be applied uniformly throughout the Group to ensure early identification, evaluation, management, monitoring and reporting of risks. The overriding objective is to safeguard the existence of the company and its future success.

The ICS and RMS are based on the globally recognized and established framework of the Committee of Sponsoring Organizations of the Treadway Commission (COSO I) and the applicable requirements and basic elements of the audit standards issued by the German Institute of Public Auditors (IDW PS 981 and 982).

The Executive Board of MTU bears overall responsibility for establishing the ICS and RMS. They are aligned to the business model and specific requirements of the MTU Group and are an important element in its comprehensive approach to corporate governance. This comprises a framework for creating sustainable value for shareholders, customers, employees and society.

All MTU entities are included in the ICS and RMS. The local management of each entity is responsible for realizing an appropriate and effective ICS and RMS, based on the Group-wide requirements, and is supported in this by the central divisions.

The Risk Management Board, which is comprised of MTU's highest risk manager and selected heads of various functional areas, is an overarching decision-making body that examines aspects of risk management, discusses and takes decisions on reported risks or those that have to be reported to the Executive Board, and oversees the functioning of the risk management system.

MTU's internal audit function, which is process-independent, plays an important role in checking the effectiveness of, and improving, the ICS and RMS. It regularly assesses, and helps to enhance, the controlling and monitoring systems. It is also considered to have an advisory function, contributing to improving business processes and, ultimately, the effectiveness of the ICS. The rules of procedure of the internal audit function comply with national and international requirements as laid down by the Deutsches Institut für Interne Revision and the Institute of Internal Auditors. The internal audit function is also bound by the code of professional ethics. The administrative standards of the internal audit function are accessible to all employees on MTU's intranet.

The Audit Committee of the Supervisory Board discusses risk management and the audits by the internal audit function. In accordance with Section 107 (3) of the German Stock Corporation Act (AktG), as amended by the German Accounting Law Modernization Act (BilMoG), it is responsible for monitoring the effectiveness of the RMS, the ICS, the internal auditing systems, the financial reporting process and the audit of the financial statements.

Compliance Management System

The ICS and RMS also include a compliance management system (CMS), which is aligned to the company's risk situation.

MTU's compliance management system is based on the requirements of the IDW AsS 980 assurance standard published by the Institute of Public Auditors in Germany and the Good Practice Guidance on Internal Controls, Ethics, and Compliance issued by the Organisation for Economic Co-operation and Development (OECD).

As the highest decision-making authority, the CEO bears the responsibility for the company's business ethics and anti-corruption policy. The central functions responsible for ensuring compliance are a Group-wide Compliance Officer and the Compliance Board.

MTU has implemented a number of measures with regard to its organizational structures and processes to minimize these risks and to safeguard compliance. In particular, central divisions with managerial authority have been set up to monitor and enforce compliance with laws and regulations in the individual divisions (for instance, the Quality division is responsible for compliance with aviation authority regulations, while the Environmental Protection/Occupational Health and Safety division ensures that environmental protection regulations are adhered to).

Above and beyond that, measures have been put in place at the company level to minimize the risks associated with compliance issues.

The corporate culture at MTU is characterized by trust and mutual respect. The observance of legal and ethical rules and principles plays a central role in this respect. They are set out in a Code of Conduct, which has been implemented. This Code of Conduct embodies MTU's corporate culture and reflects its resolve to comply strictly with the relevant laws and internal regulations. It is a Group-wide guide to ethical business relations.

The Compliance Officer submits quarterly reports to the Executive Board and the Supervisory Board's Audit Committee, which in turn reports to the plenary meetings of the Supervisory Board. The Supervisory Board's Audit Committee oversees the Executive Board's compliance activities. The company has established a global whistleblower system that allows employees and external stakeholders to report suspected cases of misconduct confidentially to the Compliance Officer.

MTU strives to continuously develop its compliance system. That includes raising employees' awareness of compliance-related matters.

Description of the principal features of the accounting-related ICS and RMS

The current recommendations of German Accounting Standard (GAS) 20 have been applied in this section of the combined management report concerning the main features of the accounting-related internal control and risk management system.

Objectives and components

MTU's Executive Board, Supervisory Board and Audit Committee attach the greatest importance to ensuring the regularity, accuracy and reliability of MTU's financial reporting. The accounting-related internal control and risk management system applicable for the MTU Group's financial statements helps ensure systematic compliance with these internal and external accounting requirements.

/ The accounting-related risk management system (RMS) is an integral part of the Group's company-wide risk management system. It forms the basis for the uniform and appropriate handling of risks and for communicating them within the Group. The risks inherent in the Group's financial reporting are among the corporate risks to be monitored as a whole.

/ The design of the accounting-related internal control system (ICS) at MTU meets the requirements of the German Accounting Law Modernization Act (BilMoG), the definition provided by the Institute of Public Auditors in Germany (Institut der Wirtschaftsprüfer e.V. – IDW), the internationally recognized and established framework of the Committee of Sponsoring Organizations of the Treadway Commission (COSO I) and the features specific to MTU. MTU understands an ICS to be the principles, procedures and measures introduced at the company by its management that are aimed at the organizational implementation of management decisions:
- to safeguard the effectiveness and economic efficiency of business operations – which includes protecting the company's assets,
- to ensure the regularity and reliability of internal and external accounting, and
- to comply with statutory regulations relevant to the company.

Main features

/ MTU has a clearly defined management and corporate structure. Key cross-organizational functions are coordinated centrally by the Group accounting department. At the same time, the subsidiaries have sufficient independence and are responsible for financial reporting.

/ Appropriate guidelines (e.g., accounting policies / financial reporting guidelines / training materials) have been introduced and are regularly updated. The Group Accounting function, comprising the Group Financial Reporting and Accounting Policies departments, is the central point of contact for questions on accounting and financial reporting and has the right to issue instructions within its area of competence.

/ Group Accounting coordinates and leads the preparation of the consolidated financial reports, on the basis of a defined data reporting system for Group companies. It helps the Group companies implement the reporting system by providing a uniform chart of accounts for the Group, along with reporting forms that reference the chart of accounts and other supporting materials (quality assurance tools).

/ Preparation and quality assurance for the financial data communicated by the Group companies for inclusion in the consolidated financial statements are undertaken on a decentralized basis by the respective finance departments on the basis of the Group-wide reporting guidelines.

/ As a supplementary control measure, (plausibility) and quality control checks on the reported data are carried out by the Group accounting department and during the consolidation process for the consolidated financial statements.

- To safeguard and enhance the integrity and responsibility of all employees, including with respect to financial reporting, all employees are required to give an undertaking that they will observe the Group-wide Code of Conduct and the applicable internal regulations (e.g., accounting policies / financial reporting guidelines).
- The (professional) qualifications of staff employed in the finance function are regarded as important for the quality of the Group's accounting process and are monitored and driven forward by the management team. The departments and other organizational units involved in the accounting process are suitably equipped and regularly trained both in quantitative and qualitative terms. In this context, the structure and workflows are reviewed at regular intervals with the support of external consultants and through discussions with peer group companies.
- The Group accounting process is integrated into the ERP system through structured interfaces between the ERP accounting systems of the Group companies and the central consolidation and Group reporting system. The IT systems are protected against unauthorized access by appropriate installations. As far as possible, standard software is for financial reporting. The accounting-related IT systems and processes (e.g., IT general controls) undergo regular internal and external reviews based on an extensive concept.
- Risk-mitigating controls are in place for accounting-related processes. Examples are standardized reporting formats, IT controls, systematic checks on forecast financial information, a level-of-authority approval concept for quality assurance of book-keeping and financial reporting information. The appropriateness and effectiveness of the internal control system are regularly assessed and refined by the administrative management of the relevant Group companies.
- The consolidated financial statements and all significant financial data submitted by Group companies for inclusion in the consolidated financial statements are audited annually by the Group's external auditor. The same auditor also reviews the condensed consolidated financial statements and interim Group management report in the half-year financial report. This is supplemented by an external audit or assurance review of the separate financial statements compiled by the material Group companies. Furthermore, the non-financial statement prepared as part of the management report is subject to a limited assurance review by the auditors.
- The financial reporting and accounting-related ICS and RMS are regularly audited by the internal audit department. In addition, they are overseen by the Audit Committee.
- The sustainability-related information for the management report, especially the non-financial statement, is compiled and reviewed on a decentralized basis by the responsible departments at MTU's locations in accordance with the applicable Group-wide guidelines. Supplementary (plausibility) checks and other quality assurance processes are performed on the reporting data and their aggregation or consolidation by a central CR organization, which is overseen by an interdisciplinary CR Board.

Disclosures under takeover law

The following disclosures are made pursuant to Section 315a in conjunction with Section 289a of the German Commercial Code (HGB) (takeover directive implementation). Items included in Section 315a of the German Commercial Code (HGB) that are not met at MTU Aero Engines AG are not mentioned here

Composition of subscribed capital

The company's subscribed capital (capital stock) amounts to €53,824,489 and is divided into 53,824,489 registered non-par-value shares. The shares are registered shares. All shares have equal rights and each share entitles the holder to one vote at the Annual General Meeting

Restrictions on voting rights and the transfer of share ownership

As of December 31, 2023, MTU held 53,575 treasury shares (previous year: 64,262). No voting rights are exercised in respect of treasury shares. The articles of association of MTU Aero Engines AG do not contain any restrictions on voting rights or the transfer of share ownership. The Executive Board has no knowledge of any agreement between shareholders that could give rise to any such restrictions.

If an RSP / LTI is granted for the reporting period as part of the compensation of the Executive Board, settlement takes the form of a taxable cash payment, which paid on the condition that, after deduction of individual income tax, it will be used for the purchase of MTU shares; these are subject to a four-year lock-up period.

Rules governing the appointment and dismissal of members of the Executive Board and amendments to the company's articles of association

The rules for the appointment and dismissal of members of the Executive Board are based on Sections 84 and 85 of the German Stock Corporation Act (AktG) and Section 31 of the German Codetermination Act (MitbestG) in conjunction with Article 5 of the company's articles of association.

All amendments to the articles of association require a resolution by the Annual General Meeting with a majority of at least three quarters of the voting stock attending, pursuant to Section 179 of the German Stock Corporation Act (AktG). The right to add amendments of a purely formal nature, for instance changes to the share capital as the result of utilization of the authorized capital, is devolved to the Supervisory Board under the terms of Article 13 of the articles of association.

Authorizations conferred on the Executive Board, especially concerning the issue and purchase of shares

Authorized capital

Through the resolution adopted by the Annual General Meeting on April 21, 2021, Article 4 (5) of the articles of association was amended to authorize the Executive Board, until April 20, 2026, to increase the company's capital stock by up to €16 million, with the prior approval of the Supervisory Board, by issuing, either in a single step or in several steps, new registered non-par-value shares in return for cash and/or contributions in kind (Authorized Capital 2021).

Conditional capital

In accordance with Article 4 (6) of the articles of association, the company's capital stock may be conditionally increased by up to €3,746,888 through the issue of up to 3,746,888 new registered non-par-value shares. The purpose of this conditional capital increase is to issue shares to owners or creditors of convertible bonds and/or bonds with warrants in accordance with the authorization granted to the company under a resolution passed by the Annual General Meeting on April 15, 2015. Shares are issued at a conversion price or warrant exercise price determined on the basis of this authorization.

Until April 14, 2020, the Executive Board was authorized to issue, with the prior approval of the Supervisory Board, bearer and/or registered convertible bonds and/or bonds with warrants (collectively referred to as "bonds") with a total nominal value of up to €500 million. In 2016, MTU made use of this authorization to increase the company's capital stock by issuing a convertible bond with a nominal value of €500 million.

Further, in accordance with Article 4 (7) of the articles of association, the company's capital stock may be conditionally increased by up to €1,600,000 through the issue of up to 1,600,000 new registered non-par-value shares (Conditional Capital 2019). The purpose of this conditional capital increase is to issue shares to owners or creditors of convertible bonds and/or bonds with warrants in accordance with the authorization granted to the company under a resolution passed by the Annual General Meeting on April 11, 2019.

Further, in accordance with Article 4 (8) of the articles of association, the company's capital stock may be conditionally increased by up to €2,600,000 through the issue of up to 2,600,000 new registered non-par-value shares (Conditional Capital 2021). The purpose of this conditional capital increase is to issue shares to owners or creditors of convertible bonds and/or bonds with warrants in accordance with the authorization granted to the company under a resolution passed by the Annual General Meeting on April 21, 2021. Shares are issued at a conversion price or warrant exercise price determined on the basis of this authorization.

The Executive Board is authorized until April 20, 2026, to issue, in a single step or in several steps and with the prior approval of the Supervisory Board, bearer and/or registered convertible bonds and/or bonds with warrants (collectively referred to as "bonds"), with or without maturity date, with a total nominal value of up to €600 million, and to grant the owners of convertible bonds and/or bonds with warrants the right, obligation or option to convert them into registered non-par-value shares of the company representing a stake in the capital stock of up to €2,600,000 under the conditions established for the issue of convertible bonds or bonds with warrants. The bonds may be issued in return for cash contributions only. They may be issued in euros or – to an equivalent value – in any other legal currency, for instance that of an OECD country. They could also be issued by an affiliated company where MTU exercises control. In such cases, and subject to the prior approval of the Supervisory Board, the Executive Board was authorized to act as guarantor for the bonds and to grant the owners of the bonds the right, obligation or option to convert them into new registered non-par-value shares in MTU.

Resolution concerning the authorization to purchase and use treasury shares pursuant to Section 71 (1) no. 8 of the German Stock Corporation Act (AktG) and to exclude subscription rights

Under the resolution adopted at the Annual General Meeting on April 11, 2019, the company received the following authorizations

a) The company was authorized to purchase treasury shares accounting for a proportion of up to 10% of the company's capital stock, as applicable on the date of the resolution, during the period from April 11, 2019, through April 10, 2024, pursuant to Section 71 (1) no. 8 of the German Stock Corporation Act (AktG). At no point in time may the value of the acquired shares, together with other treasury shares in the company's possession or which are attributed to it pursuant to Section 71a et seq. of the German Stock Corporation Act (AktG), exceed 10% of the company's capital stock. At the discretion of the Executive Board, the shares may be purchased through the stock exchange or by means of a public offer to buy addressed to all shareholders (or – where permitted by law – through a public call to submit a sell offer).

The shares must be sold in return for proceeds that are not more than 10% above or below the quoted share price, net of any supplementary transaction charges. In the case of a sale through the stock exchange, the reference for the quoted share price as defined above is the average value of share prices in the closing auction of Xetra trading (or a comparable successor system) on the last three trading days prior to the purchase of the shares. In the case of shares purchased by means of a public offer to buy addressed to all shareholders (or a public call to submit a sell offer), the reference for the quoted share price is the average value of share prices in the closing auction of Xetra trading (or a comparable successor system) on the last three trading days prior to publication of the offer. In the event of substantial fluctuations in the share price, the Executive Board is authorized to publish a new public offer to buy or a public call to submit a sell offer based on a recalculated average value of share prices computed as outlined in the previous sentence.

The volume of the offer can be limited in the case of shares purchased by means of a public offer to buy addressed to all shareholders (or a public call to submit a sell offer). If the whole take-up of the offer (or the total number of offers) exceeds this volume, the purchase must be transacted in proportion to the number of shares offered. Preferential treatment may be given to small packages (up to 100 shares) offered for sale. Further conditions may be imposed in the offer or call to submit offers

b) The Executive Board was authorized to sell the purchased treasury shares in a manner other than through the stock exchange or by means of a public offer addressed to all shareholders on the condition that the shares are sold in return for cash payment at a price that is not significantly below the stock market price of similarly entitled shares of the company at the time of sale. However, this authorization shall apply only on the condition that the shares sold excluding subscription rights pursuant to Section 186 (3) sentence 4 of the German Stock Corporation Act (AktG) do not exceed a total amount of 5% of the company's capital stock when this authorization becomes effective or – if such value is lower – when this authorization is exercised. This limit of 5% of the capital stock shall also include option rights and/or conversion rights on shares of the company which are issued during this authorization, i.e., since April 11, 2019, excluding subscription rights in mutatis mutandis application of Section 186 (3) sentence 4 of the German Stock Corporation Act (AktG), as well as the issue or sale of treasury shares without subscription rights pursuant to Section 186 (3) sentence 4 of the German Stock Corporation Act (AktG).

c) The Executive Board was authorized to use the purchased treasury shares in a manner other than through the stock exchange or by means of an offer addressed to all shareholders if the treasury shares are issued to program participants in conjunction with the company's stock option programs and those participants are, or were, employees or service providers of the company or one of its affiliated companies. If shares are to be used by issuing them to active or former members of the MTU Executive Board under the terms of the company's stock option programs, the Supervisory Board is authorized to transact this issue.

d) Furthermore, the Executive Board was authorized to use the purchased treasury shares as partial or complete payment in conjunction with business combinations or the acquisition, whether direct or indirect, of companies, parts of companies or holdings in companies.

e) The Executive Board was also authorized, with the consent of the Supervisory Board, to use the purchased treasury shares to exercise conversion rights or discharge conversion obligations relating to convertible bonds, bonds with warrants, profit participation certificates or income bonds (or combinations of such instruments) issued by the company or by a dependent affiliated company.

f) The Executive Board was moreover authorized, with the consent of the Supervisory Board and without any requirement for a further resolution to be passed by the Annual General Meeting, to redeem purchased treasury shares in whole or in part. They may be redeemed in a simplified procedure without any capital reduction and by adapting the arithmetic value of the outstanding portion of non-par-value shares to that of the company's stock capital. The redemption may be limited to a defined fraction of the purchased shares. The authorization to redeem shares may be used on one or more occasions. If the simplified procedure is employed, the Executive Board is authorized to amend the number of non-par-value shares stated in the articles of association.

g) The above-stated authorizations may be exercised on one or more occasions, in whole or in part, individually or in combination. They may also be exercised by Group companies as defined in Section 17 of the German Stock Corporation Act (AktG).

h) The subscription rights of existing shareholders in respect of these treasury shares are excluded insofar as the shares are utilized in the manner stated above in subsections b) to e).

i) The authorization to purchase treasury shares granted to the company on April 15, 2015, is revoked as of the effective date of this new authorization. The authorization to use the treasury shares purchased under the terms of the above-mentioned earlier resolution dated April 15, 2015, remains in force.

Material agreements relating to change of control subsequent to a takeover bid

The convertible bond issued by MTU Aero Engines AG in September 2019 contains the following provisions with regard to a change of control: In the event of a change of control, the bond terms grant bondholders the right to exercise their conversion right within a specific period of time at an adjusted conversion rate. In the event of a change of control, bondholders can redeem their bonds prematurely at the terms described in more detail in the bond conditions. A "change of control" comprises the acquisition of control or a mandatory offer under Section 35 (2) sentence 1 and Section 14 (2) sentence 1 of the German Securities Trading Act (WpHG). If one or more persons within the meaning of Section 29 (2) and Section 30 of the Securities Acquisition and Takeover Act (WpÜG) acquire(s) 50% of the voting rights of MTU Aero Engines AG, this shall represent an "acquisition of control."

The bond issued in 2020 provides that, in the event of acquisition of 50% or more of the shares (by holding the shares pursuant to Section 33 of the German Securities Trading Act [WpHG] or through attribution pursuant to Section 34 WpHG), MTU Aero Engines AG will fix an optional redemption date when bondholders can redeem all or some of their bonds.

In June 2022, MTU Aero Engines AG agreed a revolving credit facility with a banking syndicate, which provides for a right of termination for the lenders in the event that one or more persons assume(s) control of MTU Aero Engines AG or acquire(s) more than 50% of the company's issued capital.

MTU Aero Engines AG has risk and revenue sharing agreements with an engine manufacturer containing clauses that allow the risk and revenue sharing agreement to be converted into a long-term supplier contract in the event that a material competitor of the contracting party acquires control of 25% or more of the company's voting rights or assets.

In addition, MTU Aero Engines AG has a cooperation agreement with another engine manufacturer. Under this agreement, that manufacturer is entitled to terminate the contract for cause in the event that one of its competitors acquires more than 50% of the company's voting rights. MTU Aero Engines AG has further cooperation agreements with the same engine manufacturer. Under these agreements, that manufacturer is entitled to terminate the contract for cause in the event that one of its competitors acquires more than 30% of the company's voting rights.

MTU Aero Engines AG also has equity investments in various joint ventures with other engine manufacturers, the purpose of which is to cooperate in the development and production of aircraft engines. According to the provisions of the corresponding agreements, MTU Aero Engines AG's share in the joint venture may be withdrawn and its participation in the accompanying cooperation agreements terminated if MTU Aero Engines AG is taken over by a competitor of the partners in these consortia.

It is standard market practice to confer contractual rights of this kind. Should an event meeting any of the above definitions of change of control take place, the exercise of rights ensuing from these agreements could have a substantial impact on MTU's net assets, financial position or results of operations.

Severance payments on premature termination of contracts of service with members of the Executive Board in the event of a change of control or changes of shareholders of MTU Aero Engines AG

Under the contracts of service for members of the Executive Board in effect since January 1, 2021, a change of control is deemed to have occurred if a shareholder, alone or on the basis of the voting rights attributable to him or her pursuant to Sections 33 et seq. of the German Securities Trading Act (WpHG), acquires the majority of the voting rights and this results in material disadvantages for the Executive Board. Material disadvantages are, in particular, if the Executive Board member is removed, if the member's responsibilities and duties are significantly altered, or if the Executive Board member is asked to accept a reduction in employment benefits or to agree to premature termination of the respective contract of service. In such case, each member of the Executive Board shall have a special right of termination, which is to be exercised within a period of six months, with a period of notice of three months to the end of a month. If a member of the Executive Board makes use of the special right of termination, or if the Executive Board member's contract of service is terminated by mutual consent within nine months of the change of control, the Executive Board member receives a severance payment corresponding to the benefits still to be awarded up to the end of the contract term originally agreed. For the calculation of the severance payment, 100% target fulfillment is agreed for the variable compensation components.

Severance payments made to a member of the Executive Board as a result of early termination of their contract, including in the event of a change of control, are always limited to two years' total annual compensation (cap on termination benefits) or the compensation due for the remaining term of the contract, whichever is lower.

No comparable agreements have been made with regard to other employees.

Other disclosures

Non-financial statement

This non-financial statement (NFS) of MTU Aero Engines in accordance with the German CSR Directive Implementation Act (CSR-RUG) provides information on material non-financial topics relating to the fiscal year 2023. This is a combined non-financial statement in accordance with Sections 289b et seq. and Sections 315b et seq. of the German Commercial Code (HGB). It contains disclosures relating to MTU Aero Engines AG as the parent company, as well as information relating to the MTU Group. The structure of the Group is described in the *Combined management report under The MTU Group*. In contrast to the other sections of the management report, the NFS was subjected to a limited assurance review and selected disclosures (ESG targets for Scope 1 and 2 CO_2 emissions and training days per employee, which are relevant for compensation) were subject to a reasonable assurance review.

In addition, in early summer, the company publishes a separate sustainability report for the previous fiscal year in accordance with the international reporting standards of the Global Reporting Initiative (GRI). Since the definition of materiality used by CSR-RUG differs from the definition used by the GRI, MTU has not used any standard as the framework for its non-financial statement

Business model

The MTU Group and its business model are described in the *Combined management report under The MTU Group*.

Framework

The key topics for the non-financial statement are identified by an interdisciplinary corporate responsibility (CR) team comprising CR Coordination and the CR divisional coordinators in the relevant organizational units, in consultation with the CR Board, which is the central CR decision-making body at MTU, and the Executive Board. CEO Lars Wagner has also been named as Chief Sustainability Officer (CSO). Above all, he defines MTU's positioning, sustainability strategy and objectives, in close collaboration with the CR Board. The CR Board and CSO together form the highest decision-making body at MTU.

The Group-wide CR strategy is the starting point for an annual materiality process in which MTU identifies the material topics for the company and its stakeholders. The materiality analysis for 2023 was already performed on the basis of the new European reporting standard ESRS (European Sustainability Reporting Standard, November 2022), which will be mandatory for the first time for the fiscal year 2024. The topics are evaluated along two dimensions: their social and ecological impact on MTU's business activities (impact materiality) and their relevance for MTU's business (financial materiality). Financial materiality comprises the opportunities and risks for MTU based on probability and scope. Impacts on the environment and the society are estimated on the basis of their scale (low/high), scope (individual/global) and remediability (irreversible/reversible) along the entire value chain for the time dimensions short-, mid- and long-term. The materiality is based on a gross assessment.

Using this method, for 2023, seven topics were identified as relevant for the non-financial statement in accordance with the German CSR Directive Implementation Act (CSR-RUG). CSR-RUG requires the provision of relevant non-financial information on the business performance, operating results and position of the Group. Information is also required on the impact of its business activities on the following aspects: environmental, employee, and social matters, human rights, combating corruption, and possible additional aspects. As one such additional aspect, the non-financial statement contains information on product quality and flight safety. Using the method based on the ESRS to define materiality, occupational safety and human rights in the supply chain are no longer material topics for the NFS, but are still included on a voluntary basis to ensure consistent reporting. The materiality evaluation of the topics was discussed and confirmed by the Supervisory Board's Audit Committee.

[T38] Contents of the non-financial statement

Aspect in accordance with the German CSR Directive Implementation Act (CSR-RUG)	Material topics for MTU
Additional aspect	Product quality and flight safety
Environmental matters	Climate impact of aircraft engines
	Climate change mitigation in operation of the sites
Combating bribery and corruption	Prevention of bribery and corruption
Employee matters	Employee development
	Occupational safety (voluntary reporting)
	Respecting the human rights of employees
Respect for human rights	Respect for human rights in the supply chain (voluntary reporting)
	Responsible international trade

Under the CSR-RUG definition of materiality, no relevant topics have been identified for the aspect of social matters.

Involving stakeholders

MTU is engaged in dialogue with external stakeholders regarding environmental and social impacts. Stakeholders can give feedback on MTU's sustainability management via an online survey. There are also personal and anonymous reporting channels that stakeholders can use to submit complaints and grievances to the company. The Munich, Hanover and Ludwigsfelde sites provide information for the public on their environmental impact and activities in annual environmental declarations. MTU is committed to the global multi-stakeholder initiative, the UN Global Compact, and its ten principles including respect for human rights, fair working conditions, protecting the environment and fighting corruption. In addition, the company is represented on topic-specific initiatives such as the TRACE International anti-corruption initiative.

Risk management for non-financial topics

Risk identification and evaluation for the topics covered by the non-financial statement are based on MTU's established opportunity and risk management. The potential risks to the environment, society and employees resulting from MTU's business activities are compiled and evaluated quarterly by the responsible staff in the departments and the CR Board analogously to the established opportunity and risk process, taking into account, in each case, the probability of occurrence and impact of the risk. In this process, the risk inventory is reviewed for new material topics and aspects. To supplement the risk management process, MTU has established a compliance system with a separate reporting line. It is organized and managed by the Compliance Officer.

The risk analysis did not reveal any reportable risks with a high probability of having a severe negative impact on the identified non-financial topics.

Product quality and flight safety

Product quality and flight safety have very high significance for MTU. High quality standards, together with product safety and reliability, are important corporate objectives that are enshrined in the MTU Principles. MTU's Quality Vision 2025 also focuses on faultless quality, product safety in flight, and high customer satisfaction. A Group-wide integrated management system (IMS) ensures compliance with regulatory requirements and internal regulations as well as clear assignment of responsibilities within the company. One principle of the IMS policy is that "Safety takes priority in what we do." The basic framework is enshrined in a management manual that is binding for all employees and managers across the Group. Corporate Quality is a separate organizational unit directly subordinate to the Chief Operating Officer (COO). It reports quarterly to the Executive Board on quality aspects and flight-related incidents. In accordance with the International Civil Aviation Organization (ICAO) standard, the IMS includes a specific safety management process, which defines how to handle safety-related incidents at MTU's locations and in air traffic. Appropriate organizational structures and responsibilities, such as a Flight Safety Board and a Flight Safety Manager, have also been established.

Aviation authorities set high regulatory quality and safety requirements

Quality and safety are of paramount importance in aviation and the corresponding framework conditions are strictly regulated. Legal requirements for the safe operation of flights are closely monitored by the aviation authorities. The company has to comply with the legal requirements imposed upon it as a development, manufacturing and maintenance organization in the aviation industry. MTU continuously evaluates the regulatory requirements for its business activities in order to obtain or keep the required licenses, approvals and certifications from the aviation authorities. The strict regulatory quality and safety requirements must be complied with throughout the entire product lifecycle of an engine. MTU has therefore implemented processes designed to meet these requirements. For example, the aviation sector has strict rules governing documentation in order to verify the airworthiness of engines and their components. There must be no gaps in documentation over the entire product lifecycle. To ensure compliance with quality and safety requirements, MTU has implemented comprehensive testing and monitoring processes throughout the entire value chain. Components undergo thorough testing, based on their criticality, and are monitored in the production process.

Annual internal audits and quality audits by customers and authorities provide evidence that MTU meets uniformly high standards and is in conformance with regulatory requirements. MTU uses supplier audits to monitor suppliers' compliance with sector-specific requirements. The audits are managed on a site-specific basis. The implementation of MTU's IMS at the individual sites is validated and certified by independent and accredited external auditors.

Continuous monitoring of quality

MTU continuously monitors quality and, where necessary, initiates appropriate measures to achieve effective improvements. Providing customers and partners with safe and high-quality products and services helps to keep MTU's business competitive. "We increase the satisfaction of our stakeholders" was an overarching corporate objective for 2023. Sub-targets were specified to demonstrate that the high performance and quality of its products and services make MTU an attractive partner for its stakeholders. The targets are implemented through initiatives with a long-term focus, which are realized on a continuous basis.

A defined process is in place to ensure that all customer complaints about sub-standard quality of MTU products are followed up and analyzed, and that appropriate measures are defined and implemented to effectively eliminate the root cause. The success of these measures is closely monitored. Customer complaints are evaluated at site level. At the majority of sites, the number of customer complaints declined or was unchanged in the reporting period.

Geared Turbofan fleet management plan

During 2023, it became evident that the service life of components in the share attributable to the program partner Pratt & Whitney could be reduced in some cases. This is due to a rare condition of the powder metal used in their production. This requires an extensive fleet management plan for Geared Turbofan engines of type PW1100G-JM. In the coming years, 600 to 700 shop visits will be necessary to inspect the relevant components and, if necessary, replace them as a preventive measure.

Upgrading of the safety management system initiated

MTU is continuously developing its quality management system and regularly takes up suggestions arising, for example, from its collaboration in the international Aerospace Engine Supplier Quality (AESQ) Group and regular site-based and cross-site communication between quality managers. Continuous development focuses first and foremost on the set of rules and internal quality reporting. In addition, regular site-specific training on quality aspects is organized for managers and employees. For example, new employees are required to complete a mandatory training module on the IMS.

In the reporting period, MTU started to upgraded its safety management system in response to new regulatory requirements set by the European aviation safety agency. As a first step, a new training concept with mandatory web-based training for all employees and additional training modules for MTU safety personnel has been rolled out at the German locations. In addition, the Quality Day 2023 organized as part of the Passion for Quality initiative was dedicated to flight safety and the safety management system. In 2023, further progress was also made in implementing the new sector-wide AS13100 standard, which were developed jointly in the AESQ. MTU and its suppliers are required to implement these in their regulations and apply them in practice. MTU is also involved in work on a new edition of AS13100, which will include, for the first time, lessons learned. In the reporting period, MTU also drove forward the "MRO network development" project to harmonize core processes in commercial engine maintenance across all MRO locations

Climate impact of aircraft engines

Emission-free – that is MTU's vision and the overriding goal of its efforts to reduce the climate impact of aircraft engines. Through its responsibility in the area of climate change mitigation, MTU wants to make a contribution to achieving the Paris climate target, which is its lodestar in the development of technology. When setting its own targets, MTU is guided by the EU Green Deal, which is derived from the 1.5°C target of the Paris Agreement and aims for climate neutrality by 2050. MTU's technology agenda Claire (Clean Air Engine) is focused on possible solutions for aircraft engines and their potential to reduce climate impact and energy consumption. There is a three-step program to achieve these targets: The focus is no longer on CO_2 emissions but on the overall climate impact of air traffic. Alongside CO_2 emissions, that includes non-CO_2 impacts, especially those resulting from emissions of nitrogen oxides and the formation of condensation trails. In keeping with this paradigm shift, MTU realigned Claire in 2022.

In view of the long product cycles in the aviation sector, the climate goals for engines have a long-term perspective. They are set out in memoranda of understanding with stakeholders (airlines, the aviation industry, research, aviation authorities) such as "Fly the Green Deal," the European vision for climate-neutral aviation. In order to have a widespread impact in 2050 and contribute to the achievement of climate neutrality, the products enabling climate-neutral aviation have to be launched on the market well before 2050. Therefore, MTU is also stepping up the development of completely new propulsion concepts that go beyond conventional gas turbines. It is working on these revolutionary engine architectures with partners from industry, science and research, for example, with Bauhaus Luftfahrt and the German Aerospace Center (DLR). In parallel with this, today's engines such as the highly efficient Geared Turbofan (GTF) are being driven forward in collaboration with Pratt & Whitney and combined with sustainable fuels.

Multi-level technology and innovation process

MTU manages technology development for future products using a multi-level process. In the mid term, advanced product designs will be generated in order to derive technology requirements. In the long term, pilot concepts will be drafted with the aid of technology radar, and development of the enabling technologies and innovations will be initiated. The next-generation GTF is one example of an advanced product design. The pilot concepts are the water-enhanced turbofan (WET) and the Flying Fuel Cell™ (FFC). An Innovation Board regularly discusses all topics related to technology and innovation and initiates technology projects and studies.

Evolutionary development based on the Geared Turbofan

Together with its partner, Pratt & Whitney, MTU offers a highly efficient engine concept: the GTF engine family. These engines are used in modern short- and medium-haul aircraft (Airbus A320neo and A220, Embraer E2 family of E-jets). Compared with the previous generation of engines, the GTF family reduces energy consumption and CO_2 emissions by up to 20% per flight. Since it came into service, the GTF engine family has clocked up 26 million flight hours and thus avoided 14 million tons of CO_2 (data from Pratt & Whitney; status year-end 2023). Test flights are currently being carried out with the GTF Advantage, a technologically more advanced version of the GTF for the A320neo family. Moreover, it has already been successfully tested with 100% sustainable aviation fuels (SAFs).

SAFs are sustainably produced drop-in fuels, which can be used without major modifications. They will pay a major role in the transition to climate-neutral flying. MTU is engaged in continuous dialogue with relevant stakeholders and takes part in studies to support the introduction of SAFs, for example, as a member of aireg - Aviation Initiative for Renewable Energy in Germany e.V., an association of airlines, manufacturers, and research institutes. A study on SAFs published by aireg with MTU's involvement shows their enormous potential. In addition, MTU is involved in the Cleantech working group led by the Bavarian Ministry of Economic Affairs, Regional Development and Energy. The aim of this working group is to build a power-to-liquid plant in Bavaria. In the reporting period, MTU also signed a memorandum of understanding on a research alliance to start work on power-to-liquid aviation fuels (PtL). Representatives of MTU, Lufthansa, DLR, Airbus and Munich airport will be working together on this. PtL is the next-generation SAF and is particularly promising from environmental and scalability perspectives. Therefore, leading aviation companies and scientists are pooling their strengths to accelerate the selection of technology, market launch and industrial scale-up of PtL fuels in Germany. The research alliance will also look into other questions such as the impact on local air quality, maintenance requirements and the use of pure PtLs, in other words, fuel without the admixture of fossil-based kerosene.

In order to utilize the full potential of the GTF, MTU and Pratt & Whitney are developing the next generation of this engine. Many of the technologies required for this are being developed as part of the German aviation research program (LuFo). MTU is concentrating on its GTF components: the high-pressure compressor and the high-speed low-pressure turbine.

Revolutionary propulsion concepts for the path to climate neutrality

As described in Claire, evolutionary technology development will not achieve climate neutrality by 2050. Revolutionary propulsion concepts are needed. The concept favored by MTU is the water-enhanced turbofan (WET), which harnesses energy form exhaust emissions from the engine. Water is vaporized by a vaporizer and injected into the combustion chamber. The water required for this is obtained from the exhaust emissions via a condenser. This wet combustion concept brings a massive reduction in emissions of nitrogen oxides. At the same time, it greatly reduces fuel consumption, CO_2 emissions and the formation of condensation trails. Both innovative WET technology and hybrid-electric technologies are being developed as part of SWITCH, one of the biggest technology projects emerging from the first call for projects by the European Commission's Clean Aviation research program. SWITCH started in 2023. The aim is to ground test a hybrid-electric gas turbine for aircraft based on the Geared Turbofan within three years and to bring the WET concept to Technology Readiness Level 4. This Readiness Level describes the successful validation of components in the laboratory. SWITCH involves an international consortium led by MTU. The industrial partners are Airbus, Pratt & Whitney, Collins Aerospace and GKN Aerospace. Other partners are the DLR and universities.

Complete electrification of the powertrain in aircraft is another possibility for a revolutionary propulsion concept. The MTU concept is called the Flying Fuel Cell. Initially, it could be used for regional short-haul flights. This propulsion system does not generate CO_2, NOx or particulate emissions. The Flying Fuel Cell was awarded the status of a funding project in the second Clean Aviation Call in 2023 as the Hydrogen-Electric Zero Emission Propulsion System (HEROPS)

Climate change mitigation in operation of the sites

MTU is continuously reducing greenhouse gas emissions in development, production and maintenance activities at its facilities and thus making a contribution to global climate protection, based on the targets of the Paris Agreement. MTU introduced its ecoRoadmap climate strategy at its headquarters in Munich in 2021. Following the completion of the first stage of expansion to Green Europe, this was extended to all fully consolidated production and maintenance locations (Munich, Hanover, Ludwigsfelde, Rzeszów, Nova Pazova, Vancouver) as Green Global during the reporting period. The objective of Green Global is to reduce MTU's CO_2eq footprint (measured by material Scope 1 and 2 emissions) by 60% by 2030 compared with the reference base (2019) by introducing energy-saving measures, extending in-house emissions-free energy generation on a sustainable basis and stepping up the use of green energy by purchasing green electricity. In addition, it compensates for unavoidable CO_2 emissions at the Munich location. As a result, operation of this location has had a climate-neutral footprint since 2021. The long-term objectives of Green Global are climate-neutral production and maintenance by 2045.

Environmental management at site level

The Executive Board bears responsibility for Group-wide environmental protection at operational level. Standards are implemented through an environmental management system that defines processes, responsibilities and targets at site level. Environmental protection is part of MTU's integrated management system (IMS). The environmental protection criteria apply for all business units and processes and are implemented through process workflows and special company standards. The minimum standard for the operation of machines and facilities such as test stations is set by national legislation and secondary regulations. The Executive Board receives a report on energy consumption (based on production hours) at the Green Global sites as part of the quarterly IMS reporting. Moreover, as part of the ecoRoadmap climate strategy, CO_2 emissions reduction in the operation of the sites is reported regularly to the Executive Board, CR Board and Green Global Board, which comprises the site managers at the fully consolidated production and maintenance facilities. These reports cover the remaining CO_2 emissions and the results of the sustainable measures.

Environmental and climate protection are also an integral part of the global Code of Conduct. Here, the company sets out its commitment to an integrated approach, with environmental and climate protection included in business decisions. Environmental responsibility is explicitly set out in the MTU Principles in the section “Environment and society.” Furthermore, MTU expects sustainable and proactive climate protection from its suppliers. These expectations are set out in a binding code of conduct.

Employees are actively included in environmental protection through information campaigns and training, for example, to encourage them to save energy at work. These outreach measures include the onboarding process for new employees, an environmental action day for apprentices and web-based training in environmental protection, which was introduced in 2022. MTU's support for its employees' environment and climate awareness is an integral part of the Code of Conduct.

Corporate environmental production is organized on a decentralized basis and climate protection is included in the assessment of environmental impacts. Local departments at all production sites are responsible for implementing the relevant measures. The site management bears direct responsibility for environmental protection at each site. They are advised and supported by internal experts. The specialist departments regularly share information on innovations and best practices. The German sites are certified as complying the international management standard ISO 14001 and/or the EU Eco-Audit Regulation (Eco Management and Audit Scheme, EMAS).

More green energy for MTU

Within the framework of the ecoRoadmap climate strategy, local teams draw up sustainability measures, which they implement in collaboration with the relevant departments. In 2023, for example, these included optimizing ventilation systems and improved workflows for engine testing. An important step towards carbon neutrality at the MTU sites is the shift to green energy. That includes photovoltaic (PV) installations to generate green electricity and the use of sustainable aviation fuels (SAFs) for engine tests on test stations. In 2023, the operation of PV installations to generate electricity for captive use was extended at the Rzeszów site. MTU is also driving forward the deep geothermal project at its Munich location; the preparatory construction work started at this site in the reporting period and the drilling tower was erected. In the future, thermal underground water sources could make the supply of heat at the site largely independent of fossil fuels. In this way, MTU wants to help make the city of Munich climate-neutral by 2035. It has rejoined the city's Climate Pact initiative, which continued in 2023. In addition, MTU is stepping up the procurement of green electricity. Electricity consumption at its locations in Poland and Serbia is already completely emission-free.

The production and maintenance locations also have local environmental programs that pre-date the ecoRoadmap. The “Eco Facility 2025” project at the site in Rzeszów, Poland, aims to reduce environmental impacts and enhance environmentally conscious behavior by employees.

Energy consumption 2023

CO_2eq emissions from production and maintenance activities (Scope 1 and 2) mainly result from the energy consumption required to operate the facilities. In the twelve-month performance period from December 2022 to November 2023, which differs from the fiscal reporting period, consumption of energy (Scope 1 and 2) at the MTU Group's production sites totaled 323,951 megawatt hours (MWh) (2022: 305,359 MWh). Energy consumption at the Munich site was 172,926 MWh (2022: 168,195 MWh). The increase in energy consumption was due to higher capacity utilization and the inclusion for the first time of the new site in Serbia in the period under review.

[T39] Energy consumption in megawatt hours

	2023	2022
Scope 1		
Group	178,270	169,712
MTU AG	91,806	86,581
Scope 2		
Group	145,681	135,647
MTU AG	81,120	81,614
Total		
Group	323,951	305,359
MTU AG	172,926	168,195

Scope 1 energy consumption results from the direct consumption of kerosene, natural gas and fuels for mobility. Scope 2 energy consumption is attributable to the consumption of purchased energy (electricity and district heating). Other energy consumption (e.g. other fuels) is not reported because its contribution to total consumption by the MTU Group is not material. The Nova Pazova production site is included in the data for 2023 for the first time. Energy consumption in external testing of engines and industrial gas turbines was 1,501 MWh; SAF combustion during testing at the Hanover location was 235 MWh. This energy consumption is not included in the data in the table.

CO_2 emissions data for 2023

In the period under review (December 2022 to November 2023), CO_2eq emissions from the MTU Group's production sites totaled 49,063 metric tons (t) CO_2eq (2022: 47,125 t). Scope 1 emissions were 39,428 t CO_2eq (2022: 37,738 t). Scope 2 emissions were 9,635 t CO_2eq (2022: 9,387 t). Here too, increasing capacity utilization and the new location in Serbia contributed to the increase in emissions. That said, in Serbia emissions from electricity consumption (Scope 2) were offset by the purchase of allowances, so arithmetically their contribution was zero. MTU undertook offsetting of the remaining Scope 1 and 2 CO_2eq emissions in Munich, so this location had a climate-neutral footprint in 2023.

[T40] CO_2eq emissions in metric tons

	2023	2022
Scope 1		
Group	39,428	37,738
MTU AG	19,640	18,482
Scope 2		
Group	9,635	9,387
MTU AG	5,267	5,307
Total		
Group	49,063	47,125
MTU AG	24,907	23,789

Scope 1 CO_2eq emissions result from direct consumption of the fuels kerosene, natural gas, and fuel for mobility purposes. Scope 2 CO_2eq emissions are attributable to the consumption of purchased energy (electricity and district heating). The Scope 2 emissions are calculated using the energy suppliers' emissions factors (market-based method). Further sources of CO_2eq emissions such as other fuels and refrigerants are not reported because their contribution to the Group's emissions is not material. The Nova Pazova production site is included in the data for 2023 for the first time. Emissions from energy consumption at the site in Canada are now included in full. External testing of engines generated 389 metric tons CO_2eq, while the combustion of SAF in engine testing in Hanover generated 61 metric tons CO_2eq. These emissions are not included in the CO_2eq data for the MTU Group.

Reducing CO_2 is an important ESG target

The high priority given to climate protection is also shown by the fact that reducing CO_2 emissions is an important ESG (environmental, social and governance) target. The ESG-related KPI CO_2 affects the variable compensation of the Executive Board and senior executives. Achievement of the targets is based on the ecoRoadmap climate strategy for emissions from MTU's global production/maintenance locations – Munich, Hanover, Ludwigsfelde, Rzeszów, Vancouver und Nova Pazova. Target achievement is measured by the remaining CO_2 emissions as "maximum remaining CO_2 emissions in kt CO_2 absolute" and the realized "CO_2 abatement through sustainable measures in kt CO_2 absolute" compared with the baseline year 2019 (excluding the site in Serbia because it was not operational in 2019). The twelve-month performance period used for this is December 1, 2022 through November 30, 2023 and thus differs from the reporting period. Thanks to reduction in CO_2 emissions and the additional purchase of green power, the "maximum remaining CO_2 emissions in CO_2 kt absolute" for the relevant performance period of the reporting period were just 49 kt CO_2, which was less than the target of 54 kt CO_2. Moreover, as a result of operational measures and investments in the reporting period and previous periods, a calculated reduction of 4.52 kt CO_2 was achieved in the performance period, so the target saving of 3.54 kt CO_2 was achieved

Initial Scope 3 assessment being prepared

CO_2 emissions that do not arise from the use of energy for the operation of MTU's locations are defined as Scope 3. They include, for example, emissions from upstream value creation by suppliers, emissions relating to capital expenditure, and downstream use of products. Plans to evaluate MTU's Scope 3 emissions are now included in the sustainability strategy and are currently being implemented. The aim is to identify and evaluate all upstream and downstream activities, report on significant categories, and reduce such emissions.

Prevention of bribery and corruption

MTU's long-term business success is based on compliance with the applicable laws and regulations and the company's own internal guidelines. MTU condemns corruption of any kind and all other forms of white-collar crime. A Group-wide Code of Conduct requires employees and management to act with responsibility and integrity and to comply with the law and in-house regulations. The MTU Principles foster consistency, reliability and integrity in MTU's activities. Further regulations such as the MTU standard on donations, sponsorship and customer events contain further details and also help prevent corruption.

As the highest decision-making authority, the CEO bears the responsibility for the company's business ethics and anti-corruption policy. The central functions responsible for ensuring compliance are a Group-wide Compliance Officer and the Compliance Board. The Compliance Officer is responsible, in particular, for ongoing development of MTU's established compliance system to prevent corruption. He works in close consultation with the Compliance Board. The Compliance Board holds both regular and ad-hoc meetings at the invitation of the Compliance Officer. The Compliance Officer submits quarterly reports to the Executive Board and the Supervisory Board's Audit Committee, which in turn reports to the plenary meetings of the Supervisory Board. The Supervisory Board's Audit Committee oversees the Executive Board's compliance activities. In addition, the Compliance Officer has a regular direct reporting line to the CEO.

The company has established a global whistleblower system that allows employees and external stakeholders to report suspected cases of misconduct confidentially to the Compliance Officer. As well as the scope to seek personal contact, the web-based iTrust system can be used to submit reports anonymously. The Compliance Officer examines all allegations received and manages the necessary measures if they prove founded.

Zero tolerance of bribery and corruption

MTU's goal is to prevent bribery and corruption throughout the Group (principle of zero tolerance). To minimize corruption risks, all sales-related consultancy contracts are reviewed by the Compliance Officer, where relevant with the assistance of external service providers, before they are concluded or renewed. The Corporate Audit unit uses audits to monitor the effectiveness, efficiency and appropriateness of MTU's internal control system. There were no confirmed cases of corruption in the reporting period.

External standards and memberships

MTU's compliance management system is based on the requirements of the IDW AsS 980 assurance standard published by the Institute of Public Auditors in Germany and the Good Practice Guidance on Internal Controls, Ethics, and Compliance issued by the Organisation for Economic Co-operation and Development (OECD). It has also signed the standards issued by the Aerospace and Defence Industries Association of Europe (ASD), which aim to prevent bribery and corruption and encourage fair and equal competition. In Germany, this initiative is led by the German Aerospace Industries Association (BDLI). Moreover, these standards are a binding element of contracts with sales consultants.

Activities focus on prevention

MTU strives to continuously develop its compliance system. That includes raising employees' awareness of compliance-related matters, for example, with the aid of training materials on the Code of Conduct for all employees. Training continued in the reporting period. 2,523 employees took part in 2023. Training now comprises voluntary routine training for all employees. As part of the establishment of the MTU Maintenance Serbia location, a process to screen new suppliers in Serbia for corruption risks was defined and has been continuously applied since then.

Occupational safety

MTU places a great deal of importance on the safety of its employees. Protecting the health and safety of employees is defined as follows in the Policy statement on the protection of human rights: “The health of our employees is a top priority for MTU.” Moreover, the policy statement specifies that workplaces are set up in accordance with legal and generally recognized safety and occupational health regulations. In addition, MTU has an internal standard that contains generally valid parameters, rules and definitions of performance indicators. Quarterly Group-wide reporting to the Executive Board is established. Occupational safety is organized on a decentralized basis at MTU and is therefore aligned with site-specific requirements. At the company's production sites, occupational safety is the responsibility of the site management and occupational safety officers are appointed at management level. The responsible local departments implement site-specific occupational safety requirements and report regularly to the site management. The company's production and maintenance sites in Germany, Poland and Canada have local occupational safety committees, which include representatives of the workforce.

Occupational safety is part of MTU's integrated management system (IMS) and is regularly reviewed and driven forward. At the European production sites, workplace regulations that are mandatory for all employees contain important safety rules pertaining to accident prevention, fire protection and what to do in the event of workplace or commuting accidents.

MTU strives to minimize health and safety risks to its employees and third parties, whilst also seeking to make continuous improvements, for example, through regular workplace assessments and continuous prevention work. Workplaces are regularly assessed for any risks and hazards they present for employees so that appropriate measures can be implemented where necessary. To prevent accidents and achieve a lasting reduction in the number of accidents, the local occupational safety specialists record all accidents using uniform criteria (categories 1 to 5 from near-misses to fatal accidents) and analyze them with the employees involved and their managers. Where the analysis reveals significant accident hotspots, the causes are investigated and appropriate steps taken to prevent a recurrence. In addition, near-misses are recorded and evaluated at all production sites. Group-wide safety instruction is mandatory for all employees at least once a year and trained first responders have been named. The responsible local departments also undertake prevention work through training sessions and information on occupational safety issues. Temporary staff are included in occupational safety on the same basis as permanent employees.

The occupational safety management systems at MTU's German locations are certified externally as conforming to standard ISO 45001 Occupational health and safety management systems. MTU sets an annual tolerance threshold for workplace accidents at its production and maintenance locations. This comprises the sum of non-reportable category 3 accidents resulting in between one and three days absence and reportable category 4 accidents resulting in more than three days absence, excluding in each case commuting accidents. In 2023, the tolerance threshold ranged from 0 to 16 accidents – depending on the location. Three of the six production locations were within the target.

[T41] Workplace accidents

	2023	2022
Accidents with ensuing absence		
Group	50	63
MTU AG	11	23
Accident rate per 1,000 employees		
Group	4.0	5.4
MTU AG	1.8	3.9

The accident statistics (excluding commuting accidents) cover the entire workforce, including apprentices, interns, school and university students, employees on limited term contracts and temporary staff. Accidents involving contractors' employees are not included. Accidents during mobile working are included if they are work-related.

In the reporting period, the MTU Group recorded 50 accidents resulting in absence from work (category 3 and 4 accidents resulting in at least one day off). The number of accidents was lower than in the previous year, when 63 accidents were recorded. This was mainly attributable to a sharp drop in accidents at the Munich location from 23 in 2022 to 11 in the reporting period. As a result, the Group-wide accident rate improved from 5.4 accidents per 1,000 employees in 2022 to 4.0 in the reporting period (AG 2023: 1.8 / 2022: 3.9). The number of accidents is therefore low overall and is below the sector average for the German metal-working industry (30.4 reportable accidents per 1,000 employees resulting in more than three days absence (category 4) according to the Wood and Metal Trade Association [BG Holz und Metall], 2022 data). As in previous years, there were no fatal accidents at MTU.

Preventive workplace safety is very important

Preventive workplace safety is implemented on a site-specific basis. Interdepartmental networking supports mutual learning and standardization within MTU. The local occupational safety officers derive proactive measures from regularly updated risk assessments, routine inspections of workplaces and audits of production and administration. The results of such analyses and workplace assessments are used as a basis for the safe and ergonomic design of new workplaces.

All accidents are reported and evaluated. The analyses show that MTU's plant and machinery generally have a very high level of technical and organizational safety, so the cause of many accidents tends to be attributable to behavior rather than to the operation of plant and equipment. Therefore, measures once again focused on promoting safe working practices and enhancing the safety culture. Ergonomic workplace design is given high priority and is continuously checked through workplace inspections and audits. These measures are site-specific. In 2023 they included:

- A health day focusing on aspects of workplace safety (Munich, Hanover and Ludwigsfelde locations)
- An action day on hazardous substances and explosion protection to raise awareness of how to behave at company sites (as part of the safety first campaign at the Munich location)
- Monthly inspections of order, cleanliness and safety and monthly shop-specific instruction in occupational safety and emergency procedures, quarterly workplace safety training for office staff (Hanover site)
- Regular inspections by safety specialists of order, cleanliness and safety in all areas of the site, emergency drills in the cleaning and electroplating facilities (Ludwigsfelde location)
- Installation of "safety mirrors" in the washrooms to remind employees of the need to take personal responsibility for safety at work, introduction of the "Go home safe" campaign to raise awareness of safety-conscious practices and the need to wear personal protective equipment (Nova Pazova site)
- Launch of the "Safety starts with us!" campaign with workshops on the safety culture, special training sessions, e.g., for forklift operators, and posters highlighting safe working practices, plus new laser safety labeling of forklifters and hoists (Rzeszów site).

Employee development

Innovative capability and competitiveness are key success factors in the aviation industry. MTU is convinced that continuous and intensive employee development is essential for this and therefore invests in vocational and further training of all employees and managers and, in particular, in the development of talented employees. In response to these times of change, the company is extending its leadership competencies through future-oriented concepts to enable it to effectively address current and new requirements.

Moreover, in many of the areas in which MTU operates, training requirements are defined by the aviation authorities, for example, through mandatory training on human factors (human error). In addition to industry-specific vocational training, for example, of aircraft maintenance engineers, and dual courses of study aimed at building up knowledge over the long term, MTU encourages further training of its employees. This is a key principle of corporate social responsibility defined in the company's Code of Conduct. Promoting further training and individual development perspectives for employees and managers are also enshrined in the MTU Principles and Group-wide HR strategy. In addition, since 2023, the variable compensation of the Executive Board and senior executives has included a target relating to the area of further training. Through this ESG target (ESG = environmental, social, governance), MTU is strengthening staff training as a success factor for the future.

The Head of People & Culture is responsible for training and development of employees Group-wide. The Executive Board discusses the training indicators once a year (training report), sets priorities, decides on specific training and development initiatives and arranges for them to be implemented.

MTU's commitment to staff training is reflected in a varied training and development offering and its extensive spending on staff training are matched by high demand from employees to enhance to their knowledge and skills. The basis is a Group-wide works agreement in Germany, which guarantees all staff access to training and requires managers to discuss development options with their employees (training interview). In addition, at the three sites in Germany (Munich, Hanover, Ludwigsfelde), the works council is involved in further training of employees, in accordance with the German Codetermination Act. It has a say in the training program. The sites in other countries also have further training regulations. At MTU Aero Engines North America, for example, all employees receive an annual Development Plan that fosters individual development and sets out specific measures.

Employee development and lifelong learning help employees hone and develop their skills. Training requirements are established annually in a standard process either in a training interview where employees discuss training with their manager or by MTU's internal further training team on the basis of divisional/company-level interviews. Completed training and development courses are documented in a training history. Training officers are available to provide advice on needs-focused training.

A multilingual online learning portal is an important basis for extending multimedia and self-directed learning. Increased use of digital and hybrid formats is expected to ensure upskilling of staff at all levels and to provide flexible support. The employee development team uses a rolling training concept so that each year it can respond to specific changes in the needs of MTU and its business environment

Leadership and collaboration are key factors for the development of MTU

MTU drives forward the development of managers as companions and drivers of change to strengthen the company's performance base for the future. The MTU Leadership Values ("We transform, We empower, We create trust") create a common set of values and principles for managers. The values provide guidance and define leadership expectations. In 2023, the company therefore reinforced its leadership value process.

The HR and Organizational Development team provides local support to help managers implement personal change and changes in working situations. The team also facilitates Group-wide change processes such as the Turnaround project at the Hanover location and the Excellence made in Berlin-Brandenburg project at the Ludwigsfelde site. The Business Challenge, a cross-site training initiative for all managers, aims to strengthen an independent, entrepreneurial mindset and action. It was launched in 2023 with a focus on collaboration between the OEM and MRO segments. This training program integrates future-oriented learning technologies such as virtual reality. In addition, a competency model in the area of digitalization is being developed for managers. This will form the basis for future training activities.

Furthermore, MTU offers development opportunities and programs at all levels to identify and support talented employees in the best possible way and to support the professional development of those already appointed to management positions. One central tool is a personal status snapshot, e.g., through participation in a Development Center. 95% of managers appointed to leadership functions at the German locations in 2023 (between January and October) attended a Development Center (MTU AG: 100%).

MTU offers new and experienced managers opportunities to benefit from coaching, either in the context of a change of leadership role or function or through reflection and sparring (boxstop coaching).

Fostering talented women and equality in management are also important to the Group. In the light of this, MTU offers female staff support in their careers through a range of measures such as participation in the company-wide cross mentoring program at its Munich and Berlin-Brandenburg locations, and the internal Network of Engine Women, which promotes networking and exchange on topics such as career advancement. *Further information on diversity and support for women is presented in the Corporate governance statement.*

Revised feedback landscape

Regular feedback from employees is an important indicator of successful teamwork and leadership. In the reporting period, the established employee surveys ("pulse checks") were integrated into a new feedback landscape with additional tools, providing scope for surveys that address specific target groups and topics.

- Pulse checks: Snapshots of satisfaction, commitment and strategy in the company
- Leadership feedback: 180 degree feedback for managers at all levels, geared to individual managers and their leadership role in the context of the Leadership Values. Each manager reflects on their individual feedback report with a coach and derives areas of action to strengthen their personal leadership quality and development.
- Team feedback: A snapshot of teamwork and to foster team dialogue on improvements (from 2024)
- Readiness index: Assessment of the present status of the corporate culture.

The leadership value "We empower" is reflected in a high level of training

Since 2023, the ESG target for the social aspect has been linked to the leadership value "We empower" and is therefore calculated on the basis of staff training. The average number of training days per employee at the German locations (Munich, Hanover, Ludwigsfelde) is now one of the factors determining the variable compensation of Executive Board members. The target was an average of 2.5 days per employee. In 2023, the average was 3.6 days per employee, which was above the target.

In addition to enabling employees to spend time for training, MTU invests extensively in personnel development to encourage the principle of lifelong learning. Group-wide, MTU invested a total of €8.5 million in staff training (2022: €5.4 million). At MTU AG, it spent 5.6 million on staff training (2022: €3.4 million) (costs for internal and external training, excluding vocational training). The increase correlates with the target for average training days per employee and is due, for example, to the future-oriented Business Challenge training initiative for all managers.

Sound vocational training at MTU

Qualified employees with a sound vocational training are also important to MTU. In 2023, it enabled 105 young people in Germany to embark on vocational training. For MTU Maintenance Serbia, it has established training based on the German dual training system in cooperation with the Aviation Academy Belgrade. Furthermore, in the reporting year it signed a cooperation agreement with the Serbian Office for Dual Education to drive forward dual training and business-focused learning. In collaboration with the British Columbia Institute of Technology, MTU Maintenance Canada has opened a training academy that combines theoretical learning with practical experience of engine maintenance. This training program is designed for 36 participants, who will subsequently be able to deepen their specialist knowledge at MTU.

Respecting the human rights of employees

MTU respects the internationally proclaimed human rights set out in the United Nations' Universal Declaration of Human Rights. Human rights are integrated into the corporate culture with the aid of various tools to ensure they are respected and promoted. In particular, MTU strives to prevent employees being exposed to any violation of their human rights (zero-tolerance principle).

MTU is committed to respecting the individuality and dignity of every individual, maintaining equality of opportunity in the workplace and preventing discrimination wherever possible. The protection of human rights, the right to appropriate remuneration as well as recognition of regulations governing employee and union representation under labor and works constitution law are implemented Group-wide through the Code of Conduct. As an employer, MTU aims to create fair working conditions based on legally binding employment contracts and appropriate remuneration. This includes freedom of association and the right to adopt collective agreements. Compliance with the Code of Conduct and ethical principles is also enshrined in the MTU Principles. The MTU Principles stress that respecting human rights is an essential element in MTU's social and societal responsibility. Furthermore, in a policy statement signed by the Executive Board at the beginning of 2023 MTU gives an undertaking that it will respect human rights. This policy statement sets principles for human rights and working conditions as well as responsibilities for complying with human rights.

In Germany, MTU is bound by the General Act on Equal Treatment (AGG), which prohibits discrimination against employees and job applicants. In addition, there are internal guidelines on fair and cooperative conduct, which are designed to prevent bullying, sexual harassment and discrimination. These guidelines were adopted in consultation with the representatives of the workforce and include a systematic process for dealing with complaints.

Revised risk management on human rights

MTU has enhanced its risk management geared to respecting human rights. In this context, a Human Rights Officer was appointed in the reporting period. The Human Rights Officer oversees internal risk management in the area of human rights risks and reports directly to the Chief Sustainability Officer on the Executive Board. Moreover, Human Rights Coordinators have been named at site level and in the relevant departments (Supply Chain, HR, Environmental Protection and Workplace Safety, Communications).

A risk analysis of all fully consolidated Group companies is performed once a year and as required. This is coordinated centrally by the Human Rights Officer. The scope and severity of human rights-related risks are identified using a uniform procedure. This Human Rights Coordinators at the sites are involved in this risk identification process. The risks are then evaluated using a risk matrix, which relates the probability of occurrence to the severity of each risk. A materiality threshold has been set for both the consolidated view at Group level and for each site. The Human Rights Officer also reviews the effectiveness of risk management, especially with a view to preventive and remedial activities.

Reporting channels established

Reporting processes are in place to ensure structured and effective tracking of complaints and reports of breaches of human rights. Reports can be made confidentially within the Group to the Compliance Officer or via the web-based reporting system iTrust. In addition, site-specific reporting structures have been set up. In line with the provisions of, for example, the General Act on Equal Treatment (AGG), every site in Germany has designated contacts who are appropriately trained and to whom employees can address any complaints of discrimination. At MTU Maintenance in Canada, employees can make a formal complaint to the head of Human Resources in the event of discrimination. In addition, employees have the right to submit a formal complaint externally to the BC Human Rights Tribunal. At MTU Aero Engines Polska this function is carried out by an elected employee representative. In addition, employees can report complaints to managers, the works council or the head of human resources. The Executive Board is informed about infringements depending on the severity of their impacts. If a breach of human rights obligations is identified, appropriate action is immediately taken to end it, prevent further breaches in the future, or minimize its scope.

When they join the company, new employees are informed about the principles set out in the Code of Conduct and – in Germany – the General Act on Equal Treatment (AGG), and they undertake to comply with these requirements. In addition, MTU provides regular training on the Code of Conduct at all the company's sites and all hierarchical levels. Furthermore, information on the prevention of discrimination is provided on the company's intranet.

In 2023, there were three substantiated complaints under applicable anti-discrimination laws at sites in the MTU Group. The complaints were investigated, appropriate action has been introduced to remedy the shortcomings, and the cases have been closed.

Respect for human rights in the supply chain

MTU respects the internationally proclaimed human rights set out in the UN Declaration of Human Rights and extends this to its supply chain as well. The aim is to ensure the observance of human rights and fair working conditions. In a policy statement on the protection of human rights adopted in 2023, MTU expresses its commitment to respecting human rights due diligence obligations in the supply chain.

A code of conduct for suppliers is in place to cover the upstream value chain. MTU's suppliers are required to give an undertaking that they will comply with the Code of Conduct for MTU Suppliers, which refers to the ten principles of the UN Global Compact, which are in turn derived from international initiatives and agreements on protecting human rights and the environment. The Code of Conduct requires suppliers to respect and apply human rights, and to make sure that they are not complicit in human rights violations. In particular, it requires observance of labor standards relating to freedom of association, the right to collective bargaining, the ban on forced and child labor, equal pay regardless of gender and the equal treatment of employees. A revised version of the Code of Conduct for MTU Suppliers came into effect in 2023. This sets out human rights requirements with regard to fair pay, occupational health and safety, and environment-related aspects such as handling hazardous substances and waste, and environmental protection and climate protection expectations. MTU also expects its suppliers to obtain a corresponding undertaking from subcontractors and reserves the right to terminate any contract with a supplier without notice if the supplier fails to adopt remedies in the event of breaches of such requirements. In addition, these principles of behavior are contained in the general business conditions and the contractual documents for suppliers.

An annual risk analysis of direct suppliers to fully consolidated Group companies is performed using a standardized tool, taking into account the probability of occurrence and the extent of any damage. This is based on defined ESG-related criteria such as product groups and the countries where they are sourced. This risk analysis is integrated into the established risk process for suppliers. To supplement this, key suppliers are screened for compliance with sustainability criteria, using a scorecard in an ESG assessment tool (ESG = environmental, social, governance). Risk management includes preventive measures and any necessary remedial action. In addition, at MTU Maintenance, a structured supplier evaluation is performed twice a year for suppliers to the German sites.

Various measures are used to achieve the goal of ensuring that human rights are respected in the supply chain. These apply, above all, to the procurement of tantalum, tin, gold and tungsten, which are used in some MTU components. Procurement of these minerals can be problematic because some of them come from Central African mines where the profits may be used specifically to fund armed conflicts that violate human rights. MTU strives to ensure a sustainable and transparent value chain without these "conflict minerals." The company does not procure minerals directly but they enter production and pre-production via the global, multi-step supply chain. The general conditions of business and the templates for contracts with MTU suppliers require information on the origin of minerals. This information is compiled using the EICC/GeSI Conflict Minerals Reporting Template. MTU makes it compulsory for relevant suppliers of components containing minerals declared in the Dodd-Frank Act to provide information once a year on the origin of minerals and specifies that minerals may only be procured from certified mines and smelters (compliant smelter list) in order to ensure that the value chain does not contain conflict minerals. Based on its survey in 2023, MTU has no indication that components from its suppliers contain conflict minerals.

Moreover, in the reporting period there were no indications that suppliers had violated the human rights provisions of the Code of Conduct for MTU Suppliers. Furthermore, MTU did not have to terminate its relationship with any suppliers as a result of breaches of human rights.

Due diligence processes were introduced in the reporting period to implement the requirements for the management of human rights in the supply chain arising from the German Act on Corporate Due Diligence Obligations in the Supply Chain (LkSG). Human Rights Coordinators have been named for supply chains in the OEM and MRO segments. They are responsible for the risk analysis and report to the Group Human Rights Officer.

Responsible international trade

Trade compliance plays a vital role for MTU. One important goal here is to avoid violations of human rights. The provisions of international trade legislation apply to all business units and Group companies, including their employees. Customs and export control laws govern which products, services and technical data MTU is permitted to sell or pass on to whom, for what purpose and where. Compliance with customs legislation and international trade regulations is explicitly stipulated in MTU's Code of Conduct.

Export control law prohibits doing business with specific countries or individuals, and the supply of sensitive goods, transfer of advanced technologies, and provision of military services without explicit authorization by the respective official bodies. This is intended, in particular, to prevent the proliferation of nuclear, biological and chemical weapons, to prevent the supply of military goods or goods that can be used for military purposes to crisis regions, to prevent support for blacklisted individuals and activities that violate human rights, and to protect sovereign security interests. Under customs regulations, MTU is required to provide a precise description, detailed itemization and accurate declaration of the value of all goods intended for import or export. What is more, anti-boycott laws may prohibit individuals and entities from participating in other countries' economic boycotts and restrict the dissemination of information relating to business activities or individuals.

To ensure international trade regulations are implemented throughout the Group, MTU has set up a central international trade department (functional responsibility and supervisory authority for export control, coordination of customs regulations), which draws on the support of external consultants where necessary. To ensure compliance with international trade regulations, harmonized process standards have been introduced Group-wide. These verify conformity with export control regulations and required authorizations prior to the dispatch of documents and components. The head of the international trade department reports disciplinarily to the head of purchasing and has a direct duty to report to the CEO, who is the company's chief export compliance officer.

In the reporting period, MTU continued compulsory training of all employees affected by export control regulations on the basis of a defined training concept. The Internal Compliance Program (ICP) was revised to bring it into line with the legal framework applicable for the reporting period.

Disclosures on the EU taxonomy

Background

A key objective of the EU Action Plan for Financing Sustainable Growth is to reorient capital flows towards sustainable investment. In light of this, Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 (subsequently referred to as the EU Taxonomy Regulation) came into effect in mid-2020. This Regulation contains a uniform and legally binding classification system defining which economic activities are deemed to be “environmentally sustainable” in the EU. The results of this classification have to be reported annually on a company-specific basis.

Article 9 of the EU Taxonomy Regulation sets out the following six environmental objectives:

a) Climate change mitigation (CCM);

b) Climate change adaptation (CCA);

c) Sustainable use and protection of water and marine resources (WTR);

d) Transition to a circular economy (CE);

e) Pollution prevention and control (PPC);

f) Protection and restoration of biodiversity and ecosystems (BIO).

To supplement the requirements on sustainable economic activities within the meaning of the Taxonomy Regulation, the EU Commission has issued delegated acts.

Delegated Regulation (EU) 2021/2139 of June 4, 2021 on the technical screening criteria (Del. Reg. TSC) for the environmental objectives "Climate change mitigation" and "Climate change adaptation" sets out the technical screening criteria to be used to assess the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation and determine whether that economic activity does no significant harm to any of the other environmental objectives.

By contrast Delegated Regulation (EU) 2021/2178 of July 6, 2021 specifying the content and presentation of information to be disclosed (Del. Reg. C&P) addresses the content and presentation of the information to disclosed with respect to environmentally sustainable economic activities and the methodology to comply with the disclosure obligation.

Delegated Regulation (EU) 2023/2486 (Environmental Delegated Act) of June 27, 2023 introduces new economic activities and the corresponding screening criteria for the four other environmental objectives "Sustainable use and protection of water and marine resources," "Transition to a circular economy," "Pollution prevention and control," and "Protection and restoration of biodiversity and ecosystems," which are set out in the EU Taxonomy Regulation. Following examination of all activities for the six environmental objectives, all taxonomy-eligible and taxonomy-aligned MTU activities related to the climate change mitigation objective. Consequently, reporting still focuses solely on this environmental objective.

Delegated Regulation (EU) 2023/2485 of June 27, 2023 consists of amendments to Delegated Regulation (EU) 2021/2139. These amendments comprise the introduction of new technical screening criteria for additional economic activities for the two climate-related objectives (climate change mitigation and climate change adaptation) and amendments to the technical screening criteria for the existing economic activities. It introduces the aviation-related economic activities 3.21 "Manufacturing of aircraft" and 6.18 "Leasing of aircraft." MTU provides disclosures on these economic activities for the first time in the reporting period. As a result, economic activity "3.6 Manufacture of other low carbon technologies," which was reported in the previous year, is no longer applicable. Therefore, no further disclosures are made on this economic activity.

With regard to the classification of an economic activity as "environmentally sustainable" within the meaning of the EU taxonomy, a distinction has to be drawn between those activities that are taxonomy-eligible and those that are taxonomy-aligned. Only those economic activities that are described in the delegated acts on technical screening criteria are deemed to be taxonomy-eligible.

If an economic activity is classified as taxonomy-eligible, the next step is to evaluate whether it makes a substantial contribution to one of the environmental objectives and does no significant harm to another environmental objective and is undertaken in compliance with minimum safeguards in accordance with OECD Guidelines for Multinational Enterprises, the UN Guiding Principles on Business and Human Rights, the ILO core labor standards and the International Bill of Human Rights. The taxonomy-aligned economic activities met these criteria in the reporting period. In addition, attention is paid to the rules on avoiding principal adverse impacts pursuant to Article 18 (2) of the EU Taxonomy Regulation. If all of these criteria are met, the economic activity can be classified as taxonomy-aligned. To assess whether the criteria are met, each economic activity is compared with criteria of Article 3 of Regulation (EU) 2020/852 and the related technical screening criteria to check whether it meets the requirements. For economic activity "7.7 Acquisition and ownership of buildings," for example, checks were performed on the availability of energy performance certificates and compliance with the criteria for energy-efficient operation of buildings.

In view of the obligation to publish a non-financial statement, MTU is required to apply the rules set out in the Taxonomy Regulation. In accordance with Section 315e (1) HGB, the consolidated financial statements of MTU as of December 31, 2023, have been drawn up using the IFRSs.

For the 2023 reporting period, MTU has decided not to make any voluntary disclosures on the taxonomy alignment of the new economic activities "3.21 Manufacturing of aircraft" and "6.18 Leasing of aircraft."

The amounts used to calculate the turnover, CapEx and OpEx KPIs are based on the corresponding figures reported in the consolidated financial statements. If capital expenditures and operating expenditures cannot be allocated to a single engine, allocation keys are applied. The data basis for the allocation keys is the proportion of taxonomy-eligible and taxonomy-aligned turnover. All consolidated companies in the MTU Group are included in the calculation.

The disclosure of taxonomy-eligible and taxonomy-aligned turnover / capital expenditures (CapEx) / operating expenditures (OpEx) as a proportion of the respective total amounts for the MTU Group for the fiscal year 2023 is based on a full analysis of the Group's business activities.

Key performance indicators (KPIs)

[T42] EU Taxonomy KPIs

in percent	Taxonomy-aligned	Taxonomy eligible, but not aligned	Taxonomy non-eligible
Turnover		92	8
CapEx	3	80	17
OpEx	25	58	17

Turnover KPI

The turnover KPI comprises turnover from taxonomy-eligible or taxonomy-aligned economic activities in a fiscal year as a proportion of total turnover in the fiscal year. The basis for calculating the turnover KPI is the net revenue generated by goods and services, including intangibles, in accordance with IAS 1.82(a).

The denominator used to calculate this KPI is the total revenue of €5,363 million in 2023, as reported in the MTU Group's income statement for the fiscal year. This is examined across all Group subsidiaries to identify whether it was generated by taxonomy-eligible or taxonomy-aligned economic activities as defined in the annexes to Delegated Regulation 2021/2139 and Delegated Regulation 2023/2486 to the Taxonomy Regulation.

Based on the current status of the regulations, for the economic objective "climate change mitigation," the economic activity "3.21 Manufacturing of aircraft" was identified as a material revenue-generating economic activity of the MTU Group within the meaning of the delegated act. As a consequence, the turnover generated by MTU from the manufacture, repair, maintenance, retrofitting, design, conversion and upgrading of aircraft, aircraft components and aircraft equipment is classified as taxonomy-eligible.

Since this is MTU's core business, taxonomy-eligible turnover increased from €515 million in the previous year to €4,954 million. This is due to the switch from economic activity "3.6 Manufacture of other low carbon technologies" to economic activity "3.21 Manufacturing of aircraft," which was added to the EU taxonomy in the reporting period and is a far better reflection of MTU's business.

For more detailed information on the turnover KPIs, please see the corresponding table at the end of this section.

CapEx KPI

In accordance with subsection 1.1.2.2. of Annex I to Del. Reg. C&P, the CapEx KPIs show the proportion of capital expenditures which

/ relate to assets or processes associated with taxonomy-eligible and taxonomy-aligned economic activities,
/ are part of a CapEx plan to expand an environmentally sustainable economic activity, or
/ relate to the purchase of products and services from taxonomy-eligible and taxonomy-aligned economic activities.

The basis for calculating capital expenditures comprises additions to property, plant and equipment and intangible assets in the fiscal year under review, before depreciation and amortization and before any remeasurements relating to the year concerned. Capital expenditures also include additions to property, plant and equipment and intangible assets resulting from business combinations (application of IFRSs [IAS 16, 38, 40, 41, IFRS 16] and national accounting methods). Acquired goodwill is not taken into account. Total capital expenditures as defined in the EU Taxonomy Regulation amounted to €511 million in 2023.

Taxonomy eligibility and taxonomy alignment as defined in the Taxonomy Regulation are determined by analyzing the project descriptions of the additions of assets.

The sum of the additions that constitute taxonomy-eligible capital expenditures is €425 million. The largest contribution comes from capital expenditures in connection with economic activities "3.21 Manufacturing of aircraft" and "7.7 Acquisition and ownership of buildings." The taxonomy-eligible capital expenditures amount to 83% of total capital expenditures (previous year: 33%). The year-on-year increase was attributable to the initial use of economic activity "3.21 Manufacturing of aircraft."

Taxonomy-aligned capital expenditures that aim to reduce greenhouse gas emissions and expand the taxonomy-aligned economic activity "3.21 Manufacturing of aircraft" result from the research into new engine technologies relating to economic activity "9.1 Close to market research, development and innovation," as set out in the capital expenditure plans. The capital expenditure plans comprise capital expenditures as well as operating expenditures that cannot be capitalized, which aim to expand taxonomy-aligned economic activities, in this case, to the initial performance of a taxonomy-aligned activity. MTU's current understanding of the EU Taxonomy is that capital expenditure plans can be disclosed if the research and development plans are comprised almost entirely of operating expenditures (OpEx), which are disclosed under the OpEx KPI. By investing in research and development for engine technologies with a low climate impact, MTU is contributing to the climate change adaptation objective. Different methods are used for product-related development of established engine technologies and research work for new engine technologies. Development expenses are determined on the basis of the economic activity to which they relate ("3.21 Manufacturing of aircraft") based on allocation to engine types. Research expenses are allocated to the economic activity "9.1 Close to market research, development and innovation" and serve to extend taxonomy-eligible and taxonomy-aligned economic activities. Overall, the plans relate to various research projects that MTU expects to become taxonomy-aligned under the activity "9.1 Close to market research, development and innovation" in the next six to ten years. The planning horizon for the relevant research projects corresponds to the customary development cycle for aviation technology. MTU is planning taxonomy-aligned expenditures for research and development of €857 million in the aforementioned period. As part of capital expenditure plans in 2023, MTU calculates taxonomy-aligned expenditures of €14 million in connection with economic activity "9.1 Close to market research, development, and innovation." Based on this assessment, 3% of capital expenditures in the year under review were taxonomy-aligned.

The following table presents the taxonomy-eligible CapEx contained in the numerator by asset group.

[T43] Quantitative breakdown of the CapEx numerator at economic activity level

Activity in Mio. €	Property, plant and equipment	Intangible assets	Right-of-use assets	**Sum**	Thereof acquired through business combinations	Thereof part of a CapEx plan
3.21	170	77	1	**248**		
4.22	8			**8**		8
6.18			66	**66**		
7.2	16			**16**		
7.7	32		30	**62**		
8.1	11			**11**		
Total	**237**	**77**	**97**	**411**		**8**

For more detailed information on the CapEx KPIs, please see the corresponding table at the end of this section.

OpEx KPI

In accordance with subsection 1.1.3.2 of Annex I to Del. Reg. C&P, the OpEx KPIs show the proportion of operating expenditures which

- relate to assets or processes associated with taxonomy-eligible and taxonomy-aligned economic activities,
- are part of a CapEx plan to expand an environmentally sustainable economic activity, or
- relate to the purchase of products and services from taxonomy-eligible and taxonomy-aligned economic activities.

The basis for calculating operating expenditures comprises direct, non-capitalized research and development expenses, renovation of buildings, short-term leases, maintenance, and all other direct expenditures relating to day-to-day servicing of property, plant and equipment by the company or third parties that are necessary to ensure the continued and effective use of such assets.

The denominator is derived from the sum of the costs listed above by means of a detailed analysis of accounts and cost centers. The total operating expenditures pursuant to Taxonomy Regulation Article 8 | Annex I Point 1.1.3.1 of Annex I to Del. Reg. C&P are €250 million.

The numerator of the OpEx KPI as defined in the point 1.1.3.2. of Annex I to Del. Reg. C&P is that portion of the operating expenditures contained in the denominator that relates to assets or processes that are associated with taxonomy-eligible economic activities as defined in Annex I (contributes substantially to climate change mitigation) and Annex II (contributes substantially to climate change adaptation) to the Taxonomy Regulation.

A large proportion of the taxonomy-eligible operating expenditures of €239 million comprises non-capitalized research and development expenses. Consequently, the analysis of the taxonomy eligibility of research and development expenses is of material significance for the calculation of the OpEx KPIs.

Taxonomy-aligned operating expenditures are determined on the basis of the capital expenditure plans. The parameters are the same as those outlined in the section above on the CapEx KPI. In 2023, the research and development expenses allocated to activity “9.1 Close to market research, development and innovation” were €71 million. That was 25% of operating expenditures.

Taxonomy-eligible operating expenditures increased from 52% in the previous year to 83%. The year-on-year increase was attributable to the initial use of economic activity “3.21 Manufacturing of aircraft.”

For the other expenditures relating to day-to-day servicing of property, plant and equipment, in the calculation of the OpEx KPI, an amount of €6 million was included in the numerator and €12 million was included in the denominator.

For more detailed information on the OpEx KPIs, please see the corresponding table at the end of this section.

In the calculation of the above KPIs, double-counting of economic activities was avoided by applying various controls, including the documentation of data generation and ensuring that the data are reconcilable with other financial information.

[T44] Template: Proportion of turnover from products or services associated with Taxonomy-aligned economic activities – disclosure covering year 2023

Financial year 2023	2023			Substantial Contribution criteria						DNSH criteria ("Does Not Significantly Harm")									
	Code	Turnover	Proportion of turnover, year 2023	Climate change mitigation	Climate change adaptation	Water	Pollution	Circular economy	Biodiversity	Climate change mitigation	Climate change adaptation	Water	Pollution	Circular economy	Biodiversity	Minimum safeguards	Proportion of Taxonomy- aligned (A.1) or -eligible (A.2) turnover, 2022	Category enabling activity	Category transitional activity
Economic activities		in € million	%	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	%	E[2]	T[2]
A. TAXONOMY-ELIGIBLE ACTIVITIES																			
A.1. Environmentally sustainable activities (Taxonomy-aligned)																			
Turnover of environmentally sustainable activities (Taxonomy-aligned) (A.1)																			
Of which enabling																			
Of which transitional																			
A.2. Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)																			
				EL; N/EL[1]	EL; N/EL[1]	EL; N/EL[1]	EL; N/EL[1]	EL; N/EL[1]	EL; N/EL[1]										
Manufacture of other low carbon-technologies	CCM 3.6.																10		
Manufacturing of aircraft	CCM 3.21	4,857	91	EL	N/EL	N/EL	N/EL	N/EL	N/EL										
Leasing of aircraft	CCM 6.18	97	2	EL	N/EL	N/EL	N/EL	N/EL	N/EL										
Turnover of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		**4,954**	**92**	**100%**													**10**		
A. Turnover of Taxonomy-eligible activities (A.1 + A.2)		**4,954**	**92**	**100%**													**10**		
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																			
Turnover of Taxonomy-non-eligible activities		**409**	**8**														**90**		
TOTAL		**5,363**	**100**														**100**		

[1] Y - Yes, Taxonomy-eligible and Taxonomy-aligned activity with the relevant environmental objective; N - No, Taxonomy-eligible but not Taxonomy-aligned activity with the relevant environmental objective; N/EL- not eligible, Taxonomy non-eligible activity for the relevant environmental objective; EL - Taxonomy-eligible for the relevant environmental objective

[2] E- Enabling activity; T - Transitional activity.

The following table shows the extent of taxonomy eligibility and taxonomy alignment for turnover for each environmental objective:

[T45] Proportion of turnover / total turnover

	Taxonomy-aligned per objective	Taxonomy-eligible per objective
CCM	%	92%
CCA	%	%
WTR	%	%
CE	%	%
PPC	%	%
BIO	%	%

[T46] Template: Proportion of CapEx from products or services associated with Taxonomy-aligned economic activities – disclosure covering year 2023

Financial year 2023	2023			Substantial Contribution criteria						DNSH criteria ("Does Not Significantly Harm")									
	Code	CapEx	Proportion of CapEx, 2023	Climate change mitigation	Climate change adaptation	Water	Pollution	Circular economy	Biodiversity	Climate change mitigation	Climate change adaptation	Water	Pollution	Circular economy	Biodiversity	Minimum safeguards	Proportion of Taxonomy- aligned (A.1) or -eligible (A.2) CapEx, 2022	Category enabling activity	Category transitional activity
Economic activities		in € million	%	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	%	E[2]	T[2]
A. TAXONOMY-ELIGIBLE ACTIVITIES																			
A.1. Environmentally sustainable activities (Taxonomy-aligned)																			
Close to market research, development and innovation	CCM 9.1.	14	3	Y	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	2	E	
CapEx of environmentally sustainable activities (Taxonomy-aligned) (A.1)		**14**	**3**	**100%**													**2**		
Of which enabling		**14**	**3**	**100%**															
Of which transitional																			
A.2. Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)																			
				EL; N/EL[1]	EL; N/EL[1]	EL; N/EL[1]	EL; N/EL[1]	EL; N/EL[1]	EL; N/EL[1]										
Manufacture of other low-carbon technologies	CCM 3.6.																17		
Manufacturing of aircraft	CCM 3.21.	248	49	EL	N/EL	N/EL	N/EL	N/EL	N/EL										
Production of heat/cool from geothermal energy	CCM 4.22.	8	2	EL	N/EL	N/EL	N/EL	N/EL	N/EL										
Leasing of aircraft	CCM 6.18	66	13	EL	N/EL	N/EL	N/EL	N/EL	N/EL										
Construction of new buildings	CCM 7.1.																13		
Renovation of existing buildings	CCM 7.2.	16	3	EL	N/EL	N/EL	N/EL	N/EL	N/EL								1		
Acquisition and ownership of buildings	CCM 7.7.	62	12	EL	N/EL	N/EL	N/EL	N/EL	N/EL										

[T46] Template: Proportion of CapEx from products or services associated with Taxonomy-aligned economic activities – disclosure covering year 2023

Financial year 2023	2023			Substantial Contribution criteria						DNSH criteria ("Does Not Significantly Harm")									
	Code	CapEx	Proportion of CapEx, 2023	Climate change mitigation	Climate change adaptation	Water	Pollution	Circular economy	Biodiversity	Climate change mitigation	Climate change adaptation	Water	Pollution	Circular economy	Biodiversity	Minimum safeguards	Proportion of Taxonomy- aligned (A.1) or -eligible (A.2) CapEx, 2022	Category enabling activity	Category transitional activity
Economic activities		in € million	%	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	%	E[2]	T[2]
Data processing, hosting and related activities	CCM 8.1.	11	2	EL	N/EL	N/EL	N/EL	N/EL	N/EL								1		
CapEx of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		**411**	**80**	**100%**													**31**		
A. CapEx of Taxonomy- eligible activities (A.1 + A.2)		**425**	**83**	**100%**													**33**		
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																			
CapEx of Taxonomy-non-eligible activities		**86**	**17**														**67**		
TOTAL		**511**	**100**														**100**		

[1] Y - Yes, taxonomy-eligible activity that is taxonomy-aligned with the relevant environmental objective; N - No, taxonomy-eligible activity but not taxonomy-aligned with the relevant environmental objective; N/EL- Taxonomy-non-eligible activity for the respective environmental
objective; EL- Taxonomy-eligible activity for the respective environmental objective.

[2] E- Enabling activity; T - Transitional activity.

The following table shows the extent of taxonomy eligibility and taxonomy alignment for CapEx for each environmental objective:

[T47] Proportion of CapEx / total CapEx

	Taxonomy-aligned per objective	Taxonomy-eligible per objective
CCM	3%	83%
CCA	%	%
WTR	%	%
CE	%	%
PPC	%	%
BIO	%	%

[T48] Template: Proportion of OpEx from products or services associated with Taxonomy-aligned economic activities – disclosure covering year 2023

Financial year 2023	2023			Substantial contribution criteria						DNSH criteria ("Does Not Significantly Harm")									
	Code	OpEx	Proportion of OpEx, 2023	Climate change mitigation	Climate change adaptation	Water	Pollution	Circular economy	Biodiversity	Climate change mitigation	Climate change adaptation	Water	Pollution	Circular economy	Biodiversity	Minimum safeguards	Proportion of Taxonomy- aligned (A.1) or -eligible (A.2) OpEx, 2022	Category enabling activity	Category transitional activity
Economic Activities		in € million	%	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	%	E[2]	T[2]
A. TAXONOMY-ELIGIBLE ACTIVITIES																			
A.1. Environmentally sustainable activities (Taxonomy-aligned)																			
Close to market research, development and innovation	CCM 9.1.	71	25	Y	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	25	E	
OpEx of environmentally sustainable activities (Taxonomy-aligned) (A.1)		**71**	**25**	**100%**													**25**		
Of which enabling		**71**	**25**	**100%**															
Of which transitional																			
A.2. Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)																			
				EL; N/EL[1]	EL; N/EL[1]	EL; N/EL[1]	EL; N/EL[1]	EL; N/EL[1]	EL; N/EL[1]										
Manufacturing of aircraft	CCM 3.21.	154	54	EL	N/EL	N/EL	N/EL	N/EL	N/EL										
Manufacture of other low-carbon technologies	CCM 3.6.																20		
Leasing of aircraft	CCM 6.18	6	2	EL	N/EL	N/EL	N/EL	N/EL	N/EL										
Renovation of existing buildings	CCM 7.2.	4	1	EL	N/EL	N/EL	N/EL	N/EL	N/EL								2		
Acquisition and ownership of buildings	CCM 7.7.	3	1	EL	N/EL	N/EL	N/EL	N/EL	N/EL								5		
OpEx of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		**168**	**58**	**100%**													**28**		
A. OpEx of Taxonomy-eligible activities (A.1 + A.2)		**239**	**83**	**100%**													**52**		

[T48] Template: Proportion of OpEx from products or services associated with Taxonomy-aligned economic activities – disclosure covering year 2023

Financial year 2023	2023			Substantial contribution criteria						DNSH criteria ("Does Not Significantly Harm")									
	Code	OpEx	Proportion of OpEx, 2023	Climate change mitigation	Climate change adaptation	Water	Pollution	Circular economy	Biodiversity	Climate change mitigation	Climate change adaptation	Water	Pollution	Circular economy	Biodiversity	Minimum safeguards	Proportion of Taxonomy- aligned (A. 1) or -eligible (A.2) OpEx, 2022	Category enabling activity	Category transitional activity
Economic Activities		in € million	%	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y; N; N/EL[1]	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	%	E[2]	T[2]
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																			
OpEx of Taxonomy-non-eligible activities		**49**	**17**														**48**		
TOTAL		**287**	**100**														**100**		

[1] Y - Yes, taxonomy-eligible activity that is taxonomy-aligned with the relevant environmental objective; N - No, taxonomy-eligible activity but not taxonomy-aligned with the relevant environmental objective; N/EL- Taxonomy-non-eligible activity for the respective environmental
objective; EL- Taxonomy-eligible activity for the respective environmental objective.

[2] E- Enabling activity; T - Transitional activity.

The following table shows the extent of taxonomy eligibility and taxonomy alignment for OpEx for each environmental objective

[T49] Proportion of OpEx / total OpEx

	Taxonomy-aligned per objective	Taxonomy-eligible per objective
CCM	25%	83%
CCA	%	%
WTR	%	%
CE	%	%
PPC	%	%
BIO	%	%

[T50] Template 1: Nuclear and fossil gas related activities

Row	Nuclear energy related activities	
1.	The undertaking carries out, funds or has exposures to research, development, demonstration and deployment of innovative electricity generation facilities that produce energy from nuclear processes with minimal waste from the fuel cycle.	No
2.	The undertaking carries out, funds or has exposures to construction and safe operation of new nuclear installations to produce electricity or process heat, including for the purposes of district heating or industrial processes such as hydrogen production, as well as their safety upgrades, using best available technologies.	No
3.	The undertaking carries out, funds or has exposures to safe operation of existing nuclear installations that produce electricity or process heat, including for the purposes of district heating or industrial processes such as hydrogen production from nuclear energy, as well as their safety upgrades.	No
	Fossil gas related activities	
4.	The undertaking carries out, funds or has exposures to construction or operation of electricity generation facilities that produce electricity using fossil gaseous fuels.	No
5.	The undertaking carries out, funds or has exposures to construction, refurbishment, and operation of combined heat/cool and power generation facilities using fossil gaseous fuels.	No
6.	The undertaking carries out, funds or has exposures to construction, refurbishment and operation of heat generation facilities that produce heat/cool using fossil gaseous fuels.	No

Corporate governance statement

The corporate governance statement forms part of the combined management report of the MTU Group and MTU Aero Engines AG. In accordance with Section 317 (2) sentence 6 of the German Commercial Code (HGB), auditing of the disclosures in accordance with Sections 289f and 315d of the German Commercial Code (HGB) is limited to determining whether the disclosures have been made.

Declaration of conformity with the German Corporate Governance Code by the Executive Board and Supervisory Board of MTU Aero Engines AG, in accordance with Section 161 of the German Stock Corporation Act (AktG)

The Executive Board and the Supervisory Board of MTU Aero Engines AG declare that the recommendations of the Government Commission on the German Corporate Governance Code, as published in the amended version of April 28, 2022, by the Federal Ministry of Justice in the official section of the Federal Gazette, have been and are being complied with in their entirety.

Munich, December 2023

On behalf of the Executive Board

Lars Wagner
CEO

On behalf of the Supervisory Board

Gordon Riske
Vorsitzender

The declaration of conformity is published in *MTU's website at Investor Relations > Corporate governance > Compliance statement*.

Responsible corporate management

Responsible corporate management is very important to MTU Aero Engines AG. The company therefore complies with all the recommendations of the German Corporate Governance Code (GCGC). The term "corporate governance" stands for the management and oversight of a company in accordance with the principles of responsibility and long-term value creation. MTU sees good corporate governance as a natural responsibility that embraces every area of the company. That comprises mutual trust and efficient collaboration between the Executive Board and the Supervisory Board, respect for the shareholders' interests and open and transparent communication with all stakeholders. As a company with global operations, MTU acts in compliance with the relevant national and international standards. In Germany, where the company has its headquarters, these standards are laid down principally in the Stock Corporation Act (AktG), the Codetermination Act (MitbestG) and the GCGC.

The Government Commission on the German Corporate Governance Code concluded a new version of the GCGC on April 28, 2022, and submitted it to the Federal Ministry of Justice and Consumer Protection for review and publication. The GCGC was published in the Federal Gazette on June 27, 2022 and therefore came into effect.

The Executive Board and Supervisory Board closely examined the GCCG during the past fiscal year. This report has been compiled in compliance with the applicable version of the GCGC. A full description of management practices that extend beyond statutory requirements is also provided in this section of the Annual Report.

Corporate management

Accepting responsibility – not only for its products and processes, employees, customers and partners, but in equal measure for the environment and society as a whole – forms an integral part of MTU's corporate culture. Alongside long-term business targets, its corporate strategy therefore gives appropriate consideration to ecological and social objectives. MTU is committed to sustainable development; its contribution goes beyond the statutory requirements. The principal focus areas of MTU's social commitment are environmental protection, human resources policy, and community outreach projects in the neighborhoods of its sites. These commitments are publicly documented on the *MTU website at www.mtu.de under About us > Corporate responsibility.*

The company has a Code of Conduct, which has to be observed by all employees. The Code of Conduct can be downloaded from the company's website at *www.mtu.de under About us > Compliance > Our compliance culture*.

MTU attaches great importance to maintaining an open, ongoing dialogue with its target groups. The company communicates with these groups via many channels, including the intranet and internet, social media, brochures, employee and customer magazines as well as at events. The aim is to generate broad public acceptance.

MTU insists on the finest quality for its products and services. Compliance with quality standards is verified by the relevant authorities and through internal and external audits. The quality standards are published on the *MTU website under Engines > Quality*.

Trust-based cooperation among governing bodies

MTU is a stock corporation organized under German law. Its governing bodies are the Executive Board, the Supervisory Board and the Annual General Meeting. The close cooperation between the Executive Board and the Supervisory Board is based on trust and on intensive, ongoing sharing of information. The Annual General Meeting, in particular, offers shareholders the opportunity to put questions to MTU executives and to exercise their voting rights.

Working procedures of the Executive Board

The goal of the Executive Board in managing MTU is to create, on its own responsibility and in the company's interest, sustainable added value, taking into account the interests of its shareholders, employees and other stakeholders. The Executive Board works as a team, with its members bearing joint responsibility. The members of the Executive Board regularly discuss important actions and events within their respective remits. Their differing qualifications and professional experience are complementary. The company's Executive Board consisted of four members in 2023.

The Supervisory Board is briefed by the Executive Board in a regular, timely and comprehensive manner on the situation of the company, especially in thematically specific meetings of the Supervisory Board and Audit Committee at intervals throughout the fiscal year. The meetings address the company's strategy, the status of planning, the achievement of targets, the company's risk situation and its risk management activities. The Executive Board coordinates decisions of a strategic nature with the Supervisory Board, ensures that such decisions are implemented and discusses the progress made. To ensure the flow of information on the company's results of operations, financial position and net assets, the Executive Board has set up a process in which the Supervisory Board receives written reports on a monthly basis. Any deviations from the planned operational performance are explained in detail to the Supervisory Board. Furthermore, the Chairman of the Supervisory Board is briefed regularly and in person on the company's current situation, significant business transactions and important pending decisions.

The Executive Board also receives regular reports on compliance, i.e., on the measures taken to comply with laws and regulations as well as with company guidelines.

Material decisions by the Executive Board, especially those concerning the budget, require the approval of the Supervisory Board. The Supervisory Board provides information on its work in the *Report of the Supervisory Board* in this Annual Report. The Executive Board's rules of procedure, along with the list of transactions by MTU Aero Engines AG requiring Supervisory Board approval, can be viewed on the company's *website at www.mtu.de under Investor Relations > Corporate governance > Articles of association.*

In line with the recommendation of the GCGC, the Supervisory Board has set an age limit for the members of the Executive Board. Appointment or extension of the appointment to the Executive Board is only possible up until the age of 65.

The currently valid compensation system for the Executive Board was adopted in October 2020 in accordance with the German Act Implementing the Second Shareholder Rights' Directive (ARUG II) and the recommendations of the German Corporate Governance Code. It was approved by a large majority at the Annual General Meeting in 2021. In response to the declining acceptance by MTU shareholders in the following years and its own considerations regarding a reform, in 2023 the Supervisory Board developed a new compensation system with the aid of an independent, external compensation consultant. In December 2023, the Supervisory Board resolved to submit this to the Annual General Meeting 2024 for approval. The remuneration of the Executive Board for the 2023 fiscal year can be found in the section headed *Management compensation report and on MTU's website at Investor Relations > Corporate governance > Management compensation report 2023.*

Working procedures of the Supervisory Board

In line with statutory requirements, the Supervisory Board comprises six shareholder representatives and six employee representatives. The Supervisory Board appoints the Executive Board and monitors and advises it in the management of the company's business. In 2010 the Supervisory Board resolved as a matter of principle to appoint new members to the Executive Board for a term of three years. Key corporate decisions require the approval of the Supervisory Board. All Supervisory Board members are qualified for these tasks and perform their duties properly. The company regularly provides support in the training of Supervisory Board members and is prepared to assume the related costs. In 2023, the Supervisory Board members undertook their training independently.

All members of the Supervisory Board make sure that they have sufficient time to perform their tasks. The statutory limits on the number of mandates and the upper limit of two supervisory board mandates for members of the executive board of a publicly listed company and five supervisory board mandates for other members recommended by the GCGC are taken into account.

In compliance with the GCGC, in 2023 only one former member of the Executive Board of MTU Aero Engines AG, namely Dr. Rainer Martens, had a seat on the Supervisory Board; the GCGC recommends no more than two. The Supervisory Board is responsible for regularly assessing the independence of its own members, especially the shareholder representatives. As a matter of principle, it considers the employee representatives to be independent. It considers that the Supervisory Board is independent if the majority of its members and the majority of the shareholder representatives are considered to be independent. In its present composition, this applies to all members of the Supervisory Board. It also applies to the shareholder representatives Dr. Jürgen M. Geißinger (member of the Supervisory Board until May 11, 2023) and Dr. Joachim Rauhut, who had/have been members of the Supervisory Board of MTU for more than 12 years. The period for which members have served on the Supervisory Board is published in their resumes on the company's website. Given the nature of MTU's business model and the lifecycle of its engines, which is 30 to 40 years in some cases, and the high initial capital expenditure involved, the Executive Board and the Supervisory Board consider long-serving members of the Supervisory Board to be an especially valuable asset to the company and do not take the view that they must necessarily be deemed insufficiently independent after a tenure of 12 to 15 years based on this fact alone. Until the end of 2023, the Supervisory Board set four terms of office as the maximum for membership of the Supervisory Board and considered this to be appropriate for MTU. There are no other indications that the members of the Supervisory Board of MTU lack independence. In this way, independent advice and oversight of the Executive Board is ensured by both the full Supervisory Board and its committees.

The Supervisory Board's rules of procedure provide for the establishment of committees. The Supervisory Board of MTU has four committees: an Audit Committee, a Personnel Committee, a Mediation Committee and a Nomination Committee. The members of the Audit Committee are Dr. Joachim Rauhut (Chairman), Dr. Christine Bortenlänger, Heike Madan (until May 11, 2023), Josef Mailer and Claudia Sowa-Frank (since May 11, 2023). The members of the Personnel Committee and the Mediation Committee are Gordon Riske (Chairman), Dr. Jürgen M. Geißinger (until May 11, 2023) and Dr. Joachim Rauhut (since May 11, 2023), plus the employee representatives Josef Mailer and Daniele Frijia. The members of the Nomination Committee are Gordon Riske (Chairman), Dr. Jürgen M. Geißinger (until May 11, 2023) and Dr. Joachim Rauhut (since May 11, 2023). The Chairman of the Audit Committee, Dr. Joachim Rauhut, has many years of professional experience in various German and foreign industrial companies, most recently as CFO of Wacker Chemie AG, Munich; as a result he has a special understanding of the areas of accounting and auditing within the meaning of Section 100 (5) AktG and therefore meets the requirements for an independent financial expert. Dr. Christine Bortenlänger, who is a member of the Audit Committee, has the qualifications set out in the same provision as an independent financial expert in the area of auditing thanks to many years as a member of the Management Board of Bayerische Börse AG and Managing Director of the public stock exchange in Munich, as well as many years of experience as a member of various supervisory boards and audit committees. Both committee members have in-depth knowledge and experience of internal control processes, in other words, risk and compliance management, the internal control system and internal auditing.

Further details can be found in the section headed *The Supervisory Board*. In addition, the resumes of the Supervisory Board are published on the company's *website at www.mtu.de under About us > Supervisory Board.*

In consultation with the Executive Board, the Supervisory Board ensures long-term succession planning for appointments to the Executive Board. To this end, the Supervisory Board regularly reviews the present term of all Executive Board contracts, taking into account the age of each member, the competency profile of potential candidates and the defined diversity objective for the Executive Board.

The Supervisory Board's rules of procedure contain binding provisions for dealing with conflicts of interest. Such conflicts must be disclosed and, where appropriate, may result in termination of the member's term of office. In addition, the Supervisory Board must explicitly state such potential conflicts of interest when submitting the nominations to the Annual General Meeting. There were no conflicts of interest in the reporting period. With the exception of a consulting agreement between a Supervisory Board member and a supplier of the company, there were no consulting agreements, contracts for services or similar contractual agreements between members of the Supervisory Board and MTU Aero Engines AG or any of its subsidiaries, or with customers, suppliers, lenders or other third parties in 2023. If there are any discussions or resolutions affecting this supplier in future – this was not the case during the reporting period – the Supervisory Board member concerned will not take part in them.

The Supervisory Board has defined specific targets for its composition in a competence profile and drawn up a qualifications matrix showing the current status. Importance is attached to diversity. The competence profile forms the basis for all nominations submitted to the Annual General Meeting. It is published on MTU's website. Nominations submitted by the Supervisory Board to the Annual General Meeting take account of all objectives and also strive to comply with the competence profile for the Supervisory Board as a whole.

MTU's Supervisory Board should be made up of personalities who, in their entirety, provide a range of competences which ensure comprehensive and effective consultancy to and supervision of the Executive Board with regard to the whole gamut of MTU's business activities, including its strategy and approach to new societal and technological challenges. In the opinion of the Supervisory Board, essential elements of this range of competences should include:

- Leadership and governance in a two-tier corporate governance system
- CEO experience in publicly listed companies
- Aerospace industry
- Capital market knowledge & value creation & M&A
- Profound knowledge in financial reporting (including sustainability reporting)
- Profound knowledge in auditing of the annual accounts (including review of sustainability reporting)
- Supply chain & operations
- Risk management & compliance
- Marketing & sales
- International experience in respect to relevant markets
- Sustainability (ESG)
- Future-oriented technologies / Digitalization & IT

In addition to the following qualifications matrix, the resumes of the Supervisory Board members contain details of their main experience and competencies. These are available on the company's *website at About us > Supervisory Board*.

[T51] Qualifications matrix for the Supervisory Board of MTU Aero Engines AG

		Gordon Riske	Josef Mailer	Dr. Christine Bortenlänger	Kai Eisenblätter	Daniele Frijia	Dr.-Ing. Marc Haltrich	Anita Heimerl	Dr. Rainer Martens	Dr. Joachim Rauhut	Claudia Sowa-Frank	Univ.-Prof. Dr. Marion A. Weissenberger-Eibl	Ute Wolf
Professional competence	Leadership and governance in a two-tier corporate governance system	•	•	•		•			•	•	•	•	•
	CEO experience in publicly listed companies	•											
	Aerospace industry		•		•		•	•	•				
	Capital market knowledge & value creation & M&A	•		•					•	•			•
	Supply Chain & operations		•						•		•	•	•
	Risk management & compliance	•		•						•	•		•
	Marketing & sales			•									
	International experience in respect to relevant markets	•							•				
	Sustainability (ESG)	•		•		•			•	•	•	•	•
	Future-oriented technologies								•			•	
	Digitalization & IT	•				•				•		•	•
Financial expertise	Expert in financial reporting (including sustainability reporting)									•			•
	Expert in auditing of the annual accounts (including review of sustainability reporting)			•						•			•
Term of office	Initial appointment	2022	2015	2018	2023	2022	2023	2018	2021	2009	2023	2013	2023
End of term of office		2026	2028	2027	2028	2028	2028	2028	2025	2024	2028	2024	2027
Personal suitability	Independence	•	•	•	•	•	•	•	•	•	•	•	•
	Time availability	•	•	•	•	•	•	•	•	•	•	•	•
	No overboarding	•	•	•	•	•	•	•	•	•	•	•	•
Diversity/ internationality	Gender	M	M	F	M	M	M	F	M	M	F	F	F
	Year of birth	1957	1964	1966	1974	1981	1967	1964	1961	1954	1987	1966	1968
	Nationality	D / USA	D	D	D	D	D / CAN	D	D	D	D	D	D
	International experience	•					•		•	•	•	•	•

In the past financial year, directors' and officers' liability insurance was in effect for the members of MTU's Executive Board and Supervisory Board. The compensation of the members of the Executive Board and Supervisory Board is based on clear and transparent criteria. These are described in the section headed *Management compensation report, and on MTU's website at Investor Relations > Corporate governance > Management compensation report 2023*.

The Supervisory Board regularly assesses how effectively the Supervisory Board as a whole and its committees perform their tasks. At the turn of 2022 / 2023, the Supervisory Board conducted a self-assessment of the work in plenary session, with the aid of an external consultant. This comprised a questionnaire and individual talks with each Supervisory Board member and with the Executive Board. Special attention was paid to the areas of strategy, structures & processes, corporate culture, composition of the Supervisory Board, leadership and ESG. Benchmarking against a selected peer group of companies was also used. The results were discussed with the Supervisory Board at a separate workshop. They form the basis for the ongoing development of the work of the Supervisory Board and for its competence profile. In fall 2023, the Supervisory Board conducted a further evaluation of feedback derived from a questionnaire developed by an external law firm. This examined the provision of information for the Supervisory Board, the discussion culture, the composition of the committees and the preparation of meetings. The Supervisory Board considered its work to be efficient and only adopted a few specific measures to improve the organization of its work.

The Audit Committee also conducted a self-assessment by evaluating feedback from a questionnaire developed by an external law firm. The focal areas of this self-assessment were the tasks and organization of the committee, the skills of its members, oversight of the audit, internal auditing and the risk management system, and financial reporting. The members of the Audit Committee considered the work of the committee to be conducted efficiently and adopted some specific measures to enhance the organization of its work.

Diversity

The diversity of its employees plays a key role in MTU's success. Therefore, diversity is very important to MTU.

In the context of the German law on equal participation of women and men in leadership positions, MTU has set itself goals. In accordance with Section 111 (5) of the German Stock Corporation Act (AktG), the supervisory boards of publicly listed companies and companies that are subject to the German Codetermination Act (MtibestG) are required to set target quotes for women on their supervisory and executive boards. In addition, under Section 76 (4) of the German Stock Corporation Act (AktG) the Executive Board is required to set a target quota for women at the two management levels directly below the Executive Board.

Diversity also plays an important role in the composition of the Supervisory Board. In compliance with both the German Stock Corporation Act (AktG) and the GCGC, the supervisory boards of listed companies subject to the German Codetermination Act (MitbestG) must comprise at least 30% women and at least 30% men. The Supervisory Board has five female members: Dr. Christine Bortenlänger, Anita Heimerl, Claudia Sowa-Frank, Univ.-Prof. Dr. Marion A. Weissenberger-Eibl and Ute Wolf. Two are employee representatives and three are shareholder representatives. The percentage of women on the Supervisory Board therefore increased to 41.7% in 2023.

In addition, the Supervisory Board has set the following goal: International focus is very important for MTU as a global corporation. At least one member of the Supervisory Board should therefore meet the criterion of "internationality." It is already the case that various members of MTU's present Supervisory Board trained or have spent a large part of their professional lives abroad. The members of the Supervisory Board should continue to contribute an international perspective.

The Supervisory Board takes the above-mentioned goals into account when submitting proposals for election by the Annual General Meeting. The same applies to the Nomination Committee, which is responsible for preparing the vote of the Supervisory Board. Since the main criterion for any proposal is still the company's interest, the Supervisory Board proposes the most suitable candidates.

The Supervisory Board's rules of procedure set an age limit for members. Their terms on the Supervisory Board automatically end at the end of the Annual General Meeting following the member's 75th birthday. Moreover, a general limit of twelve years has been set for membership of the Supervisory Board.

The Supervisory Board also places value on fostering diversity in appointments to the Executive Board. The members of the Executive Board have diverse qualifications and work experience, which contribute to their work. In accordance with the provisions of the German Stock Corporation Act (AktG) and the German Corporate Governance Code (GCGC), in 2017 the Supervisory Board set a target quota of 25% for female members of the Executive Board, to be achieved by June 30, 2022. This target had not been achieved by this date because the existing appointments of four men to the Executive Board extended beyond this time horizon. Following the decision by Reiner Winkler to step down and the appointment of Dr. Silke Maurer as a member of the Executive Board with responsibility for OEM Operations and Chief Operating Officer (COO) of MTU with effect from February 1, 2023, the target of 25% female members was achieved; the Executive Board still comprises four members. The Supervisory Board has appointed Dr. Silke Maurer to the company‘s Executive Board for a three-year term of office.

For the management levels below the Executive Board, the Executive Board has set a target quota of 15% (three women) for the first management tier and 20% (18 women) for the second tier, to be achieved by June 30, 2027. As of December 31, 2023 (based on modified reference base), the proportion of women in the first management tier was 10.5% (two women) and the proportion in the second tier was 19.8% (18 women). In view of the pleasing development of the proportion of women in the second management tier, the Executive Board will set a new target in 2024, earlier than had been planned. MTU was therefore able to realize some of the potential effectively, but not in equal measure in all units. In recent years, various initiatives have been introduced to increase the proportion of women in management positions (mentoring, establishment of the Network of Engine Women, etc.); these should have a greater impact in the medium term.

MTU is continuing to pursue its goal of increasing the number of women on all levels. Every area of the company is called upon to work actively toward achieving this corporate objective. The measures focus on recruiting more female potentials and providing more intensive support for female employees during their careers. To this end, MTU invests extensively in the development of its female employees and is involved in mentoring programs and a variety of initiatives. In addition, MTU has an active network for women, with Lars Wagner, CEO, as its advocate, and extensive measures to improve work-life balance, including flexible working hours, support services for families, and scope for teleworking. A full description of diversity management at MTU Aero Engines AG can be found in the current Sustainability report.

Accounting

MTU prepares its consolidated financial statements and interim reports in accordance with the International Financial Reporting Standards (IFRSs). The Executive Board is responsible for this. Financial reporting comprises, in particular, the consolidated financial statements and the Group management report (including the non-financial statement). In addition, the financial reporting and the audit include sustainability reporting, together with the audit thereof. The annual financial statements of MTU Aero Engines AG are compiled in accordance with the provisions of the German Commercial Code (HGB). An internal control system, coupled with the application of uniform accounting policies, should ensure that the results of operations, financial position, net assets and cash flows of all Group companies are accurately presented. In addition, MTU has a differentiated system in place to identify and monitor business and financial risks.

Risk management and control system

The aim of the Executive Board is to ensure that the company has an appropriate and effective risk management and control system. To this end, the Group's risk and opportunity situation and how it is determined are evaluated at an Executive Board meeting at least once a quarter; moreover, every six months, the status of the internal control system is discussed and an overall assessment of its appropriateness and effectiveness is made. Based on this, the Executive Board has not found any indication indication that either the overall entire risk management system or the overall internal control system might not be appropriate or effective. MTU takes findings and suggestions for optimization resulting from audits by the Internal Group Audit function and external audits as an opportunity to make continuous improvements to the risk management system and internal control system. The systems are described in the section headed *Internal control and risk management system*.

The Executive Board reports to the Supervisory Board in a regular and timely manner on existing opportunities and risks, and how they are developing. The Audit Committee of the Supervisory Board discusses risk management. In accordance with Section 107 (3) of the German Stock Corporation Act (AktG), the Audit Committee is explicitly responsible for monitoring the appropriateness and effectiveness of the risk management system, the internal control and auditing systems, the financial reporting process and the audit of the financial statements, and in particular, for assessing the auditors' independence.

Compliance

The corporate culture at MTU is characterized by trust and mutual respect. The observance of legal and ethical rules and principles plays a central role in this respect. These and other aspects of compliance, such as the responsible handling of insider information, are documented in a Code of Conduct, which was revised, agreed and introduced jointly by the Executive Board and the Group Works Council in 2020. This Code of Conduct embodies MTU's corporate culture and reflects its resolve to comply strictly with the relevant laws and internal regulations. It is a Group-wide guide to ethical business relations.

Nevertheless, the risk can never be entirely ruled out that unauthorized behavior of isolated individuals might lead to contravention of the law. MTU does everything in its power to minimize this risk as far as possible, and is committed to preventing acts of misconduct, such as corruption, in the first place through corresponding rules and regular and targeted training, and to uncovering and pursuing any such acts.

Compliance is an important aspect of all management functions at MTU. For example, all managers must check that every member of their staff is familiar with the Code of Conduct and abides by its rules. Reinforcement is provided by internal training.

The central contact for all compliance-related matters in the company is the Compliance Officer, who is a member of the corporate management and reports directly to the Executive Board. The duties of the Compliance Officer focus, first and foremost, on preventing corruption and failure to comply with cartel and insider regulations. The Compliance Officer advises the Executive Board, managers and the managing directors of the individual sites. He draws up training concepts and guidelines and makes recommendations on compliance checks. In addition, the Compliance Officer leads investigations into cases of suspected non-compliance and coordinates the measures taken. Furthermore, he acts as ombudsman. Both employees and third parties such as customers and suppliers can report suspected non-compliance issues to the Compliance Officer confidentially. As well as contacting him personally, they have access to iTrust, a web-based whistleblower system that also allows anonymous reports.

Reports on the Compliance Officer's activities are presented to the Supervisory Board's Audit Committee. The Audit Committee then informs the plenary meetings of the Supervisory Board via a summary of its own meetings. It supervises the Executive Board's compliance activities, including monitoring the measures and training programs implemented by the Compliance Officer and proposing revisions to the compliance rules.

Extensive information, Annual General Meeting, Directors' Dealings

In keeping with the principles of good corporate governance, MTU continually provides extensive and timely information on the company's activities and any major developments in its business situation for shareholders, shareholder associations, financial analysts, the media and other interested parties. MTU strives to ensure that all stakeholders are kept informed in equal measure. Within reason, the Chairman of the Supervisory Board is also prepared to meet with investors to talk about topics specific to the Supervisory Board. He did this at a number of meetings in late 2023 and early 2024. The company publishes an extensive range of information on its website at *www.mtu.de*. It publishes quarterly information on its business activities. Any new developments likely to have a significant impact on the MTU share price are disclosed in the form of ad-hoc releases in accordance with statutory requirements.

Information is also posted on the MTU website whenever members of the Executive Board or Supervisory Board or related persons have purchased or sold MTU shares, debt instruments or share-based derivatives. Section 19 of the European Market Abuse Regulation stipulates that these persons must disclose such transactions if their value in a single calendar year reaches or exceeds €20,000. The total number of shares in MTU Aero Engines AG, Munich, held by members of the company's Executive Board and Supervisory Board as of December 31, 2023, was less than 1% of the company's capital stock.

In the interests of the health of shareholders and employees of MTU, the Executive Board decided, with the consent of the Supervisory Board, to hold the Annual General Meetings in 2020, 2021 and 2022 remotely, without physical attendance by shareholders or their proxies, as permitted by the German Act Concerning Measures Under the Law of Companies, Cooperative Societies, Associations, Foundations and Commonhold Property to Combat the Effects of the Covid-19 Pandemic (GesRuaCOVBekG) and the legal ordinance issued by the Federal Ministry of Justice and Consumer Protection, which came into force on October 29, 2020. MTU decided to hold its Annual General Meeting in 2023 virtually again. In view of the highly international shareholder structure, MTU also considers a modern format for its Annual General Meeting to be appropriate as it enables global participation of shareholders without the need to travel and therefore enables them to exercise their rights as shareholders and to follow the entire Annual General Meeting, including the general discussion, as a live video and audio stream. At the virtual Annual General Meeting in 2023, shareholders were able to request information pursuant to Section 118a (1) sentence 2 no. 4 of the German Stock Corporation Act (AktG) via electronic communication channels during the meeting.

The company supports the exercise of shareholder rights and proxy voting by its shareholders in part by providing voting representatives who exercise voting rights in accordance with instructions received from individual shareholders. Shareholders also have the option of absentee voting. Shareholders can use electronic means to authorize proxies and provide voting instructions to the company's voting representatives up to the beginning of the Annual General Meeting.

Legislation on the introduction of virtual annual general meetings at joint stock companies came into force on July 27, 2022. Joint stock companies can now choose whether a virtual format is preferable to an in-person meeting or whether a hybrid format is an alternative. MTU has decided that it will hold its Annual General Meeting in 2024 as a virtual Annual General Meeting again.

Besides cost and efficiency benefits of a virtual meeting, key considerations for the Executive Board were that it facilities simple access for all MTU shareholders, not just its national shareholders, and sustainability aspects.

Furthermore, the agenda for the Annual General Meeting 2024 does not contain any items that would require a physical presence at the meeting. MTU is convinced that holding the Annual General Meeting in virtual format safeguards shareholders' rights of participation and scope for good interaction between the company and its shareholders in full and without any compromises compared to an in-person Annual General Meeting.

Consolidated financial statements

Consolidated income statement

[T52] Consolidated income statement

in € million	(Note)	2023	2022
Revenue	**(1.)**	**5,363**	**5,330**
Cost of goods sold	(2.)	-5,245	-4,475
Gross profit		**118**	**855**
Research and development expenses	(3.)	-114	-106
Selling expenses	(4.)	-141	-143
General administrative expenses	(5.)	-109	-111
Other operating income	(6.)	43	23
Other operating expenses	(6.)	-57	-72
Profit/loss of companies accounted for using the equity method and of equity investments	(7.)	99	62
Earnings before interest and taxes (EBIT)		**-161**	**508**
Net interest income/expense	(8.)	-12	-22
Other financial income/expense	(9.)	-32	-23
Net financial income/expense		**-45**	**-45**
Earnings before income taxes		**-205**	**463**
Income taxes	(10.)	108	-130
Net income		**-97**	**333**
thereof:			
owners of MTU Aero Engines AG		-102	331
non-controlling interests		5	2
Earnings per share (in €)			
Basic (EPS)	(11.)	-1.90	6.21
Diluted (DEPS)	(11.)	-1.90	6.06

Consolidated statement of comprehensive income

[T53] Consolidated statement of comprehensive income

in € million	(Note)	2023	2022
Net income		**–97**	**333**
Translation differences arising from the financial statements of foreign entities		–10	16
Financial instruments designated as cash flow hedges		91	–34
Items that may subsequently be recycled to profit or loss		81	–18
Actuarial gains/losses on pension obligations and plan assets		–34	151
Item that will not be recycled to profit or loss		–34	151
Other comprehensive income after taxes	**(24.)**	**47**	**134**
Total comprehensive income		**–50**	**466**
thereof:			
owners of MTU Aero Engines AG		–52	461
non-controlling interests		2	6

Consolidated balance sheet – assets

[T54] Assets

in € million	(Note)	Dec. 31, 2023	Dec. 31, 2022
Non-current assets			
Intangible assets & Goodwill	(13.)/(14.)	1,200	1,151
Property, plant and equipment	(13.)/(15.)	1,501	1,384
Financial assets accounted for using the equity method	(16.)	643	628
Other financial assets	(16.)	132	100
Acquired program assets, development work and other assets	(17.)	800	800
Deferred taxes	(34.)	328	84
Total non-current assets		**4,604**	**4,146**
Current assets			
Inventories	(19.)	1,629	1,514
Trade receivables	(20.)	1,010	1,110
Contract assets	(21.)	1,248	1,137
Income tax receivables	(22.)	81	34
Other financial assets	(16.)	679	410
Other assets	(17.)	68	56
Cash and cash equivalents	(23.)	883	823
Total current assets		**5,599**	**5,085**
Total assets		**10,204**	**9,230**

Consolidated balance sheet – equity and liabilities

[T55] Total equity and liabilities

in € million	(Note)	Dec. 31, 2023	Dec. 31, 2022
Equity	**(24.)**		
Subscribed capital		54	53
Capital reserves		579	531
Retained earnings		2,407	2,680
Treasury shares		-11	-13
Accumulated other comprehensive income		-166	-216
Owners of MTU Aero Engines AG		**2,863**	**3,034**
Non-controlling interests		70	72
Total equity		**2,933**	**3,107**
Non-current liabilities			
Pension provisions	(25.)	713	661
Other provisions	(27.)	28	53
Financial liabilities	(28.)	1,495	1,610
Contract liabilities	(30.)	3	5
Other liabilities	(32.)	19	14
Deferred taxes	(34.)		0
Total non-current liabilities		**2,258**	**2,343**
Current liabilities			
Pension provisions	(25.)	30	46
Income tax liabilities	(26.)	37	70
Other provisions	(27.)	129	217
Refund liabilities	(31.)	3,242	2,041
Financial liabilities	(28.)	395	319
Trade payables	(29.)	325	284
Contract liabilities	(30.)	735	708
Other liabilities	(32.)	120	95
Total current liabilities		**5,013**	**3,780**
Total equity and liabilities		**10,204**	**9,230**

Consolidated statement of changes in equity

[T56] Consolidated statement of changes in equity

in € million	Subscribed capital	Capital reserves	Retained earnings	Treasury shares	Accumulated other comprehensive income: Translation differences arising from the financial statements of foreign entities	Accumulated other comprehensive income: Actuarial gains/losses[1]	Accumulated other comprehensive income: Financial instruments designated as cash flow hedges	**Owners of MTU Aero Engines AG**	Non-controlling interests	**Total equity**
Carrying amount as of Jan. 1, 2022	**53**	**529**	**2,461**	**-17**	**19**	**-321**	**-43**	**2,681**	**79**	**2,760**
Net income			331					331	2	333
Other comprehensive income					12	151	-34	129	4	134
Total comprehensive income			**331**		**12**	**151**	**-34**	**461**	**6**	**466**
Dividend payment			-112					-112	-12	-124
Convertible bond 2016	0	2						2		2
Restricted Stock Plan		-1		3				3		3
Carrying amount as of Dec. 31, 2022	**53**	**531**	**2,680**	**-13**	**32**	**-170**	**-77**	**3,034**	**72**	**3,107**
Net income			-102					-102	5	-97
Other comprehensive income					-7	-34	91	50	-3	47
Total comprehensive income			**-102**		**-7**	**-34**	**91**	**-52**	**2**	**-50**
Dividend payment			-171					-171	-3	-174
Other transactions with non-controlling interests[2]									-1	-1
Convertible bond 2016	0	45						46		46
Restricted Stock Plan (LTI)		3		2				6		6
Carrying amount as of Dec. 31, 2023	**54**	**579**	**2,407**	**-11**	**24**	**-204**	**14**	**2,863**	**70**	**2,933**

[1] Refers to pension obligations and plan assets

[2] Refers to purchases and sales of participations or capital measures.

Consolidated cash flow statement

[T57] Consolidated cash flow statement

in € million	(Note)	2023	2022
Operating activities			
Net income		-97	333
Non-cash amortization (including impairment) of capitalized program assets and acquired development work		50	109
Amortization, depreciation, write-ups and impairment of other non-current assets		282	247
Profit/loss of companies accounted for using the equity method	(7.)	-97	-60
Profit/loss of equity investments	(7.)	-2	-3
Dividends received		56	76
Gains/losses on the disposal of assets		1	-0
Result effective change in pension provisions	(25.)	-14	-19
Change in other provisions	(27.)	-32	34
Change in refund liabilities (not included in working capital)	(31.)	1,010	204
Change in working capital		-81	-293
Other non-cash items		34	43
Net interest income/expense	(8.)	12	22
Interest paid		-28	-26
Interest received		29	7
Income taxes	(10.)	-108	130
Income taxes paid		-237	-76
Cash flow from operating activities		**777**	**728**
Investing activities			
Capital expenditure on:			
Intangible assets	(14.)	-80	-59

in € million	(Note)	2023	2022
Property, plant and equipment	(15.)	-332	-322
Financial assets	(16.)	-33	-51
Acquired program assets, development work and other assets		-21	-21
Proceeds from disposal of:			
intangible assets/property, plant and equipment	(14.) / (15.)	30	16
financial assets (previously consolidated subsidiaries)			14
other financial assets	(16.)	16	23
Cash flow from investing activities		**-420**	**-400**
Financing activities			
Cash outflow from other bonds and notes	(28.)	-0	-0
Settlement of lease liabilities	(28.)	-81	-64
Settlement of purchase price liabilities for stakes in programs		-44	-36
Increase in other financial liabilities	(28.)	7	
Repayment of other financial liabilities	(28.)		-0
Dividend paid to shareholders of MTU AG/ to non-controlling interests		-174	-124
Capital repayment/ increase		-1	0
Cash flow from financing activities		**-294**	**-224**
Net change in cash and cash equivalents during the reporting period		**64**	**104**
Effect of translation differences on cash and cash equivalents		-3	-3
Cash and cash equivalents at beginning of period (Jan. 1)		823	722
Cash and cash equivalents as of Dec. 31		**883**	**823**

Consolidated segment report

[T58] Consolidated segment report

in € million	Commercial and military engine business (OEM segment) 2023	Commercial and military engine business (OEM segment) 2022	Commercial maintenance business (MRO segment) 2023	Commercial maintenance business (MRO segment) 2022	Total reportable segments 2023	Total reportable segments 2022	Consolidation/ reconciliation 2023	Consolidation/ reconciliation 2022	MTU Group 2023	MTU Group 2022
External revenue	1,181	1,766	4,183	3,564	5,363	5,330			5,363	5,330
Revenue from intersegment sales	69	65	42	52	111	117	–111	–117		
Total revenue	**1,249**	**1,831**	**4,225**	**3,616**	**5,474**	**5,447**	**–111**	**–117**	**5,363**	**5,330**
Adjusted revenue	2,212	1,831	4,225	3,616	6,437	5,447	–111	–117	6,326	5,330
Gross profit	**–266**	**500**	**383**	**357**	**117**	**857**	**1**	**–2**	**118**	**855**
Amortization of intangible assets	50	45	8	9	58	54			58	54
Depreciation of property, plant and equipment	115	113	102	77	218	190			218	190
Non-cash amortization of capitalized program assets and acquired development work	50	47			50	47			50	47
Impairment losses		65	6	1	6	66			6	66
Amortization/value adjustments/depreciation/impairment losses	**215**	**271**	**116**	**87**	**331**	**357**			**331**	**357**
Earnings before interest and taxes (EBIT)	**–508**	**268**	**346**	**239**	**–162**	**507**	**1**	**0**	**–161**	**508**
thereof: special item "effects of purchase price allocation"	18	18	0	2	19	20			19	20
thereof: special item "effects from increase in the stake in IAE-V2500"	23	23			23	23			23	23
thereof: special item "Other material aperiodic contribution to earnings" - "Geared Turbofan fleet management plan"	932				932				932	
thereof: special item "impairment losses" – "program GE T408"		24				24				24
thereof: special item "impairment losses" – "Russia-Ukraine war"		53	–21	27	–21	81			–21	81
thereof: special item "Other material aperiodic contribution to earnings" – "consortial major litigation and claims"	23		3		26				26	
Adjusted earnings before interest and taxes (adjusted EBIT)	**488**	**387**	**329**	**268**	**817**	**655**	**1**	**0**	**818**	**655**
Profit/loss of companies accounted for using the equity method	27	9	70	51	97	60			97	60
Carrying amount of companies accounted for using the equity method	305	311	338	317	643	628			643	628
Assets	**8,802**	**7,793**	**3,273**	**3,056**	**12,075**	**10,849**	**–1,871**	**–1,619**	**10,204**	**9,230**
Liabilities	**6,375**	**5,247**	**2,267**	**2,158**	**8,642**	**7,406**	**–1,371**	**–1,282**	**7,271**	**6,124**

	Commercial and military engine business (OEM segment)		Commercial maintenance business (MRO segment)		Total reportable segments		Consolidation/ reconciliation		MTU Group	
in € million	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022
Material other non-cash items	**2**	**8**	**31**	**34**	**34**	**43**			**34**	**43**
Capital expenditure:										
Intangible assets	78	58	4	2	82	60	-0		82	60
Property, plant and equipment	218	157	211	230	429	387			429	387
Acquired program assets, development work and other assets	25	26			25	26			25	26
Total capital expenditure	**321**	**240**	**215**	**232**	**536**	**472**	**-0**		**536**	**472**
Key segment data:										
EBIT (in % of revenue)	-40.7	14.7	8.2	6.6	-3.0	9.3			-3.0	9.5
Adjusted EBIT (in % of revenue)	22.1	21.1	7.8	7.4	12.7	12.0			12.9	12.3

The key indicator used by management to measure the operating performance of each segment is adjusted earnings before interest and taxes (adjusted EBIT).

Intersegment sales are transacted at arm's length at standard market terms and invoiced in the same way as transactions with external third parties. The material other non-cash items in the reporting period included gains arising from foreign currency translation.

In the reporting period, three major customers each accounted for more than 10% of total Group revenue. Business with the largest customer generated revenue of €840 million (previous year: €758 million), with the second-largest customer €724 million (previous year: €1,335 million) and with the third largest customer 721 million (previous year: €494 million). Based on revenue after adjustment for the Geared Turbofan fleet management plan, revenue generated with the second-largest customer was €1,641 million in the reporting period.

The revenue from the largest customers stemmed from both segments.

For more information on segment reporting, please see *section V. Segment information*.

I. Accounting principles and policies

Principles and methods

The business activities of MTU Aero Engines AG, Munich, Germany, and its consolidated companies (subsequently referred to as the Group, Group companies or MTU) extend over the entire lifecycle of an engine program – from development, structural design, testing and manufacturing of new commercial and military engines and spare parts through to the maintenance, repair and overhaul of commercial and military engines. MTU divides its activities into two operating segments: the commercial and military engine business (OEM) and the commercial maintenance business (MRO).

MTU's commercial and military engine business (OEM segment) covers the development and manufacturing of modules, components and spare parts for engine programs, and in some cases final assembly. The military engine business additionally includes the provision of maintenance services. The MRO segment consists of the commercial maintenance business (MRO), which covers all activities relating to the maintenance, repair and overhaul of commercial engines as well as associated services.

The parent company, MTU Aero Engines AG, which has its registered office at Dachauer Strasse 665, 80995 Munich, Germany, is registered under reference HRB 157 206 in the commercial registry of the district court of Munich.

The consolidated financial statements were approved for publication by the Executive Board of MTU Aero Engines AG, Munich, on March 18, 2024.

MTU's consolidated financial statements were prepared in accordance with the International Financial Reporting Standards (IFRSs) as applicable in the European Union (EU) and the supplementary requirements of Section 315e (1) of the German Commercial Code (HGB). MTU applied all IFRSs issued by the International Accounting Standards Board (IASB) that were in effect at the time these consolidated financial statements were prepared and had been endorsed by the European Commission for use in the EU. Amounts are presented in euros.

The consolidated financial statements have been prepared on a going concern basis. This management assessment is based on the multi-year business planning, taking into account the proven past achievement of the plans and the complementary system for the early identification of risks. Furthermore, the management assessment is supported by the company's future earnings capability, an order backlog covering several years and sound financing combined with high levels of liquidity.

The consolidated financial statements for the period ended December 31, 2023, and the combined management report for fiscal year 2023 were prepared in accordance with Section 315e (1) of the German Commercial Code (HGB) and have been published in the company register.

The fiscal year is identical to the calendar year. Comparative figures for the previous year are included in the consolidated financial statements.

In the presentation of the balance sheet, a distinction is made between non-current and current assets and liabilities. A more detailed maturity analysis of certain items is provided in the notes to the consolidated financial statements. An asset or liability is classified as current if:

- it is held primarily for trading purposes,
- it is generally expected to be realized or repaid respectively within 12 months of the reporting date,
- it is cash or a cash equivalent, unless the exchange or utilization of the asset for the purpose of fulfilling an obligation is restricted for a period of at least 12 months after the reporting date, or
- it comprises a refund liability that arises in the course of MTU's normal operating cycle, even if, in the absence of specific contractual deadlines, effective settlement only takes place after 12 months.

The income statement is prepared using the cost-of-sales method in which revenue is balanced against the expenses incurred to generate it, and expenses are classified by function: production, research and development, distribution, and general administration. The consolidated financial statements are denominated in euros. All amounts are stated in millions of euros (€ million), unless otherwise specified. Due to rounding, some of the rounded figures presented in these consolidated financial statements may not correspond exactly to the sum of the individual figures, and it may not be possible to calculate some of the individual percentages from the rounded absolute figures presented. "0" represents amounts of between zero and half a million euros, while "-0" represents amounts between zero and minus half a million euros. Amounts of exactly €0.00 are shown by an empty field in tables.

Accounting standards, interpretations, and amended standards and interpretations applied for the first time in fiscal year 2023

The following new and amended accounting standards and interpretations were applied for the first time in these consolidated financial statements:

[T59] New and amended standards

Standard	Title
IAS 1	Amendment: Disclosure of Accounting Policies
IAS 8	Amendment: Definition of Accounting Estimates
IAS 12	Amendment: Deferred Tax related to Assets and Liabilities arising from a Single Transaction
IAS 12	Amendment: International Tax Reform – Pillar 2 Model Rules
IFRS 17	Insurance Contracts
IFRS 17	Amendment: Application of IFRS 17 and IFRS 9 – Comparative Information

Application of these standards did not result in any significant changes to the MTU Group's financial reporting.

Accounting standards, interpretations, and amended standards and interpretations issued but not yet applied

The following new and amended standards and interpretations have been issued by the IASB but were not yet effective for annual periods beginning on January 1, 2023:

[T60] Accounting standards and interpretations not yet applied

Standard	Title
IAS 1	Amendments: Classification of Liabilities as Current or Non-current[1]
IAS 1	Amendments: Non-current Liabilities with Covenants[1]
IAS 21	Amendments: Effects of Changes in Exchange Rates – Lack of Exchangeability[2] [3]
IAS 7 and IFRS 7	Amendments: Supplier Finance Arrangements[1] [3]
IFRS 16	Amendments: Lease Liability in a Sale and Leaseback[1]

[1] Effective for annual periods beginning on or after January 1, 2024.
[2] Effective for annual periods beginning on or after January 1, 2025.
[3] Still awaiting EU endorsement.

MTU does not apply standards, interpretations and amendments before the effective date, taking into account endorsement by the EU.

In view of the MTU Group's current business model, the aforementioned standards are not expected to have a material impact on MTU's financial reporting in future reporting periods.

Application of Section 264 (3) of the German Commercial Code (HGB)

MTU Maintenance Hannover GmbH, Langenhagen, Germany, and MTU Maintenance Berlin-Brandenburg GmbH, Ludwigsfelde, Germany, are consolidated affiliated companies of MTU Aero Engines AG, Munich. These companies apply the exemption in Section 264 (3) of the German Commercial Code (HGB).

Consolidated group

As of December 31, 2023, the Group including MTU Aero Engines AG, Munich, comprised 34 companies. These are presented in the list of major shareholdings in *Note 38. Related party disclosures*, which contains details of the method of inclusion in the consolidated financial statements.

Changes in the consolidated group

In the reporting period, the number of Group companies and equity investments in associates and joint ventures included in the consolidated financial statements changed as follows:

[T61] Consolidated group

	Germany	International	Total
Shareholdings as of Dec. 31, 2021	**13**	**21**	**34**
Additions 2022			
Disposals 2022	-1		-1
Shareholdings as of Dec. 31, 2022	**12**	**21**	**33**
Additions 2023	1		1
Disposals 2023			
Shareholdings as of Dec. 31, 2023	**13**	**21**	**34**

On April 13, 2023, MTU Aero Engines AG, Munich, acquired 100% of the shares in eMoSys GmbH, Starnberg, Germany, for €6 million.

Subsidiaries

The consolidated financial statements of MTU Aero Engines AG, Munich, include all material companies in which MTU Aero Engines AG, Munich, has a controlling interest as defined by IFRS 10, in other words entities in which MTU, as the investor, is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee.

Associates

Associates are companies over which MTU exercises significant influence in accordance with IAS 28 and which are neither subsidiaries nor joint ventures. Stakes in such companies, where MTU is directly or indirectly able to significantly influence decisions on financial and business policy, are included in the consolidated financial statements using the equity method. MTU holds an 18% share in the voting rights of each IAE International Aero Engines LLC, East Hartford, CT, USA, and of PW1100G-JM Engine Leasing LLC, East Hartford, CT, USA. The contractual business relationships, management agreements and representation on governance bodies give MTU significant influence, thus justifying their classification as associates from MTU's perspective.

Joint ventures

Joint ventures are companies over which MTU exercises joint control together with one or more other entities in accordance with IFRS 11. MTU's joint ventures, namely

- AES Aerospace Embedded Solutions GmbH, Munich, Germany;
- Airfoil Services Sdn. Bhd., Kota Damansara, Malaysia;
- Ceramic Coating Center S.A.S., Paris, France;
- EME Aero sp. z o.o., Jasionka, Poland;
- MTU Maintenance Zhuhai Co. Ltd., Zhuhai, China; and
- Pratt & Whitney Canada Customer Service Centre Europe GmbH, Ludwigsfelde, Germany

are included in the consolidated financial statements using the equity method of accounting.

Materiality criterion – Non-material investments

For the purpose of inclusion in the consolidated financial statements (by consolidation or the equity method), the materiality of investments is consistently evaluated using the following criteria:

- Shareholding as a proportion of the total carrying amount of all shares in the affiliated companies
- Relative share of average consolidated annual net income in the past three years (based on the income statement)
- Share of total assets of the affiliated company (based on balance sheet)

On this basis, there was no change in the consolidation of investments or the method of inclusion in the balance sheet, either in the reporting period or in the previous year.

Consolidation principles

In accordance with IFRS 3, the Group accounts for business combinations using the acquisition method, provided that the acquired set of activities and assets meets the definition of a business and the Group has obtained control. When determining whether a specific set of activities and assets constitutes a business, the Group assesses whether the set of acquired assets and activities comprises at least one input and one substantial process and whether the acquired set of activities and assets can generate outputs. Under the acquisition method, the acquirer accounts for the business combination by measuring and recognizing the identifiable assets acquired and the liabilities and contingent liabilities assumed. The identifiable assets, liabilities, and contingent liabilities are measured at fair value. Any excess of the purchase price over the net fair value of the acquired assets is recognized as goodwill and tested for impairment in accordance with IAS 36 at least annually, or at shorter intervals if there is an indication that the asset might be impaired. If the Group's interest in the net fair value of the acquired identifiable net assets exceeds the cost of the business combination, that excess (negative goodwill) is recognized in the income statement after remeasurement as required by IFRS 3.36.

Non-controlling interests are initially measured on the basis of their proportion of the identifiable net assets of the acquiree at acquisition date. Changes in the share of a subsidiary held by the Group that do not lead to a loss of control are accounted for as an equity transaction between owners.

The effects of intragroup transactions are eliminated. Receivables and liabilities as well as expenses and income between the consolidated companies are offset against each other. Intragroup profits and losses are eliminated.

Currency translation

Transactions in foreign currencies are translated to the functional currency using the exchange rate prevailing on the date of the transaction. At the reporting date, monetary items are translated using the exchange rate prevailing at that date, whereas non-monetary items are translated using the exchange rate prevailing on the actual transaction date. The translated amounts are recognized in revenue, cost of goods sold, other function costs, or net financial income/expense depending on the underlying transaction.

As a general principle, translation differences are recognized in profit or loss for the period and presented in net financial income/expense. Revenue from currency translation does not constitute revenue within the meaning of IFRS 15.

Contrary to the general principle, currency translation differences relating to the following items are recognized in other comprehensive income and thus outside of profit or loss:

- Qualifying cash flow hedges, provided that they are effective.

The assets and liabilities of Group companies whose functional currency is not the euro are translated from the corresponding local currency to the euro using the closing exchange rate at the reporting date. In the income statements of foreign Group companies whose functional currency is not the euro, income and expense items are translated each month using the exchange rate applicable at the end of the month; the average exchange rate for the year can be derived from these end-of-month exchange rates. The translation differences arising in this way are recognized in other comprehensive income and do not have any impact on the net profit/loss for the year.

In the event of full or partial disposal of a foreign business, which results in loss of control or the loss of significant influence or joint control, the accumulated amount recognized in currency translation reserves in connection with the foreign business up to this date is reclassified to profit or loss as part of the disposal gain/loss.

In the event of only partial disposal, without loss of control, of a subsidiary that includes a foreign business, the corresponding portion of the accumulated translation differences is allocated to non-controlling interests.

If the Group sells part of an associate or joint venture that includes a foreign business but retains a significant influence or joint control, the corresponding portion of the accumulated currency translation differences are reclassified to profit or loss.

Accounting policies

The consolidated financial statements of MTU Aero Engines AG, Munich, and its subsidiaries are prepared using uniform accounting policies based on the International Financial Reporting Standards (IFRSs).

Revenue

IFRS 15 states that revenue from contracts with customers should be recognized as an amount that reflects the consideration to which the entity expects to be entitled in exchange for the promised goods or services as part of its contractual performance obligation. A five-step model framework is used to identify and measure this revenue:

1. Identify the contract(s) with the customer,
2. Identify each party's performance obligations in the contract,
3. Determine the transaction price,
4. Allocate the transaction price to the performance obligations in the contract,
5. Recognize revenue when (or as) the entity satisfies a performance obligation.

Identification of the contracts with the customer

Contracts may be entered into in writing, orally or implicitly in the ordinary course of business. In each case, the contracts must be enforceable and have commercial substance. A contract with a customer will be within the scope of IFRS 15 if these conditions are met and as soon as it is "probable" that MTU will collect the consideration to which it is entitled for the performance of the contractually agreed work and services. When the probability that the consideration will be collected is assessed, the customer's ability and intention to deliver the consideration by the due date are taken into account. MTU considers contracts to be within the scope of IFRS 15 if:

- all parties are in agreement with the terms of the contract,
- each party's rights in relation to the goods or services to be transferred can be identified,
- the payment terms for the goods or services to be transferred can be identified,
- the contract has commercial substance, and
- it is probable that the consideration to which MTU is entitled in exchange for the goods or services will be collected.

If, at the reporting date, a contract with a customer does not yet meet all of the above criteria, the company will continue to re-assess the contract at regular intervals until such time as the criteria are met. From this point onward, IFRS 15 will be applied to the contract.

In the case of risk- and revenue-sharing partnerships in the commercial engine business (OEM segment), MTU identifies the consortium leader that exercises control over the relevant engine program or, in individual cases, special-purpose consortia (OEMs), as customers within the meaning of IFRS 15. In the case of risk- and revenue-sharing partnerships with joint consortium leadership – as is the standard for the military engine business (OEM segment) – by contrast, the customer served by the consortium (e.g., an air force) is identified as the customer within the meaning of IFRS 15. In the commercial maintenance business (MRO segment), MTU identifies customers within the meaning of IFRS 15 on the basis of the regular direct customer (e.g., aircraft operator, leasing company).

Contract modification

Given the long operating cycles in the engine industry, it is common practice to conclude long-term contracts. These are regularly modified to provide more detailed specifications or optimize the exchange of services. In particular, the renewal of existing contracts is also regarded as a contract modification. A contract modification in accordance with IFRS 15 exists if the changes either create new rights and obligations or modify existing enforceable rights and obligations, thus altering the scope of the contract and/or the agreed price. Such changes must be accounted for either by modifying the existing contract or by establishing a separate, new contract. In the commercial maintenance business (MRO segment) in particular, maintenance for engine fleets can be arranged by way of long-term service agreements. The renewal of such long-term service agreements is usually accounted for as the termination of the old contract and the simultaneous establishment of a new contract.

Identification of performance obligations

Once a contract has been identified as being within the scope of IFRS 15, its terms and conditions and the customary business practices in the sector are assessed in order to identify the promised goods or services (or bundle of goods and services) to be treated as distinct performance obligations and subsequently recognized. A good or service is distinct if the customer can benefit from the good or services on its own or in conjunction with other readily available resources, and if the promise to transfer the good or services to the customer is separately identifiable from other promises in the contract.

The material categories of performance obligations recognized by MTU are as follows:

- manufacturing/delivery of aircraft engine components, including their assembly into modules
- development/provision of engine technology
- technical services relating to the development, manufacturing and repair of engines and toll manufacturing
- Maintenance and overhaul of engines and gas turbines, including fleet maintenance management and the related support services (e.g., engine leasing)

Determination of the transaction price

The transaction price is the amount of consideration to which a company is entitled in exchange for the transfer of goods or delivery of services to a customer. Where a contract contains elements of variable consideration, the company will estimate the amount of variable consideration to which it is entitled under the terms of the contract.

Variable consideration included in the transaction price is only recognized as revenue to the extent that MTU considers a subsequent revenue reversal highly improbable.

The agreed transaction price is reduced in the case of payments to customers. MTU defines such payments to customers as payments that are not made in exchange for identifiable goods and services that are independent of MTU's performance obligations toward its customer. Such payments to customers are customary in the sector, especially in the commercial engine business (OEM segment) due to risk- and revenue-sharing structures. The payments relate to compensation for engine development and certification, measures to gain market access and customer acquisition, and, where relevant, joint liability for warranty risks, contractual penalties and other price and costs risks in connection with the respective engine programs.

Allocation of the transaction price to performance obligations

Where a contract comprises multiple performance obligations, the transaction price is allocated to the performance obligations by reference to their standalone selling prices. Standalone selling prices are based whenever possible on information that is observable in the market. Certain variable consideration components are allocated in full to a performance obligation by reference to their economic substance. Factors taken into account here are that the performance obligation is substantially satisfied by MTU and the allocation is in line with the contractual objectives for the allocation of the transaction price. If no standalone selling price is directly observable, MTU as a general rule estimates the applicable transaction price on the basis of the expected costs plus an appropriate margin. In the case of contracts in the commercial and military engine business (OEM segment) in which MTU's role is effectively that of a supplier or service provider to the consortium leader (OEM), without the responsibility to provide development assets or engine technology, the transaction prices are fixed in the consortium agreement, including variable elements. These transaction prices must be allocated in full to the goods delivered or services provided (e.g., engine assembly).

For commercial consortium agreements in which MTU assumes responsibility for providing development/engine technology to the consortium or consortium leader (OEM) in addition to supplying parts or performing assembly, engine maintenance and other maintenance services, MTU initially allocates the contractually agreed, market-driven transaction prices (relative standalone selling prices) to the corresponding delivery and performance obligations. The additional contractually agreed variable consideration (share in the net profits of the engine program) is allocated to the obligation to provide the development/provision of engine technology.

In the commercial maintenance business (MRO segment), transaction prices fixed in the consortium agreement, including variable elements, are allocated with reference to the relative standalone selling prices to the identified components of the respective maintenance contracts.

Recognition of revenue when performance obligations are satisfied

Revenue is recognized, either over a specific period of time or at a point in time, when control of a good or service is transferred to the customer.

Revenue from the delivery of engine modules and components is recognized at a point in time and calculated with respect to the effective transfer of control to the customer and the associated beneficial risks and opportunities. In the commercial engine business, the transfer of control and the associated beneficial risks and opportunities generally takes place at the point in time when the modules and parts are delivered to the consortium leader, i.e., to the program consignment inventories managed by the consortium leader. Revenue from customer-specific services – such as development projects and especially engine maintenance – is recognized over time if they meet the necessary criteria.

When such revenue is recognized over time, the amount of completed work is determined as the ratio of contract costs incurred up to the reporting date to the expected total contract costs. The advantage of this method is that the inputs used to determine the amount of completed work are directly observable and the company can obtain the necessary information with sufficient reliability.

In the reporting period and the previous year, all substantial claims to consideration identified or to be identified in the future in connection with the provision of goods and services for which orders had been placed as of the reporting date are classified as contracts with customers pursuant to IFRS 15.

Contracts with subcontractors

In individual cases, MTU works with subcontractors to fulfill its performance obligations. When MTU subcontracts the repair of engine components to a third party, MTU remains responsible for the quality of these repairs vis-à-vis its customer. MTU is normally responsible for ensuring certification of the airworthiness of the delivered engine components. Subcontractors generally bill MTU on a commercial basis. This is independent of MTU's invoicing of its customers.

MTU therefore acts essentially as principal and recognizes its revenue from the relevant transactions on a gross basis by recognizing invoices to its customers in revenue and the invoices received from subcontractors in the cost of goods sold.

Activity as agent for the sale of non-MTU parts

As a member of certain engine consortia in the military sector (OEM segment), MTU participates in the sale of parts made by other partners, in addition to its development and production activities. The specific tasks performed by MTU consist, in particular, of organizing and supporting the sales process. The corresponding commission on the sale is recognized as revenue when no uncertainty exists as to the amount of revenue arising from the sale, which is then recognized at a point in time.

Since MTU is the agent in this transaction, it recognizes the net amount of the consideration to which it is entitled for its activity as an agent in revenue.

Cost of goods sold

The cost of goods sold comprises the production cost of goods and services sold, including customer-funded development work, and the cost of products purchased for resale. In addition to direct material and production costs, it also comprises allocated production overheads, including amortization of production-related intangible assets and depreciation of production facilities, write-downs on inventories and an appropriate portion of production-related administrative overheads.

Research and development expenses

Research costs are expensed in the period in which they are incurred.

In the case of development costs, a distinction is drawn between customer-funded development work and company-funded development work.

Services provided as part of customer-funded development projects (e.g., government-funded technology programs) are reported in cost of goods sold, in light of the fact that the allocated funds are reimbursed by a contracting entity.

Development costs generated in the context of company-funded development projects are capitalized in accordance with IAS 38 if they meet the relevant requirements. Otherwise, they are recognized as an expense in the period in which they are incurred. The capitalized development costs comprise all costs directly attributable to the development process and are amortized through cost of goods sold over the asset's respective useful life from the start of marketing of the engine program by MTU.

Intangible assets

Externally acquired and self-generated intangible assets are recognized in accordance with IAS 38 if it is probable that a future economic benefit is associated with the asset and the cost of the asset can be measured reliably.

Intangible assets with a finite useful life are carried at their purchase or production cost and amortized through cost of goods sold on a straight-line basis over their useful lives.

Amortization is based on the following regular useful lives:

[T62] Useful lives of assets (in years)

Program assets arising from the purchase price allocation and self-generated development assets	Maximum 30
Customer relationships	4 – 26
Other assets	3 – 10

The useful lives and amortization methods pertaining to intangible assets are regularly assessed for appropriateness, and adjustments are made where necessary to the estimates used when the financial statements are being prepared.

Goodwill is tested for impairment regularly or as necessary in accordance with IAS 36. Each of the two operating segments, OEM (commercial and military engine business) and MRO (commercial maintenance business), is tested separately.

Property, plant and equipment

Property, plant and equipment are subject to wear and tear and are carried at their purchase or production cost less cumulative depreciation charges and impairment losses. The cost of items of self-constructed plant and equipment comprises all directly attributable costs and an appropriate proportion of production-related overheads. The revaluation model is not applied. Depreciation on property, plant and equipment is calculated using the straight-line method in accordance with the useful life of the respective asset.

Depreciation is based on the following regular useful lives:

[T63] Useful lives of assets (in years)

Buildings	20 – 50
Lightweight structures	10 – 15
Property facilities	10 – 20
Technical equipment, plant and machinery	5 – 25
Operational and office equipment	1 – 14

The useful lives of machines used in multi-shift operation are reduced accordingly to take account of additional usage. The useful lives and amortization methods pertaining to intangible assets are regularly assessed for appropriateness, and adjustments are made where necessary to the estimates used when the financial statements are being prepared.

Public sector grants and assistance

In accordance with IAS 20, public sector grants and assistance are not recognized until there is reasonable assurance that the conditions attached to them will be complied with and that the grants will be received. Grants are recognized as other operating income in the periods in which the related expenses arise. This item also includes the reimbursement of personnel expenses under relevant government assistance programs.

In the case of capital expenditure on property, plant and equipment and on intangible assets, the amount of the public sector grant awarded for this purpose is normally deducted from the purchase or production costs of the asset. The grants are then recognized in the income statement using reduced depreciation/amortization amounts over the useful life of the asset. If public sector grants and assistance are not directly linked to assets that are subject to depletion, they are generally recognized as other operating income in the periods in which expenses arising from fulfillment of obligations related to the grants are incurred. This does not apply to grants funding technology, which are reported as revenue as a verified reimbursement of expenses in the year they are received. They do not constitute revenue within the meaning of IFRS 15.

Borrowing costs

Borrowing costs directly related to the acquisition, construction or production of qualifying assets are added to the purchase or production costs of those assets in accordance with IAS 23 until such time as the assets have been made ready for sale or for their intended use. Qualifying assets are those that require a substantial period of time to be made ready for their intended use or for sale.

Borrowing costs are capitalized only insofar as they relate to the purchase and preparation of qualifying assets for their intended use or sale, and only include activities that commenced on or after January 1, 2009. The capitalized portions of borrowing costs that affect cash flows are included in the line item "interest paid" in the cash flow from operating activities in the consolidated cash flow statement.

Leases

A contract is accounted for as a lease if it grants the following rights:

- right to control the use of an identified asset in return for compensation
- right to obtain substantially all the economic benefits from that use

At the start of the lease, a lease liability and a right-of-use asset are recognized. Right-of-use assets are recognized at cost less all cumulative depreciation charges and all cumulative impairment losses. Lease liabilities are recognized at the present value of the lease payments to be made over the term of the lease. Lease payments are both fixed and variable.

The Group generally calculates the present value of lease payments by applying its incremental borrowing rate at the delivery date, because the interest rate underlying each lease regularly cannot be determined reliably on an individual basis. After the delivery date, interest is added to the lease liabilities, and they are reduced by lease payments made. In addition, the carrying amount of the lease liabilities is remeasured when there is any modification of the lease, lease term, or lease payments (e.g., changes in future lease payments due to a change in the index or interest rate used to determine those payments), or a change in the assessment of an option to buy the underlying.

Lease payments are reported in the cash flow statement, with the amount of the lease liabilities paid recognized in cash flow from financing activities and the interest component paid recognized in cash flow from operating activities.

For accounting purposes, certain future developments are only taken into account if their occurrence is deemed to be sufficiently certain.

MTU applies the recognition exemptions permitted by IFRS 16. Accordingly, right-of-use assets and lease liabilities are not recognized if, from an economic standpoint, the lease term is less than 12 months at its commencement (short-term lease) or the value of the underlying asset is less than €5,000. Payments owed for short-term leases or low-value asset leases as well as variable lease payments are recognized in function costs in the income statement.

If the Group acts as lessor, all leases at the start of their term are classified as either finance leases or operating leases.

In this context, classifying a lease requires the Group to make an overall assessment as to whether the lease transfers all significant risks and opportunities associated with ownership of the underlying asset. If this is the case, the lease is classified as a finance lease; if not, it is classified as an operating lease. In making this assessment, the Group takes into account certain indicators, especially whether the lease covers most of the useful life of the asset.

On the delivery date of the leased assets, assets held in a finance lease are recognized as a receivable in the amount of the net investment in the lease. The market interest rate used to calculate the lease is used to measure the net investment in the lease. Revenue relating to leases is outside the scope of IFRS 15.

Acquired program assets and acquired development work

MTU refers to program assets and acquired development as capitalized compensation payments to the consortium leader (OEM) in favor of inclusion in or compensation for development services for the respective engine program. Such compensation payments generally take account of the proportionate stake that MTU acquires or has acquired as a partner in the consortium for the engine program.

Since there is no specific consideration, MTU classifies these compensation payments to the OEM – the identified customer in the commercial engine business (OEM segment) – as revenue-reducing payments to customers in accordance with IFRS 15. Such payments are always accounted for by reference to the economic life of the engine program. Moreover, due to their structure, they are incurred at the start of the engine program. Therefore, such payments are recognized on the balance sheet as non-current assets and subsequently offset as revenue-reducing amounts in parallel with the recognition of revenue from the stake in the relevant engine program over the economic life of the program, which is generally up to 30 years.

If such compensation payments contain significant deferred conditional components, they are accounted for analogously to IFRIC 1 if a direct relationship between the conditional components and the economic benefit (revenue) from the program stake is identifiable. Changes resulting from reassessment of the deferred conditional components are initially recognized outside of profit or loss by adjusting the related asset. This asset is subsequently amortized as outlined above in accordance with the recognition of revenue from the respective engine program over the remaining economic life of the program and thus reduces revenue.

Impairment of intangible assets, property, plant and equipment, acquired program assets and acquired development work

At each reporting date, an analysis is carried out to reveal any indication that the value of intangible assets, or property, plant and equipment, or acquired program assets or development work might be impaired. If impairment is indicated, the value of the asset in question is assessed on the basis of its recoverable amount.

While assets with an indefinite useful life, intangible assets that are not yet ready for use, and goodwill acquired in connection with a business combination are not subject to amortization, they are reviewed for possible impairment at least once each year, even if there is no indication of impairment. Annual impairment testing of goodwill takes place at the level of the cash generating units, corresponding to the two operating segments, commercial and military engine business (OEM segment) and commercial maintenance business (MRO segment).

Impairment losses on intangible assets, property, plant and equipment and acquired program assets or acquired development work are determined by comparing the carrying amount with the recoverable amount at the level of the engine programs, which are the cash-generating units. The recoverable amount is usually determined as the value in use using a discounted cash flow (DCF) method. If the need to recognize an impairment loss is identified, the fair value less costs to sell is also determined.

When applying the discounted cash flow (DCF) method, the weighted average cost of capital (WACC) before tax is derived iteratively on the basis of a corresponding after-tax discount rate. This is derived from the cost of equity after tax, which is based on a risk-free base interest rate and a risk premium (market risk premium multiplied by the beta coefficient calculated on the basis of a peer group analysis). The cost of debt of the peer group companies is also factored into the calculation. Cost of equity and cost of debt are weighted according to the average capital structure of the peer group companies when determining WACC after tax. The discount rate used for a DCF method is the weighted average cost of capital (WACC) as an approximation of the risks associated with the asset or the cash-generating unit.

If it is not possible to attribute separate future cash flows to discrete assets that have been generated independently of other assets, then an impairment test must be carried out on the basis of the cash-generating unit to which the asset (group) ultimately belongs. For this purpose, the cash flows that can be generated by the asset or cash-generating unit are forecast. Such forecasts are based on the current operational or strategic planning for the Group approved by the management or the expected cash flows from the asset or cash-generating unit being tested.

If there is sufficient certainty that the reasons for impairment losses recognized in a prior period for assets or their cash-generating units are considered obsolete, the impairment loss on these assets is reversed, except in the case of goodwill.

Non-current financial assets

Investments in joint ventures and associates that have a material impact on the Group's net assets, financial position and results of operations are accounted for using the equity method. The Group's share in the profit or loss of these entities is therefore allocated to profit/loss and to the corresponding carrying amount of the investment and included in the consolidated financial statements in the line item "profit/loss of companies accounted for using the equity method and of equity investments."

Inventories

Raw materials and supplies are measured at average purchase cost or net realizable value, whichever is lower. Transaction price reductions such as rebates, bonuses or cash discounts are taken into account when determining acquisition cost. Purchase cost comprises all direct costs of purchase and other costs incurred in bringing the inventories to their present location and condition.

Finished products and work in progress are recognized at purchase/production cost or net realizable value, whichever is lower. The purchase/production cost comprises all direct costs of acquisition and production plus the appropriate portion of material and production overheads, including production-related depreciation. Administrative expenses are also included to the extent that appropriate allocation to production operations is possible.

Net realizable value is the estimated selling price generated in the ordinary course of business for the relevant finished goods, less the expected costs required to sell the product (costs to complete and selling expenses). In the commercial engine business (OEM segment), the net realizable value from the marketing of inventories in the new parts or series business at the consortium (OEM) level is regularly below the corresponding purchase/production cost required to gain market access; as a partner in consortia for commercial engine programs, MTU generally participates in this loss-making series business of its customer, the OEM, through revenue.

In the commercial maintenance business (MRO segment), the marketing of engine parts is affected, in particular, by the availability of used parts and by demand resulting from current usage of the engine fleet. Valuation allowances are recognized through profit or loss to account for the impairment risk of inventories.

Contract assets

Contract assets are recognized with an impact on revenue and the balance sheet if the Group has satisfied its contractual obligations by transferring goods or services to the customer before the customer settles the identified consideration or the consideration is due. In doing so, settlement of the consideration relating to the contract asset by the customer does not take place solely over time – in this case, a trade receivable would be recognized instead of a contract asset. The contract assets are presented on the basis of contracts with customers, taking into account any related upfront payments or netted with the related contract liabilities.

Financial instruments

A financial instrument is a contract that simultaneously gives rise to a financial asset in one company and to a financial liability or equity instrument in another company.

Financial assets

Financial assets comprise cash and cash equivalents, trade receivables, loans to third parties, other receivables, derivative financial assets, and other interests in related companies.

At initial recognition, financial assets are measured at their fair value on the trade date, except for trade receivables, which are recognized at the transaction price. The measurement of a financial asset subsequent to initial recognition depends on its classification.

Financial assets are accounted for at amortized cost in accordance with IFRS 9 if they are acquired with the objective of collecting solely contractual cash flows that are payments of principal and interest. In this case, the Group does not apply the option of recognition at fair value through profit or loss permitted by IFRS 9.

In application of the option permitted by IFRS 9, the Group recognizes financial assets that are contractual debt instruments that are held for trading at fair value through profit or loss. By contrast, taking into account the applicable accounting option, as a general rule, equity instruments are accounted for at fair value through other comprehensive income.

Arm's length acquisitions and disposals of financial assets are recognized as of the fulfillment date.

Impairment loss on financial assets

The aim of the IFRS 9 impairment model is to reflect expected losses on the balance sheet and income statement.

In the case of trade receivables and contract assets, expected losses are recognized for the entire remaining duration of the contract (lifetime expected credit losses). For all other financial instruments, expected credit losses are measured at an amount equal to the 12-month expected credit losses, unless there has been a significant increase in the credit risk. In this context, MTU does not assume a significant increase in credit risk if payment is more than 30 days past-due because MTU's business practices take a longer-term view. Rather, MTU considers there to be a significant increase in credit risk when uncontested, contractually due receivables are more than 90 days past-due. Otherwise, expected losses are also recognized for these financial assets over their remaining term to maturity.

To determine whether there has been a significant increase in the credit risk of a financial asset, the probability of default is assessed at least once a quarter using both external rating information and internal information on the specific credit risk of the financial asset. In the case of debt instruments, a significant increase in the credit risk is determined principally on the basis of past-due information and probability of default.

When calculating the expected credit losses, a ratio is factored in for the possible impairment of groups of financial assets with a comparable credit rating. The loss allowance is based on credit spreads covering good, average and poor credit ratings. The classifications used by respected rating agencies are applied when making these assessments.

The credit rating of financial assets is considered to be impaired and a corresponding impairment loss is recognized in profit or loss in the following cases: significant financial difficulties of the debtor or a high probability that the debtor will enter bankruptcy or financial reorganization; the closure of an active market; significant changes in technological, economic, legal or market conditions affecting the issuer; or a significant or persistent decline in the fair value of the financial asset below its amortized cost. For this assessment, MTU makes use, in particular, of publicly available information from respected credit and rating agencies. If the result is that the asset is uncollectable, it is derecognized instead of recognizing an impairment loss.

Derivative financial instruments

MTU uses derivative financial instruments as a hedge against currency and price risks arising from its operating activities and financing transactions.

At initial recognition and when measured subsequently, derivative financial instruments are measured at their fair value. Derivative financial instruments used in hedging relationships are recognized outside of profit or loss until the related hedged item is realized or any ineffectiveness materializes; the accumulated gains and losses are then reclassified from other comprehensive income to profit or loss for the period.

The fair value is generally determined using quoted market prices in an active market and is represented by the amount that MTU would receive or would have to pay at the reporting date if the financial instrument were terminated. If no quoted market prices in an active market are available, the fair value is calculated using recognized financial mathematical models (DCF method) on the basis of the relevant exchange rates, interest rates and credit standing of the contractual partners at the reporting date.

Cash and cash equivalents

The salient feature of cash and cash equivalents, which include demand deposits, money market funds and short-term bank deposits, is that they generally have an effective maturity of three months or less from the date of acquisition. Assuming the appropriate creditworthiness of the debtor, they are measured at their nominal value or at fair value through profit or loss.

Hedge accounting (hedging relationships)

MTU satisfies the requirements of IFRS 9 concerning instruments used to hedge future cash flows from revenue-generating transactions in foreign currencies (cash flow hedges). At the inception of the hedge, the relationship between the financial instrument designated as the hedging instrument and the underlying transaction (hedged item) is documented, as are the risk management objective and strategy for undertaking the hedge. This includes assessing the effectiveness of the hedging instrument used. Existing cash flow hedges are checked for effectiveness on a regular basis.

MTU uses (derivative) financial instruments as cash flow hedges to hedge the exposure of expected cash flows relating to transactions in U.S. dollars (hedged items) to fluctuations in foreign currency exchange rates. At remeasurement subsequent to initial recognition, the effective portion of the hedging instrument is recognized in equity in other comprehensive income, together with attributable deferred taxes, until such time as the underlying hedged transaction is realized.

The amounts recognized in other comprehensive income at remeasurement are recycled to the income statement as soon as the underlying hedged transaction is recognized. The cost of effective hedging instruments, especially those used to hedge cash flows from revenue-generating transactions (cash flow hedges), is recognized in other operating income.

Current and deferred taxes

Current and deferred taxes are recognized in the consolidated financial statements in the manner prescribed in the relevant income tax jurisdictions. Current and deferred taxes are recognized in equity if they relate to business transactions that directly lead to a decrease or increase in equity.

The MTU Group assesses whether it is probable that a tax authority will accept a specific tax treatment. Based on this assessment, it determines the taxable profit, tax bases, unused tax losses, unused tax credits or tax rates consistently with the tax treatment that it uses or plans to use in the income tax filings of relevance to the Group.

If MTU concludes that it is probable that the tax authority will not accept the chosen tax treatment, it reflects the tax implications of this uncertainty in the measurement of the related taxable profit or tax bases and in the accounting treatment of unused tax losses and unused tax credits, and in the tax rates applied through a best estimate (e.g., the amount/expected amount) of the most likely outcome.

If this tax treatment affects both current and deferred taxes, the MTU Group makes consistent judgments and estimates for both current and deferred taxes, or makes estimates that are coherent for both taxes.

Interest on back taxes and tax refunds arising from tax audits is recognized in interest expense in the income statement.

Deferred tax assets and liabilities are established for temporary differences between the tax bases of assets and liabilities and the corresponding carrying amounts in the consolidated balance sheet. Tax assets are established on tax credits available for carry-forward at such time as the conditions attached to the award of the tax credit have been fulfilled. Similarly, deferred tax assets are established on tax losses available for carry-forward. Deferred tax assets are recognized if it is probable that there will be taxable income against which it is possible to apply the deductible temporary difference and the tax losses and tax credits available for carry-forward. Deferred tax assets and liabilities are measured using the tax rates applicable on the date when the temporary differences are reversed. Deferred tax assets and liabilities are offset insofar as this meets the relevant requirements of IAS 12.

In the MTU Group, the recognition of deferred tax assets for tax credits and tax losses available for carry-forward is limited by the applicable taxable income against which they can be offset within a detailed planning period of at most five years. The same procedure is used when recognizing net deferred tax assets relating to temporary differences.

Pension obligations

Provisions for pension obligations are accounted for using the projected unit credit method in accordance with IAS 19. This method takes into account not only pension and other vested benefits known at the reporting date, but also expected increases in pensions as well as wages and salaries, applying a conservative assessment of the relevant parameters.

In the case of defined contribution plans, the company has no obligations beyond the payment of contributions to the plan. In the case of defined benefit plans, the company has an obligation to fulfill commitments to current and former employees.

In some cases, it is difficult to differentiate between defined contribution and defined benefit plans. In Germany, for example, a minimum level of benefits is guaranteed for defined contribution plans, such that, even when the plan is provided through an external fund or insurance company, MTU, as the employer, remains liable. This "ultimate employer liability" is governed in Germany by the German Occupational Pensions Act (BetrAVG). For financial reporting purposes, the term "defined benefit plan" is interpreted on the basis of the underlying economic substance of the arrangement. If the Group has no legal or constructive obligation to make further contributions, these plans are classified as defined contribution plans. Current contributions are recognized as personnel expenses through profit and loss in the period in which they are paid.

Actuarial gains and losses – from the measurement of the defined benefit obligation (DBO) or the associated plan assets – may arise either from changes in the actuarial assumptions used or when the actual development diverges from those assumptions. They are recognized in other comprehensive income in the period in which they arise and are recognized separately in the statement of comprehensive income. By contrast, past service cost is recognized directly in profit and loss. If the criteria given in IAS 19 are met, reinsurance claims are treated as plan assets and netted against the corresponding pension obligations. The interest expense resulting from the reversal of the discount on the net liability, comprising pension obligations less the corresponding plan assets, is recognized through profit and loss in other financial income/expense. Service cost is recognized in the income statement as personnel expenses allocated to the relevant function costs.

Other provisions

In accordance with IAS 37, other provisions are recognized to cover legal or constructive obligations resulting from past events if settlement is expected to result in an outflow of resources, where the expected amount can be estimated with sufficient reliability. Relevant obligations regularly arise in connection with warranties, legal and litigation expenses, pending losses on onerous contracts, personnel-related matters, and other issues.

If a planned and controlled restructuring program has been presented by the management, provisions are recognized for the expenditures arising directly from the restructuring. Restructuring provisions are recognized only if there is a constructive restructuring obligation and if the related expenditures are both necessarily incurred as a result of the restructuring and not associated with the company's ongoing operating activities.

Non-current provisions for liabilities with an identifiable maturity of more than one year beyond the reporting date are measured at the present value of expected future cash flows. The company measures provisions for pending losses on onerous contracts at the lower of the expected costs on settlement of the contract and the expected costs on premature termination of the contract.

Provisions for personnel obligations are recognized in accordance with IAS 19 or IAS 37. Obligations relating to pre-retirement part-time working arrangements and long-service awards are measured on the basis of actuarial reports.

Contingent liabilities

Contingent liabilities are potential obligations arising from past events whose existence depends on the occurrence or non-occurrence of one or more uncertain future events that are not wholly within the control of MTU. Contingent liabilities are not recognized as liabilities in the balance sheet because at the reporting date it is considered that there is unlikely to be an outflow of economic resources, or, as an exception, the amount of the obligation cannot be reliably estimated.

Contract liabilities

If a customer pays consideration before the company transfers the contractually agreed good or service to the customer, which gives rise to an unconditional right to consideration, the company recognizes a contract liability for the consideration in accordance with IFRS 15.

Recognition of a contract liability signifies that MTU has entered into an agreement with a customer in which it promises to transfer goods or services to that customer in exchange for consideration. In the commercial engine business (OEM segment), MTU is a party, in some cases, to the contract liabilities of the consortium leader (OEM) or the engine program through its position as a partner in the program consortium. On subsequent recognition, MTU accounts for the revenue impact of such liabilities proportionately to its customer relationship with the engine program OEM, taking into account the refund liabilities in connection with its stake in the relevant engine program. The contract liabilities are presented on the basis of contracts with customers and are netted against any corresponding contract assets recognized as of the reporting date.

Refund liabilities

In accordance with IFRS 15, a refund liability is recognized if the company receives consideration from a customer and expects to refund some or all of that consideration to the customer. A refund liability is measured at the amount of consideration received for which the entity does not expect to be entitled as of the reporting date. In the commercial engine business (OEM segment), MTU participates in program profits through the provision of development work/technology. Over time, these profits are influenced by invoice corrections, which result from the multi-step invoicing processes in the supply chains for commercial engine programs; engine parts are invoiced at list price within the engine program supply chain and subsequently sold to program customers at a discount (program price risks). As a partner in such consortia, MTU initially participates in all invoicing by the engine program through its pro rata share of the program profits.

Furthermore, as a partner in commercial engine program consortia (OEM segment), MTU is exposed to unplanned price and cost risks relating to the engine program, which can also result in – at times significant – corrections to the share of the program profits granted by the OEM. To take account of such potential refunds, MTU recognizes revenue-reducing refund liabilities on the basis of estimates.

Financial instruments

A financial instrument is a contract that simultaneously gives rise to a financial asset in one company and to a financial liability or equity instrument in another company.

Financial liabilities

Financial liabilities reflect contractual obligations to return cash or another financial asset. Financial liabilities include, in particular, bonds and other liabilities evidenced by certificates, trade payables, finance lease liabilities, promissory notes, derivative financial liabilities and other financial liabilities to third parties.

Financial liabilities are measured at their fair value at the time of acquisition, which is normally equivalent to the fair value of the settlement amount. Transaction costs directly attributable to the acquisition are deducted from the amount of all financial liabilities, except derivatives. If a financial liability is interest-free or bears interest at below the market rate, it is recognized or initially measured at fair value; this amount generally deviates from the settlement price or nominal value. Subsequently, the financial liability is amortized using the effective interest rate method.

Interest on debt is presented in the consolidated cash flow statement in the line item “interest paid” in the cash flow from operating activities.

Dividend payment and profit distribution

The claims of shareholders to dividend payments and profit distribution relating to a specific reporting period (fiscal year) are recognized as a liability in the period in which the corresponding resolution is passed. Disclosures relating to the Executive Board's or Supervisory Board's proposal to the Annual General Meeting concerning the dividend payment are provided in *section VII. Determination of the net profit available for distribution on the basis of the annual financial statements*.

Discretionary scope, measurement uncertainties and sensitivity

Preparation of the consolidated financial statements in accordance with IFRSs requires that assumptions and estimations be made that have an impact not only on the amounts of the assets, liabilities and contingent liabilities, but also on how these items are recognized. These assumptions and estimations conform with the circumstances prevailing at the reporting date and, to that extent, also influence the amount of income and expenses recognized in the reporting periods presented. The assumptions and estimations relate primarily to the Group's own determination of the useful lives of intangible assets and property, plant and equipment or the basis for measuring acquired program assets and development work, measuring inventories and contract assets, calculating the fair value of financial instruments and other assets, determining the effective date of planned transactions that form part of a hedging relationship, measuring and recognizing provisions and other liabilities, especially refund liabilities and contract liabilities. Furthermore, recognition of tax assets, especially in connection with temporary differences, tax losses available for carry-forward and tax credits are included. Assumptions and estimations are the elementary basis for planning calculations at company, segment, program, and customer contract level. Such planning calculations form the material basis for impairment testing in accordance with IAS 36, including in connection with program assets and other program-related assets, for example, in connection with purchase price allocations, and revenue realization in some areas, particularly in regard to the realization of variable consideration within the meaning of IFRS 15.

In individual cases, the actual values may differ from the assumptions and estimations made, so it may be necessary to adjust the measurement of assets and liabilities recognized in the financial statements. Changes are made to estimations in accordance with IAS 8 when more reliable information becomes available and these may have an impact on the figures in the period in which the changes are made and, where applicable, on subsequent periods. If the actual results deviate from estimations that are relevant for the financial statements, or if the estimations have to be adjusted in a future period, this may have a significant impact on the presentation of the Group's net assets, financial position and results of operations.

- In view of the customary long-term nature of engine programs, considerable estimations are required, for example, on volume, price and cost structures, the time period for the provision of the work and services and the corresponding consideration within the program. These can have a very significant impact on accounting and thus on the recognition of revenue for the program-related assets. The principal components of program-related assets, alongside the acquired program assets, are the capitalized compensation payments for developments, capitalized development work, inventories, contract assets and program-related financial assets.
- In the process of determining impairment losses, estimations are made concerning such parameters as the source, timing and amount of the impairment risks. Many different factors can give rise to an impairment loss, e.g., changes in the competitive situation, expectations concerning the growth of air travel and the aircraft industry, changes in the cost of capital, exchange rates, changes in the future availability of financing funds, aging and obsolescence of technologies, replacement costs, or purchase prices for the corresponding assets or sets of assets. If the actual results deviate from these estimations, or if these estimations have to be adjusted in a future period, this may have an impact on the presentation of the Group's net assets, financial position and results of operations. Further details of impairment testing can be found in *Note 14. Intangible assets* and *Note 17. Acquired program assets*.
- Refund liabilities, especially for warranty and liability risks, result from MTU's specific compensation obligations to the relevant OEM arising from its stakes in consortia for commercial engine programs (OEM business). Accounting for these refund liabilities requires considerable judgment and necessarily has to be based on the associated estimations made by the engine OEMs, which manage the relevant relationships with program customers. In this context, with regard to the reporting period, attention should be drawn specifically to the compensation obligations relating to the Geared Turbofan fleet management plan to offset the reduced service life of powder metal components in the PW1100G-JM engine program. As a consequence of the Geared Turbofan fleet management plan, the OEM gave assurances

to program customers, which affect MTU as a consortium partner. In order to measure these, substantial estimations have to be made regarding the scope and timing of the measures and the resulting restrictions on the use of the associated aircraft. MTU's assessment of its obligations in this matter takes into account the estimations made by the OEM in July 2023, the fundamental development as of September 2023, and reviews up to the final date of preparation of the present financial statements. Further details of the joint liability for assurances relating to the compensation of contractual partners of the PW1100G-JM program in connection with the Geared Turbofan fleet management plan can be found in *Note 31. Refund liabilities*.

- In view of the sector's customary spread of expected margins in the series or new parts business, on the one hand, and in the spare parts or aftermarket business, on the other, the assumed "marketing mix" in the commercial OEM programs (OEM segment) has a considerable influence on the determination of the fair values of program-specific assets such as inventories and contract assets, and liabilities such as refund and contract liabilities.
- The management recognizes valuation allowances for expected credit losses from receivables, contract assets, other financial assets and cash and cash equivalents. Valuation of the expected credit loss and the hedging instruments used to offset this requires the use of estimations based on assumptions.
- In certain cases, financial liabilities may be linked to deferred, conditional purchase price components. Determination of the fair value of such liabilities requires predictions about the future development of the parameters affecting their development. These comprise, on the one hand, publicly available market data (interest rate, U.S. dollar exchange rate) and, on the other, input parameters that are not publicly available – specifically, in this case, the number of flight hours on which payments are based for part of the V2500 engine fleet in the period up to 2027. To predict the future number of flight hours, MTU makes use of an in-house forecasting model that is based on internally as well as externally available information concerning the in-service V2500 fleet. The sensitivity analysis takes into account both the absolute number of flight hours on which payments are based and the time period within which these hours arise. Further details of the financial liability relating the increase in the stake in the IAE V2500 can be found in *Note 28. Financial liabilities*.
- For revenue recognized at a point in time in connection with the commercial and military engine business, it is necessary to make significant estimations of invoice amounts due to the delayed timing of invoicing. These estimations cover both fixed and variable revenue components from the stakes in the revenue of the relevant consortia. The variable revenue component is determined by the revenue from the sale of engines and parts to program subcontractors and subsequent marketing of the engine maintenance services provided by the subcontractors to contractual partners of the program. Estimations are required, in particular, with regard to the refund liabilities relating to the variable revenue components and, in individual cases, the subsequent measurement of contract assets and liabilities.
- Revenue recognized over time is accounted for according to progress, if it is sufficiently probable that future economic benefits associated with the business will flow to MTU. Because in some cases it may not be possible to reliably estimate the outcome, revenue calculated according to progress is recognized on the basis of the contract costs incurred up to the reporting date, to the extent that it is probable that these costs can be recovered. The measurement uncertainty is consistent with the complexity and long-term nature of the respective customer contract. Management regularly reviews its estimations made in connection with these customer contracts, making adjustments to the accounting where necessary.
- Income taxes must be determined for each tax jurisdiction in which the Group operates. Estimates are required when measuring actual and deferred taxes. The utilization of deferred tax assets depends on the possibility of generating sufficient taxable income in a particular tax category and tax jurisdiction. A variety of factors are used to assess the probability that it will be possible to utilize deferred tax assets, e.g., past operating results, operating business plans and the periods over which losses can be carried forward.
- The total value of provisions for pensions and similar obligations, and therefore the expenses in connection with employees' retirement benefits, are determined using actuarial methods based on assumptions concerning interest rates, choice of optional payment modalities, wage, salary and pension trends, and life expectancy. Changes in these assumptions affect the future amount of pension provisions or the future expenses for pensions. Further details of pension provisions can be found in *Note 25. Pension provisions*.

All assumptions and estimates are based on the prevailing conditions and judgments made at the reporting date. Any subsequent changes occurring before the financial statements are prepared are taken into account in the amounts recognized. Estimations of future business developments also take into account the economic environment of the industry and the regions in which MTU is active, such as are deemed realistic at that time. In order to obtain new information, MTU also relies on the services of external consultants such as analysts, actuaries, appraisers, and tax and legal advisors.

Macroeconomic factors

The development of business in the reporting period was affected by macroeconomic factors, which have to be taken into account when preparing the financial statements in view of the assumptions and estimations made. In light of the delayed effects of the COVID-19 pandemic, in combination with crisis-related geopolitical developments, the dynamics of the macroeconomic framework conditions have a negative impact on the ability to forecast MTU's medium- to long-term business performance. Corporate planning requires forecasting of the developments of relevance for MTU as regards the availability and inflation trend for fuel, supply chain and personnel capacities, exchange rates and other capital market terms. These factors affect the estimations used to derive the fair value of intangible assets, program assets, inventories, contract assets, receivables and refund liabilities.

Negatively impacted by multiple crises, the environment is intensifying uncertainty surrounding estimates in regard to forecasting information for the financial statements, particularly for deriving the fair values of assets and liabilities, and in regard to the mid- and long-term outlook for MTU's results of operations and liquidity situation. Against this backdrop, MTU strives to apply the parameters affected by macroeconomic factors with due diligence during the corporate planning process. In addition, the Group continues to utilize options for mitigating macroeconomic effects by means of compensating measures such as strategic inventory management, implementing alternative energy sources and concluding forward contracts, especially to compensate for commodity price risks and currency risks. In its corporate planning, MTU assumes that there will be no short-term stabilization of the international energy, commodity and capital markets and supply chains relative to the status quo.

The scenario used for multi-year corporate planning is based on the following principal key assumptions:

The IMF forecasts that global GDP growth will increase slightly in 2024. Following growth of 2.1% in 2023, it is projecting a higher global economic growth of 3.1% in 2024. One third of the world will probably experience a recession in 2024. The OECD is predicting a similar economic trend in 2024, with a growth rate of 2.9% (source: OECD Economic Outlook, February 2023). The main reason for the forecast increase in global GDP growth is the positive development in Asia. In view of the declining cost pressure, the gradual downward trend in inflation should continue. The core inflation rate should drop to 2.5% in the advanced G20 countries in 2024. The IMF anticipates that annual GDP growth will pick up again in North America and Europe in 2024: In the USA, growth will rise from 1.1% in 2023 to 2.1% in 2024, while in the euro zone it will increase from 0.5% to 1.2%. For China the IMF forecasts a slight drop in GDP growth from 5.0% to 4.2% in 2024 as a consequence of the problems on the real estate market, which are having a noticeable impact on the economy.

At present, it is expected that the upswing in the aviation sector will continue in 2024.

In its forecast of December 2023, IATA predicts a slight upturn in air passenger traffic from 95% of the pre-pandemic level to 106% in 2024. Cargo traffic is expected to increase by 3.7%. This assessment takes account of the development of China, the Russia-Ukraine conflict and the emerging global economic slowdown.

According to the IATA forecast, global revenue in the airline sector should recover from U.S.$895 billion in 2023 to U.S.$964 billion in 2024, which would be a good 101.4% of the pre-crisis level. It forecasts that the sector make a profit of U.S.$ 23.3 billion. IATA's latest forecast is based on an oil price of U.S.$114 per barrel in 2024, which put the airlines under pressure compared with the price of U.S.$92 per barrel in 2023.

Aircraft manufacturers Airbus and Boeing expect to deliver 800 and 608 passenger aircraft, respectively, in 2024. For Airbus, that would be an increase of 65 aircraft. The production rates of the A320neo and Boeing 737 MAX models are to be increased further. The planned increase in aircraft deliveries at Airbus and Boeing represents a challenge for suppliers due to personnel- and material-related capacity constraints, partly as a consequence of the pandemic. Although supply chains have continued to recover, they are not yet back at the pre-pandemic level.

With regard to the commercial engine business (OEM segment) and the commercial engine maintenance business (MRO segment), the assumption is that both passenger kilometers and aircraft deliveries will rise in 2024. IATA assumes that passenger traffic will increase by 9.8%, so it should exceed the pre-criss level of 2019. Following national and regional traffic, it also anticipates further recovery of the long-haul sector. High demand for maintenance work is expected, especially for the GTF engine program and for the V2500 and CFM56 programs, for all of which MTU performs extensive MRO services. Cargo traffic should stabilize at the prior-year level. In this market, MTU participates in the MRO segment through the CF6-80C and PW2000 engine programs and therefore expects a correspondingly stable level of capacity utilization. Alongside the expected spare parts business, the commercial engine business (OEM segment) is linked to aircraft deliveries. Here, Airbus has announced, for example, that it will be raising the production rate for its top-selling A320neo family to 65 aircraft per month. MTU participates in this through its stake in the PW1100G-JM GTF engine. Boeing has also increased its production targets, for example, for the 787.

Further information on revenue from the commercial engine business can be found in *Note 1. Revenue*.

In the military engine market, the most important programs for MTU at present are the EJ200 for the Eurofighter, the TP400-D6 for the A400M and the Next European Fighter Engine (NEFE) for the Future Combat Air System (FCAS). Further deliveries of the Eurofighter and the A400M are planned up to 2030, including through export marketing. The FCAS program is currently at demonstrator phase 1B. The first flight with a development prototype is scheduled for 2030. MTU is not involved in the €100 billion supplementary funding provided by the German government for equipment for the German armed forces. However, it can be assumed that defense spending in the NATO member states will increase by about 7% p.a. In the coming years (compared with about 1% in 2011 to 2020) in the wake of the Russia-Ukraine war and increase geopolitical tensions (Middle East conflict, Taiwan). This opens up scope for a fifth tranche of the Eurofighter and for the planned MTU-Safran joint venture as part of the European Next Generation Rotorcraft Technologies (ENGRT) project. Moreover, given the more intensive use of the military fleet in the NATO countries, MTU stands to benefit from higher demand for spare parts for maintenance.

Further information on revenue from the military engine business can be found in *Note 1. Revenue*.

Therefore, MTU assumes that the impact of current macroeconomic factors on global air traffic and thus on the business development of MTU and its consolidated financial statements will be temporary.

Climate change

The impacts of climate change were taken into consideration by the management, to their best judgment, in the preparation of the consolidated financial statements, both in terms of assessing the company's continuation as a going concern and deriving fair values, e.g., in the context of evaluating impairment risks. In the final analysis, MTU assumes that the measures to prevent or offset climate change are unlikely to have a material effect on the development, and especially the expected service life, of those engine programs in which the Group is currently invested or involved – neither in the OEM nor in the MRO segment. Here, MTU takes into account the EU Green Deal, which is derived from the 1.5°C target of the Paris Agreement and aims for climate neutrality by 2050.

The impact of climate change on the engine programs of relevance for MTU was analyzed, in particular, with a view to the development of demand for passenger and cargo traffic and scope for substitution of MTU engines by propulsion technologies (aircraft engines) that offer a comparable function with far lower emissions.

From the present viewpoint, taking into account maturity level and aviation regulations (focus on the avoidance of risk), the fields in which MTU currently operates will not be affected by substitution risks in the foreseeable future. MTU monitors and analyzes developments in the field of electric motors, batteries and, especially, fuel cells and takes part in studies on the technological development of these promising technologies for emission-free flying, partly to allow early identification of developments that could adversely affect its established business and, at the same time, to invest in such developments and benefit from the associated opportunities. In parallel, MTU is permanently working to improve the efficiency of conventional engine technology, thus continuously raising the ecological and economic access barriers for any substitute products.

In addition to the substitution risks, risks could arise from climate-related regulations in the future which, in turn, would have to be offset by gradual efficiency improvements in existing engine and fuel technology. Consequently, MTU is carefully monitoring developments in its field and examines emerging regulatory activities to identify potential impacts on its assets, financial position and results of operations. However, insofar as MTU can see, there are currently no indications of specific activity by the international regulatory authorities.

This assessment is flanked by proactive measures to ensure a seamless transition to the climate-neutral provision of MTU products and services. These measures are set out in the ecoRoadmap, which MTU has been rolling out stepwise at its international sites since 2020. The funding necessary to realize the planned measures is included in the multi-year corporate planning which forms the basis for the forward-looking information for the financial statements and for determining fair values. To manage and further improve its activities, MTU continuously monitors greenhouse gas emissions in the production and maintenance of engines and modules at its sites using the recognized international Greenhouse Gas (GHG) Protocol. MTU aims to permanently reduce CO_2 emissions or provide high-quality compensation for those emissions that are unavoidable.

In the context of the ecoRoadmap, the following significant measures were implemented in the reporting period (expenditure per measure >€0.5 million):

[T64] ecoRoadmap measures

in € million	2023
Geothermal energy	8
Installation of photovoltaic systems	1
Total general ecoRoadmap measures	**9**

Moreover, in its disclosures pursuant to Regulation (EU) 2020/852 (Taxonomy Regulation), MTU reports that significant proportions of its revenue and capital expenditures are related to sustainable activities.

The Taxonomy Regulation is an EU Regulation, which was adopted by the European Parliament and the Council of the European Union on June 18, 2020. It aims to establish a framework for sustainable investment and create a sustainable financial system. The Regulation contains criteria that determine which economic activities are deemed to be sustainable and therefore taxonomy-eligible. The Regulation is part of the European Green Deal and its purpose is to help the EU achieve its climate targets by 2050.

More detailed reporting pursuant to the Taxonomy Regulation can be found in the *section Disclosures on the EU Taxonomy* in the non-financial statement.

PW1100G-JM Geared Turbofan fleet management plan (powder metal issue)

In the third quarter of 2023, the OEM of the PW1100G-JM engine program, Pratt & Whitney (P&W), announced that it reached agreement with the Federal Aviation Authority (FAA) in the USA on a precautionary reduction in the service life of specific GTF powder metal components as a result of potential contamination. To offset the reduction in the service life of the components affected, which results in shorter maintenance cycles and thus restricts uninterrupted operation of aircraft with the PW1100G-JM engine, the OEM has launched an extended fleet management program for the PW1100G-JM Geared Turbofan. Compared with previous maintenance plans for the PW1100G-JM fleet of engines, P&W expects this to result in additional shop visits for engine inspection and maintenance in the short term. In view of the available maintenance and material supply chain capacities, P&W sees a concrete risk of significant temporary restrictions on the use of aircraft fitted with this engine fleet in the period from 2024 to 2026. In view of this, P&W felt compelled to make a public assurance of support for PW1100G-JM customers: With regard to this matter, compensation will be granted in individual cases and to an unlimited extent, even beyond the contractual claims provided by PW1100G-JM consortium.

Accordingly, RTX Corporation (RTX), the parent company of Pratt & Whitney (PW), has reported, especially in its annual report for 2023 (10-K filing of February 5, 2024), that it is recognizing an accrual for compensation to PW1100G-JM program customers (51% program share), which is also reflected in a U.S.$5.4 billion revenue reduction at RTX. However, RTX reported that it could reduce these costs by passing U.S.$2.5 billion through to the other partners in the PW1100G-JM consortium, such as MTU (18% program stake).

In line with its contractual position in this consortium and its stake in the PW1100G-JM program, in the reporting period MTU established provisions for its compensation obligations to the consortium leader P&W. Specifically, based on the assumptions and estimations made by the OEM P&W, in the reporting period MTU made estimates with regard to this matter and, on this basis, established or increased refund liabilities for warranty and liability risks and invoice corrections/subsequent costs, and also recognized impairment losses on assets relating to its stake in the consortium for the PW1100G-JM engine program. The resulting earnings impact totaling €932 million in the reporting year comprised a revenue reduction of €917 million and an increase in the cost of goods sold of €15 million.

MTU provided information on this matter, initially in its half-year financial report on June 30, 2023, and subsequently in an ad-hoc announcement on September 11, 2023, and in its capital market and interim reporting.

Furthermore, in its 10-K filing of February 5, 2024, RTX Corporation reports that, in addition to the PW1100G-JM, further P&W engine models use the affected powder metal components. RTX and P&W do not currently consider that there will be any relevant impact on these programs, so no additional financial impact is to be expected. These P&W engine programs include, in particular, the PW1500G, PW1900G and V2500 engine models, where MTU is also a partner in the consortia.

The estimations required for accounting decisions on this matter are based to a considerable extent on estimates and information from the OEM P&W (RTX), especially as regards the financial impact of the PW1100G-JM Geared Turbofan fleet management plan to deal with the powder metal issue. RTX, as the parent company of P&W, states in this context (10-K filing of February 5, 2024) that the estimations by RTX and P&W are based on historical experience and are subject to various assumptions and judgments. According to RTX, the assumptions and judgments relate, most notably, to the number and expected timing of shop visits, inspection results and scope of work to be performed, turnaround time, availability of parts, available capacity at overhaul facilities and outcomes of negotiations with impacted customers of the PW1100G-JM program.

While these assumptions reflect the best estimates at the present time (10-K filing of February 5, 2024), potential changes to these assumptions and the actual incurred costs could significantly affect the estimates inherent in RTX's financial statements (10-K filing of February 5, 2024) and could have a material effect on RTX's results of operations during the period of the PW1100G-JM Geared Turbofan fleet management plan. In the same way, MTU identifies the need to make assumptions and judgments on the value drivers communicated by RTX and P&W in order to reflect the effects of the PW1100G-JM Geared Turbofan fleet management plan on the assets, financial position and results of operations of the MTU Aero Engines Group. Therefore, possible future modification of these assumptions and, as a result, of estimations of the charges resulting from this matter, along with a corresponding deviation in the actual claims on MTU, could have a considerable impact on the presentation of the Group's assets, financial position and results of operations in the future.

II. Notes to the consolidated income statement

1. Revenue

The revenue of €5,363 million (previous year: €5,330 million) comprises revenue of €5,180 million (previous year: €5,400 million) from contracts with customers (IFRS 15) and revenue of €183 million (previous year: €-70 million) from leasing transactions (IFRS 16), technology funding grants (IAS 20) and other support services, and currency result that impact revenue. For the sake of clarity, note that the revenue from leasing transactions, technology funding grants and other support services and the currency result that impact revenue are not revenue as defined in IFRS 15. The development of revenue in 2023 was affected, in particular, by the revenue-reducing accrual of €917 million for the expected charges arising from the PW1100G-JM Geared Turbofan fleet management plan (see *Note 12. Additional disclosures relating to the income statement*). In view of this, revenue developed as follows in the reporting period:

[T65] Revenue

in € million	Revenue recognized at a point in time	Revenue recognized over time	Other revenue	Jan. 1 to Dec. 31, 2023	Revenue recognized at a point in time	Revenue recognized over time	Other revenue	Jan. 1 to Dec. 31, 2022 [1]
Commercial engine business	571	12		583	1,431	22		1,453
Military engine business	199	339		538	212	284		496
Other revenue			128	128			-118	-118
Commercial and military engine business (OEM segment)	**770**	**351**	**128**	**1,249**	**1,643**	**306**	**-118**	**1,831**
Commercial maintenance business	215	3,927		4,141	125	3,419		3,545
Other revenue			83	83			72	72
Commercial maintenance business (MRO segment)	**215**	**3,927**	**83**	**4,225**	**125**	**3,419**	**72**	**3,616**
Consolidation	-32	-50	-29	-111	-29	-65	-23	-117
Total revenue	**953**	**4,228**	**183**	**5,363**	**1,740**	**3,661**	**-70**	**5,330**

[1] Prior-year figures restated.

[T66] Other revenue

in € million	2023	2022
Leasing (IFRS 16)	106	79
Technology funding grants (IAS 20)	29	30
Currency result	39	–184
Other support services	37	28
Consolidation	–29	–23
Total other revenue	**183**	**–70**

Companies in the OEM segment generated internal revenue of €69 million with companies in the MRO segment, while companies in the MRO segment generated internal revenue of €42 million with companies in the OEM segment.

Revenue included €745 million (previous year: €558 million) in connection with contract liabilities deferred at the beginning of the year.

Furthermore, revenue of €19 million recognized in the reporting period (previous year: €16 million) related to performance obligations satisfied in prior periods. The background to this is, in particular, the determination of variable compensation components in the reporting period.

The proportion of turnover (revenue) identified as taxonomy-eligible within the meaning of the EU Taxonomy for sustainable economic activities and further disclosures on the EU taxonomy can be found in the *section Disclosures on the EU Taxonomy in the non-financial statement in the management report*.

The Group generates its revenue in the following geographical areas:

[T67] Revenue according to customer's country of domicile

in € million	2023	2022
Germany	671	762
Europe (excluding Germany)	404	397
North America (especially USA)	3,597	3,716
Asia	376	201
Other regions	315	255
Total revenue	**5,363**	**5,330**

In the reporting period, approximately 67% (previous year: 70%) of MTU's revenue was generated from business with customers in North America, with the US market accounting for a share of 62% (previous year: 64%).

The cumulative transaction price, including estimated variable components, attributable to the unfulfilled performance obligations as of December 31, 2023, i.e., the order backlog, was €24.4 billion (previous year €22.3 billion). Of this cumulative transaction price, €4.6 billion will be recognized in revenue within one year, €11.0 billion will be recognized in revenue within two to five years, and €8.8 billion is expected to be recognized in revenue after five and within 25 years.

A more detailed presentation of revenue, broken down by external and intersegment revenue and their attribution to major customers, is provided in the *consolidated segment report*. Im Additional information can be found in the *disclosures relating to operating results in the combined management report*.

2. Cost of goods sold

[T68] Cost of goods sold

in € million	2023	2022
Cost of materials	-4,148	-3,424
Personnel expenses	-879	-778
Depreciation and amortization (incl. impairment losses)	-274	-293
Other cost of goods sold	-22	-46
Cost of goods sold	**-5,322**	**-4,541**
Capitalized development costs	77	66
Total cost of goods sold	**-5,245**	**-4,475**

The cost of goods sold increased as a result of the higher business volume. Due to the revenue impact of the Geared Turbofan fleet management plan, the increase in the cost of goods sold was well above the rise in revenue. While inflation effects increased the cost of goods sold, as well as revenue, the U.S. dollar exchange rate and economies of scale realized in relation to the utilization of production and service capacities took pressure off the cost of goods sold and gross profit compared with the previous year.

The cost of goods sold also contains additional costs of €15 million in connection with the PW1100G-JM Geared Turbofan fleet management plan (see Note 12. Additional disclosures relating to the income statement – Reconciliation to adjusted key performance figures). In the previous year, the cost of goods sold was dominated by the accrual of impairment losses of €77 million (in connection with the Russia-Ukraine war and the business development of the T408 program). Overall, the stagnation of revenue due to the revenue-reducing effect of the PW1100G-JM Geared Turbofan fleet management plan and the increase in the cost of goods sold, which was driven by the increase in operating business in both segments, resulted in a significant reduction in the gross profit in 2023, while the gross margin, which is defined as the ratio of revenue less cost of goods sold to revenue, fell from 16.0%in the previous year to 2.2% in the reporting period.

3. Research and development expenses

Company-funded research and development expenses developed as follows:

[T69] Research and development expenses

in € million	2023	2022
Cost of materials	-69	-65
Personnel expenses	-40	-37
Depreciation and amortization	-2	-2
Other development costs	-3	-2
Research and development expenditure	**-114**	**-106**
Research and development expenses recognized in profit or loss	**-114**	**-106**

More information can be found in the Research and development section of the combined management report.

4. Selling expenses

[T70] Selling expenses

in € million	2023	2022
Cost of materials	-29	-27
Personnel expenses	-85	-76
Depreciation and amortization	-2	-2
Other selling expenses	-25	-38
Total selling expenses	**-141**	**-143**

Selling expenses comprise the use of funds in the form of material and personnel expenses for marketing, advertising and media relations, as well as for customer relationship and receivables management. The increase in the cost of materials and personnel expenses contained in selling expenses was driven by the business trend and the effects of inflation.

The other selling expenses contain amounts relating to valuation allowances for expected credit losses relating to trade receivables and the derecognition of actual credit losses on trade receivables. In the previous year, the other selling expenses were affected by amounts in connection with the special item "Russia-Ukraine war" (see *Note 12. Additional disclosures relating to the income statement – Reconciliation to the adjusted key performance figures*). Further information on valuation allowances can be found in *Note 20. Trade receivables* and *Note 21. Contract assets*.

5. General administrative expenses

[T71] General administrative expenses

in € million	2023	2022
Cost of materials	-11	-12
Personnel expenses	-76	-76
Depreciation and amortization	-4	-4
Other administrative expenses	-19	-19
Total general administrative expenses	**-109**	**-111**

General administrative expenses comprise the use of funds in the form of material and personnel expenses for administrative activities that cannot be directly allocated to development, production or sales activities.

6. Other operating income and expenses

[T72] Other operating income and expenses

in € million	2023	2022
Income		
Gains from the disposal of intangible assets and property, plant and equipment	0	0
Income from insurance cases	21	1
Hedge income (foreign exchange risk, hedging)	6	8
Rental income from property owned by MTU	2	2
Rental income from sublet property owned by third parties	0	0
Income from public sector grants and assistance	1	0
Miscellaneous other operating income	13	11
Total other operating income	**43**	**23**
Expenses		
Losses from the disposal of intangible assets and property, plant and equipment	-2	-0
Expenses from insurance cases	-2	-1
Hedging costs (foreign exchange risk, hedging)	-51	-47
Rental payments for sublet property	-1	-1
Miscellaneous other operating expenses	-2	-23
Total other operating expenses	**-57**	**-72**
Net other operating income/expenses	**-14**	**-50**

The increase in miscellaneous other operating income in the reporting period was mainly due to the development of income from insurance claims. In 2023, this resulted from the receipt of acceptance of a claim for compensation for damage sustained in the previous year in connection with MTU's leasing business in Russia. Further details can be found in *Note 12. Additional disclosures relating to the income statement – Reconciliation to the adjusted key performance figures*.

7. Profit/loss of companies accounted for using the equity method and of equity investments

[T73] Profit/loss of companies accounted for using the equity method and of equity investments

in € million	2023	2022
Profit/loss of companies accounted for using the equity method		
Associates	26	9
Joint ventures	71	51
Total profit/loss of companies accounted for using the equity method	**97**	**60**
Profit/loss of equity investments		
Cooperation companies	0	1
Other related companies	2	2
Total profit/loss of equity investments	**2**	**3**

The main driver of the profit/loss of companies accounted for using the equity method in 2023 was the positive business development at the associate PW1100G-JM Engine Leasing LLC, East Hartford, CT, USA and the joint venture MTU Maintenance Zhuhai Co. Ltd., Zhuhai, China. In contrast, a negative business development was reported by EME Aero sp.z o.o, Jasionka, Poland, which in 2023 was again affected by idling costs resulting from the recent massive capacity expansion for the growing GTF engine maintenance business, combined with capacity constraints resulting from the only gradual stabilization of the material supply chain.

Information on companies accounted for using the equity method is provided in *Note 16. Financial assets*.

8. Net interest income/expense

[T74] Net interest income/expense

in € million	2023	2022
Interest income	**29**	**7**
Interest expense		
Bonds and notes	-20	-20
Convertible bonds	-4	-4
Liabilities to banks	-0	-1
Lease liabilities	-4	-4
Other interest expense	-16	-3
Capitalized borrowing costs for qualifying assets	3	3
Interest expense	**-41**	**-29**
Net interest income/expense	**-12**	**-22**

The year-on-year increase in interest income is mainly due to the general increase in interest rates, which increased the return on the investment of MTU's liquidity reserves. The increase in other interest expense resulted principally from interest on the financial liability that has been recognized since 2022 in connection with the obligation to make compensation payments within the scope of MTU's stake in the consortium for the PW1100G-JM engine program. Further information on the obligation to make compensation payments can be found in *Note 28. Financial liabilities, in the section Miscellaneous other financial liabilities (financing component)*. The borrowing costs capitalized in the reporting period relate to qualifying assets acquired or constructed mainly in connection with the Group's stake in the PW800 engine program and the construction of new buildings at the Munich site. The capitalized amount was determined using a cost of debt of 2.7% (previous year: 2.3%).

9. Other financial income/expense

[T75] Other financial income/expense

in € million	2023	2022
Effects of currency translation: exchange rate gains/losses on		
currency holdings	3	-1
financing transactions	-0	3
lease liabilities	2	-5
Fair value gains/losses on derivatives		
Currency derivatives (exchange rate risks/hedging)	2	-9
Commodity forwards	-13	6
Interest included in measurement of assets and liabilities		
Pension obligations and plan assets	-28	-11
Receivables, other provisions and liabilities	2	-5
Miscellaneous other financial income/expense	1	0
Other financial income/expense	**-32**	**-23**

The effects from measurement of foreign currency holdings mainly relate to the change in the U.S. dollar exchange rate prevailing on the reporting date from U.S.$1.07 to U.S.$1.11 to the euro in 2023. The amounts recognized for pensions and plan assets were affected by the change in the discount rate compared with the previous year. Further details can be found in *Note 25. Pension provisions.*

10. Income taxes

Recognized income taxes comprise current income taxes paid or payable in the countries in which the Group operates, and deferred tax income or expense.

[T76] Analysis of current and deferred income taxes

in € million	2023	2022
Tax expense incurred in current period	–155	–179
Tax expense (-)/tax income incurred in prior periods	–2	–14
Current income taxes	**–156**	**–192**
Deferred tax expense (-)/tax income resulting from temporary differences	264	56
Deferred tax expense (-)/tax income resulting from tax credits	1	7
Deferred tax expense (-)/tax income resulting from tax losses carried forward	0	0
Deferred income taxes	**265**	**63**
Income tax expense (-)/income	**108**	**–130**

The tax expense does not include the Group's share of the tax expense of financial assets accounted for using the equity method, which amounted to €15 million (previous year: €6 million) and is included in profit/loss of companies accounted for using the equity method in the consolidated income statement. The development of deferred income taxes in the reporting period was principally affected by temporary differences resulting from the reduction in revenue as a result of accrual of the expected expenses in connection with the PW1100G-JM Geared Turbofan fleet management plan (see Note 12. Additional disclosures relating to the income statement – Reconciliation to adjusted key performance figures). Information on changes in deferred tax assets and liabilities is provided in Note 34. Deferred taxes.

Tax reconciliation

As a basic principle, deferred tax assets and liabilities are measured using the applicable tax rate for the period when the asset is realized or the liability is settled, based on current tax legislation in the countries concerned.

In the reporting period, as in the previous year, the deferred taxes of the German Group companies were measured using a regular income tax rate of 32.2%. The income tax rate for the domestic tax group of MTU Aero Engines AG is still comprised of the uniform corporation tax rate of 15.0% plus a solidarity surcharge of 5.5% on the calculated corporation tax expense and takes into account an average municipal trade tax rate of 16.4%.

The deferred taxes of companies outside Germany were determined in each case on the basis of the relevant tax rates for the countries in question, which range between 15% and 27%.

Information on changes in deferred tax assets and liabilities is provided in Note 34. Deferred taxes.

The following table shows the reconciliation of expected tax expense to recognized tax expense:

[T77] Tax reconciliation

in € million	2023	2022
Earnings before income taxes	–205	463
Income tax rate	32.2%	32.2%
Expected tax benefit (+)/expense (-)	**66**	**–149**
Impact of		
recognition and measurement adjustments and write-downs on deferred tax assets	5	3
non-tax-deductible operating expenses and tax-exempt income	9	–4
lower tax rates for companies outside Germany	15	2
investments accounted for using the equity method	18	12
tax audit and prior periods	0	1
Tax credits available for carry-forward	–4	4
Withholding tax charge and other foreign taxes	–2	–2
Other impacts	2	2
Income tax benefit (+)/expense (-)	**108**	**–130**
Effective tax rate	**52.8%**	**28.1%**

BEPS Pillar 2

As of the reporting date, Germany had transposed the BEPS Pillar 2 rules into law (Minimum Tax Act – MinStG), but the legislation was not applicable for 2023. The Group falls within the scope of this legislation.

As of the reporting date, MTU performed a first, indicative analysis to determine the basic impact and jurisdictions in which the Group could be exposed to possible effects in connection with BEPS Pillar 2.

As the first step, it examined whether the relief permitted within the BEPS Pillar 2 framework in the form of safe harbors based on country-by-country reporting (CbCR) is applicable. If, following examination of the safe harbor rules, a jurisdiction of relevance for the Group was not deemed to be exempt from the full BEPS Pillar 2 calculation, the effective tax rate within the meaning of BEPS Pillar 2 was calculated using a simplified method.

Based on this indicative analysis, no jurisdictions were identified where the Group would be affected by a BEPS Pillar 2 top-up tax. At present, it is therefore assumed that the Group will not be exposed to any relevant effects from the BEPS Pillar 2 top-up tax on the average effective tax rate for the Group in the future, when the BEPS Pillar 2 legislation comes into force.

The Group is keeping a close eye on the progress of the legislative process in each country where it operates.

MTU applies the exception permitted by IAS 12 and does not recognize deferred tax assets and liabilities in connection with the BEPS Pillar 2 income taxes, nor does it make any related disclosures.

11. Earnings per share

To determine diluted earnings per share, the number of common shares that could potentially be issued through the granting of equity instruments is added to the weighted average number of outstanding shares.

The net income attributable to shareholders of MTU Aero Engines AG amounted to €-102 million (previous year: €331 million).

In the reporting period, the weighted average number of outstanding shares was 53,691,433 (previous year: 53,366,518 shares). Based on these parameters, basic earnings per share amounted to €-1.90 (previous year: €6.21).

Dilutive effects arose from 1,395,418 shares (previous year: 1,707,201 shares) that could potentially be issued through the convertible bonds issued by MTU. Due to the loss in the reporting period, diluted earnings per share in accordance with IAS 33.41 were also €-1,90 (previous year: €6.06).

12. Additional disclosures relating to the income statement

Reconciliation to adjusted key performance figures

In the reconciliation of the consolidated income statement, special items, especially amounts recognized in operating results that are material – measured using the internal materiality criterion for external reporting (see *section I. Accounting principles and policies / Consolidated group / Materiality criterion – Non-material investments*) – and, above all, amounts relating to other periods, are factored out of the key earnings figures of the Group and its segments. The aim is to measure the success of managing operating activities in the reporting period and, at the same time, to provide information as a further point of reference for efficient comparison with different periods and companies.

Following its standard practice, the central earnings indicators reported by MTU as key performance indicators are:

- adjusted earnings before interest and taxes (adjusted EBIT), the adjusted EBIT margin and
- adjusted net income.

Given the considerable impact of the adjusted earnings contributions factored out as a special item in connection with the "other significant non-period earnings impacts" in connection with the accrual of the expected charges for the "PW1100G-JM Geared Turbofan fleet management plan," in order to ensure the meaningfulness of the adjusted EBIT margin and provide information on organic business growth in the reporting period, the following supplementary indicator was calculated for the first time:

- adjusted revenue.

The adjusted figures do not come under the provisions of the International Financial Reporting Standards (IFRSs); they are to be seen as an addition to the key financial indicators reported pursuant to IFRSs.

It is standard practice for the CEO to classify items and the corresponding earnings contributions as special items to be eliminated in the reconciliation to the adjusted figures in consultation with the CFO, the Chairman of the Supervisory Board and the members of the Supervisory Board's Audit Committee.

Adjusted revenue

With a view to consistent reporting, in the reporting period revenue was adjusted for the "significant non-period earnings impacts" in connection with the Geared Turbofan fleet management plan described in the section on adjusted EBIT, the impact of the "consortial major litigation and claims," which also affect revenue, and the "effects from the increase in the stake in IAE-V2500."

Adjusted revenue was €6,326 million in the reporting period (for details, see the *table Reconciliation of the consolidated income statement*). The prior-year revenue figure has not been amended because adjusted revenue was not reported in the previous year for materiality reasons because there was no relevant influence on the adjusted EBIT margin.

Adjusted EBIT

Following its standard practice, MTU adjusted the EBIT calculated in accordance with the IFRSs for the following categories of special items:

Adjusted special items comprising recurring effects – to enhance the comparability of financial reporting within the sector:

/ "Effects of the purchase price allocation": As of January 1, 2004, MTU passed into the ownership of Kohlberg Kravis Roberts & Co. Ltd. (KKR), following the latter's purchase of 100% of the MTU shares from the then DaimlerChrysler AG. In the context of the acquisition, assets, liabilities and contingent liabilities were identified in accordance with IFRS 3 and measured at fair value. Since then, the identified intangible assets, in particular, have resulted in substantial amortization. The resulting earnings impacts are eliminated as special items in the reconciliation to adjusted EBIT.
/ "Effects from the increase in the stake in IAE-V2500": The increase in MTU's stake in the Pratt & Whitney IAE-V2500 program in 2012 was accounted for as the addition of a program asset. Since then, this asset has been amortized over the expected remaining useful life of the program, thereby reducing revenue, and the corresponding earnings impact is eliminated as a special item in the reconciliation to adjusted EBIT.

Special items comprising non-period effects – to enhance measurement of the Group's operating performance and the comparability of financial reporting, especially over time:

/ "Impairment losses": Significant earnings impacts resulting from asset impairment losses, especially in accordance with IAS 36, are eliminated as special items in the reconciliation to adjusted EBIT. In the previous year, the impact of impairment losses in connection with the termination of business relationships with Russian partners as a consequence of the **Russia-Ukraine war** was eliminated in adjusted EBIT. In 2022, earnings were impacted by impairment losses on assets relating to the stake in the PW1400G-JM program and, to a smaller extent, the stake in the PW1100G-JM and the commercial maintenance business (MRO segment).
Claims to insurance compensation payments for materialized damage from the leasing of engines to Russian customers, which were impaired in the previous year, were realized in the reporting period. The corresponding other operating income was eliminated as a special item in the reconciliation to adjusted EBIT and adjusted net income in the reporting period.

In 2022, the earnings impact of impairment losses in connection with changes in forecast sales of the **GE T408 program** – the engine for the Sikorsky CH53-K transport helicopter – was eliminated in the calculation of adjusted EBIT.

/ "Restructuring expenses": Earnings impacted by restructuring measures according to the meaning of IAS 37. No such effects had to be recognized in the reporting period or the previous year.

/ "Changes in the consolidated group": Earnings impacts result from the acquisition, divestment or discontinuation of material investments and processes of a comparable nature. No such effects had to be recognized in the reporting period or the previous year.

/ "Other significant non-period earnings impacts": In keeping with the objective of the adjusted earnings parameters (see above), analogously to the categories specified in previous periods, adjustments were made for the earnings impacts of non-period transactions, i.e., transactions that impact earnings across periods. In the reporting period, this category comprised the considerable earnings impact of the **accrual for the expected charges for the PW1100G-JM "Geared Turbofan fleet management plan".**

/ Further details can be found in *section I. Accounting principles and policies / PW1100G-JM Geared Turbofan fleet management plan (powder metal issue)* in the notes to the consolidated financial statements.

In the reporting period, this category also contained the earnings impact of the provisions for "**consortial major litigation and claims**" in connection with pending arbitration proceedings. The resulting reduction in revenue in the reporting period was €26 million and was eliminated as a special item in the calculation of adjusted EBIT.

These effects have been eliminated as a special item in the reconciliation to adjusted revenue and adjusted EBIT.

Adjusted net income

Similarly, the effect of the special items outlined above is eliminated from earnings before income taxes. To establish adjusted earnings before income taxes, only net interest income/expense and the interest shares in other financial income/expense, which are mainly connected with provisions for pensions and liabilities from pensions and plan assets, are added to adjusted EBIT. None of the other components of financial income/expense, especially those that are influenced by the U.S. dollar exchange rate, such as the effects of exchange-rate hedging, are taken into account.

Adjusted net income is derived from adjusted earnings before income taxes. The normalized income taxes are calculated on the basis of the expected average tax rate for the Group derived in each case from the current operational planning for the Group. This is 27% (previous year: 26%). The profit/loss of companies accounted for using the equity method does not form part of the tax base.

[T78] Reconciliation of the consolidated income statement

in € million	2023 As reported	2023 Non-recurring items	2023 Adjusted figures	2022 As reported	2022 Non-recurring items	2022 Adjusted figures
Revenue [1]	**5,363**	**963**	**6,326**	**5,330**		**5,330**
thereof: special item "Other material aperiodic contribution to earnings" - "Geared Turbofan fleet management plan"		917	917			
thereof: special item "Other material aperiodic contribution to earnings" – "consortial major litigation and claims"		23	23			
thereof: special item "effects from increase in the stake in IAE/V2500"		23	23		23	23
Cost of goods sold [1]	–5,245	34	–5,211	–4,475		–4,475
thereof: special item "effects of purchase price allocation"		19	19		20	20
thereof: special item "Other material aperiodic contribution to earnings" - "Geared Turbofan fleet management plan"		15	15			0
thereof: special item "impairment losses" – "program GE T408"			0		24	24
thereof: special item "impairment losses" – "Russia-Ukraine war"			0		63	63
Gross profit	**118**	**997**	**1,115**	**855**	**129**	**984**
Research and development expenses	–114		–114	–106		–106
Selling expenses	–141		–141	–143		–143
thereof: special item "impairment losses" – "Russia-Ukraine war"			0		12	12
General administrative expenses	–109		–109	–111		–111
Other operating income and expenses	–14		–14	–50		–50
thereof: special item "impairment losses" – "Russia-Ukraine war"		–21	–21			0
Profit/loss of companies accounted for using the equity method and of equity investments	99		99	62		62
thereof: special item "impairment losses" – "Russia-Ukraine war"		–0	–0		6	6
Special item "Other material aperiodic contribution to earnings" – "consortial major litigation and claims"		3	3			
Earnings before interest and taxes (EBIT)	**–161**	**979**	**818**	**508**	**147**	**655**
Net interest income/expense	–12		–12	–22		–22
Other financial income – interest included in the measurement of pensions	–29		–29	–11		–11
Other financial income/expense – miscellaneous (e.g., measurement of foreign currency holdings)	–4	4	0	–12	12	0
Earnings before income taxes	**–205**	**983**	**777**	**463**	**159**	**622**
Income taxes	108		108	–130		–130
Adjustment based on normalized income taxes		–292	–292		–16	–16
Net income	**–97**	**691**	**594**	**333**	**143**	**476**

[1] The previous year's figures for revenue and cost of goods sold have not been adjusted because adjusted revenue was not reported in 2022. In the table, adjustments are allocated to the 2022 figures for revenue and the cost of goods sold for information.

Adjusted EBITDA

[T79] Reconciliation of EBIT to adjusted EBITDA

in € million	2023	2022
Earnings before interest and taxes (EBIT)	**–161**	**508**
Amortization/impairment losses	331	357
Earnings before interest and taxes, depreciation and amortzation (EBITDA)	**171**	**865**
thereof: special item "Other material aperiodic contribution to earnings" – "Geared Turbofan fleet management plan"	932	
thereof: special item "Impairment losses" – "Russia-Ukraine war" (not in amortization/depreciation)	–21	39
thereof: special item "Other material aperiodic contribution to earnings" – "consortial major litigation and claims"	26	
Adjusted earnings before interest and taxes, depreciation and amortization (adjusted EBITDA)	**1,108**	**904**

Personnel expenses

Personnel expenses, calculated using the total cost method, were as follows:

[T80] Personnel expenses

in € million	2023	2022
Wages and salaries	902	809
Social security, pension and other benefit expenses	161	145
Total personnel expenses	**1,063**	**954**

Personnel expenses include pension benefits of €13 million (previous year: €13 million). Other social security expenses amounted to €149 million (previous year: €132 million). The increase in wages and salaries is primarily attributable to the increase in active employees in line with the growth in the operating business. In addition, salary increases and special payments aimed at offsetting inflation in both the non-performance-related components and the performance-related components increase personnel expenses.

Number of employees

The average number of persons employed during the fiscal year breaks down as follows:

[T81] Disclosures on the average number of employees

Number	2023	2022
Industrial staff	4,681	4,304
Administrative staff	5,562	5,103
Temporary employees	1,099	990
Employees in vocational training	299	317
Interns	248	235
Total average number of employees	**11,889**	**10,949**

Group auditor compensation

The fees charged for fiscal year 2023 in accordance with Section 314 (1) no. 9 of the German Commercial Code (HGB) amounted to €1,873 thousand (previous year: €1,998 thousand). Of this amount, €1,568 thousand was charged by the auditor of the consolidated financial statements for fiscal year 2023, KPMG AG, Wirtschaftsprüfungsgesellschaft, while €305 thousand was charged for previous years by the previous auditor of the consolidated financial statements, Ernst & Young GmbH, Wirtschaftsprüfungsgesellschaft (comprising €259 thousand for financial statement auditing services, €12 thousand for other assurance services and €34 thousand for other services).

[T82] Group auditor compensation

in € thousand	2023	2022
Financial statement auditing services	1,584	1,555
Other assurance services	224	432
Other services	66	11
Total Group auditor compensation	**1,873**	**1,998**

The fee for financial statement auditing services related to the audit of the consolidated financial statements and the separate financial statements of MTU Aero Engines AG and its subsidiaries by KPMG in 2023 and by Ernst & Young GmbH in the previous year, and to reviews of the interim financial statements. Other assurance services included the limited assurance engagement on selected non-financial key performance figures and the non-financial statement and the compensation report as well as the EMIR audit. The other services relate to handover services in connection with non-audit services performed before the start of the audit period.

III. Notes to the consolidated balance sheet

13. Changes in intangible assets, goodwill, and property, plant and equipment

[T83] Changes in non-financial assets – purchase and production costs 2023

in € million	As of Jan. 1, 2023	Currency translation differences	Additions	Transfers	Disposals	As of Dec. 31, 2023
Program assets (purchase price allocation)	670					670
Program-independent technologies (purchase price allocation)	125					125
Customer relationships (purchase price allocation)	57					57
Rights and licenses	229	1	25	25	–0	280
Goodwill	386					386
Development assets	625		57			682
Prepayments on intangible assets	0					
Intangible assets & goodwill	**2,092**	**1**	**82**	**25**	**–0**	**2,200**
Land, leasehold rights and buildings, including buildings on third-party land	727	4	53	129	–2	911
Technical equipment, plant and machinery	922	6	24	88	–6	1,033
Other equipment, operational and office equipment	930	2	197	20	–151	998
Advance payments and construction in progress	286	1	155	–261	–0	181
Property, plant and equipment	**2,865**	**13**	**429**	**–25**	**–159**	**3,122**
Total	**4,957**	**14**	**511**	**–0**	**–159**	**5,322**

[T84] Changes in non-financial assets – depreciation/amortization and carrying amount 2023

in € million	As of Jan. 1, 2023	Currency translation differences	Additions	Transfers	Disposals	As of Dec. 31, 2023	Carrying amount as of Dec. 31, 2023
Program assets (purchase price allocation)	486		18			504	166
Program-independent technologies (purchase price allocation)	125					125	
Customer relationships (purchase price allocation)	55		0			55	1
Rights and licenses	146	1	18		–0	164	116
Goodwill							386
Development assets	130		22			152	530
Prepayments on intangible assets							
Intangible assets & goodwill	**941**	**1**	**58**		**–0**	**1,000**	**1,200**
Land, leasehold rights and buildings, including buildings on third-party land	235	1	29	0	–1	265	646
Technical equipment, plant and machinery	677	3	62	–0	–5	736	297
Other equipment, operational and office equipment	569	2	131	0	–82	621	377
Advance payments and construction in progress							181
Property, plant and equipment	**1,481**	**5**	**223**	**0**	**–88**	**1,622**	**1,501**
Total	**2,423**	**6**	**282**		**–88**	**2,622**	**2,701**

[T85] Changes in non-financial assets – purchase and production costs 2022

in € million	As of Jan. 1, 2022	Currency translation differences	Additions	Transfers	Disposals	As of Dec. 31, 2022
Program assets (purchase price allocation)	670	0		–0		670
Program-independent technologies (purchase price allocation)	125					125
Customer relationships (purchase price allocation)	57					57
Rights and licenses	156	–0	7	67	–0	229
Goodwill	386					386
Development assets	572		53			625
Prepayments on intangible assets	47			–47		
Intangible assets & goodwill	**2,013**	**–0**	**60**	**20**	**–0**	**2,092**
Land, leasehold rights and buildings, including buildings on third-party land	655	1	7	70	–5	727
Technical equipment, plant and machinery	887	0	14	33	–12	922
Other equipment, operational and office equipment	875	–0	180	13	–138	930
Advance payments and construction in progress	236	0	185	–135		286
Property, plant and equipment	**2,653**	**1**	**387**	**–20**	**–155**	**2,865**
Total	**4,665**	**0**	**447**		**–156**	**4,957**

[T86] Changes in non-financial assets – depreciation/amortization and carrying amount 2022

in € million	As of Jan. 1, 2022	Currency translation differences	Additions	Transfers	Disposals	As of Dec. 31, 2022	Carrying amount Dec. 31, 2022
Program assets (purchase price allocation)	467	0	18	–0		486	185
Program-independent technologies (purchase price allocation)	125					125	
Customer relationships (purchase price allocation)	53		2			55	1
Rights and licenses	131	–0	15	0	–0	146	83
Goodwill							386
Development assets	108		22			130	495
Prepayments on intangible assets							
Intangible assets & goodwill	**885**	**–0**	**57**	**0**	**–0**	**941**	**1,151**
Land, leasehold rights and buildings, including buildings on third-party land	214	–0	26	–0	–5	235	492
Technical equipment, plant and machinery	632	–1	58	–0	–12	677	245
Other equipment, operational and office equipment	556	–0	108	0	–94	569	360
Advance payments and construction in progress							286
Property, plant and equipment	**1,401**	**–1**	**191**	**–0**	**–110**	**1,481**	**1,384**
Total	**2,286**	**–1**	**248**		**–111**	**2,423**	**2,534**

14. Intangible assets and goodwill

Intangible assets comprise program assets, program-independent technologies and customer relationships which were capitalized as part of the purchase price allocation in connection with the acquisition by Kohlberg Kravis Roberts & Co. Ltd. (KKR) on January 1, 2004, of the shareholding in MTU previously held by DaimlerChrysler AG, and acquired goodwill. This item also includes capitalized, internally generated development assets as well as right-of-use assets and licenses, particularly in connection with – mainly technical – software.

In the reporting period, MTU capitalized a total of €82 million (previous year: €60 million) for intangible assets. Of this amount, €57 million (previous year: €53 million) was for own development work, mainly in connection with the Pratt & Whitney GTF engines and the PW800 engine program.

The proportion of additions to intangible assets in the reporting period identified as taxonomy-eligible within the meaning of the EU Taxonomy for sustainable economic activities and further disclosures on the EU Taxonomy can be found in the section *Disclosures on the EU taxonomy in the non-financial statement in the management report*.

€58 million (previous year: €56 million) of the amortization expense for intangible assets was recognized in the cost of goods sold; this amount does not include any impairment losses within the meaning of IAS 36 on internally generated development assets (previous year: impairment losses of €3 million on internally generated development assets in connection with the Russia-Ukraine war special item).

Goodwill reported in intangible assets is allocated to the operating segments as follows:

[T87] Goodwill of operating segments

in € million	Dec. 31, 2023	Dec. 31, 2022
Commercial and military engine business (OEM segment)	304	304
Commercial maintenance business (MRO segment)	82	82
Total goodwill	**386**	**386**

Goodwill was tested for impairment in the reporting period as in previous years. For information on the basic approach, please refer to *Impairment of intangible assets, property, plant and equipment, acquired program assets and acquired development work in Section I. Accounting principles and policies*. As in previous years, the end of the first half of the year (June 30, 2023) was taken as the date for the regular impairment testing of the goodwill of the segments. The PW1100G-JM Geared Turbofan fleet management plan (powder metal problem) initiated in September by the consortium leader P&W, which is expected to have a considerable financial impact on MTU as a partner in the consortium, triggered a new impairment test on goodwill as of September 30, 2023. The results of this impairment test are presented below. Compared with the regular impairment test as of June 30, 2023, there were only minor changes because the decline in the value in use of the OEM segment, which was affected by the Geared Turbofan fleet management plan, was largely offset by a corresponding reduction in the carrying amount of the OEM segment.

The value in use calculations are based on the following assumptions: The first step involves the use of models to predict future changes in the engine fleet and the corresponding market shares of engines for which MTU holds or expects to hold supply responsibility (OEM segment) or that are or will be of significance to its service business, especially in the MRO segment. MTU applies these forecasts systematically as a basis for its revenue and corresponding capacity planning, from which the planned EBIT and cash flows for each of the two business segments are derived.

The outcome of this process is therefore necessarily based on expectations as regards future market shares and growth in the individual markets, the profitability of products, available supply chain and personnel capacity, and macroeconomic developments such as trends in exchange rates, interest rates and commodity prices against a backdrop of decisions related to climate policy and geopolitics. The values in use, and the corresponding carrying amounts, are determined without reference to financing activities.

In the OEM segment, the calculation of cash flow used to determine the value in use is based on average revenue growth in the mid-single digit percentage range in the five-year planning period. The EBIT margin is expected to grow at average rates in the high single-digit percentage range. The weighted cost of capital before taxes (discount rate) applied here was 11.4% (previous year: 10.7%). The increase in the weighted cost of capital is mainly due to the increase in the risk-free interest rate. Since the detailed planning period in the OEM segment depends on the pricing typical for the commercial industry for the new engine and spare parts businesses, while the multi-year program business cycles are dominated by the impact of the PW1100G-JM Geared Turbofan fleet management plan and the special item relating to the geopolitical influence of the Russia-Ukraine war and its macroeconomic implications, the perpetuity is derived from the strategic long-term planning as in previous years. In this way, the Group endeavors to take a balanced view of both the low-margin phase for ramping up stakes in newer commercial engine programs and the stronger margin phase of the spare parts business in more mature programs. Consequently, the revenue assumption for the perpetuity is derived from the detailed operational planning period – the revenue in 2028 – plus a compound annual growth rate of 0.5% and an annuity. The annuity takes into account the extent to which revenue in the strategic long-term planning exceeds the revenue in the final year of the planning period (plus a growth rate of 0.5%). The operating earnings margin used for the perpetuity is based on a conservative valuation. Therefore, a margin below the average margin used for strategic long-term planning (2029 to 2037) is applied.

For the MRO segment, the detailed five-year planning horizon reflects average revenue growth in the mid single-digit percentage range and EBIT margin growth in the high single-digit percentage range, while the weighted average cost of capital before taxes (discount rate) is expected to be 10.8% (previous year: 10.6%). Analogously to the method used in the previous year, given the shorter business cycles of the MRO business, the perpetuity for this segment was derived from the revenue and EBIT margin for the final year of the detailed planning period (2028) plus a growth rate of 0.5% as in the previous year.

Impairment testing of goodwill did not result in the need to recognize impairment losses in either of the segments.

In addition, various sensitivity analyses were carried out. These did not indicate any imminent need to recognize impairment losses for segment activities, even in the case of less favorable assumptions than those applied during the original planning phase for key determining factors. In particular, neither the increase in the weighted cost of capital before taxes to 12.4% for the OEM segment and 11.8% for the MRO segment, nor a 30% shortfall in the planned EBIT – assuming otherwise identical conditions in each case – would imply an need to recognize an impairment loss for the segments. Further details of the influence of climate policy-related effects on MTU's business model, can be found in *section I. Accounting policies and principles – Discretionary scope, measurement uncertainties and sensitivity*.

15. Property, plant and equipment

Through its capital expenditure on property, plant and equipment, MTU aims to expand its production capacity and modernize equipment and machinery to state-of-the-art standards.

In the reporting period, the Group's total capital expenditure on property, plant and equipment amounted to €429 million (previous year: €387 million). Additions to this item also include the recognition of right-of-use assets relating to leases. Further information is provided in *Note 36. Leases*.

The depreciation expense for property, plant and equipment is included in the presentation of the following line items: cost of sales €217 million (previous year: €185 million), research and development expenses €2 million (previous year: €2 million), selling expenses 2 million (previous year: €2 million), and general administrative expenses €3 million (previous year: €3 million).

In the reporting period, additions to land, leasehold rights and buildings, including buildings on third-party land, amounted to €53 million (previous year: €7 million) and relate mainly to new buildings and right-of-use assets for real estate leases at the Munich location.

Capital expenditure on technical equipment, plant and machinery totaling €24 million (previous year: €14 million) relates mainly to the purchase of plant and machinery for the capacity expansion in connection with the ramp-up of production of the Pratt & Whitney GTF engine family and the GE9X engine program.

The capital expenditure on other equipment and operational and office equipment, which amounted to €197 million (previous year: €180 million), and the additions to advance payments and construction in progress, which amounted to €155 million (previous year: €185 million), relate to the expansion of production capacities at the Munich and Hanover locations and the growing engine leasing business at the Amsterdam location.

The proportion of additions to property, plant and equipment in the reporting period identified as taxonomy-eligible within the meaning of the EU Taxonomy for sustainable economic activities and further disclosures on the EU Taxonomy can be found in the *section Disclosures on the EU Taxonomy* in the non-financial statement in the management report.

16. Financial assets

Financial assets accounted for using the equity method

Financial assets accounted for using the equity method in the consolidated financial statements amounted to €643 million at the reporting date (previous year: €628 million).

Associates

PW1100G-JM Engine Leasing LLC, East Hartford, CT, USA, leases out replacement engines of the PW1100G-JM series and is the only material investment in an associate included in MTU's consolidated financial statements.

MTU holds an 18% interest in the company, which is included in the consolidated financial statements using the equity method for the consolidated financial statements, analogously to the previous years.

The table below provides a summary of the financial data of PW1100G-JM Engine Leasing LLC, East Hartford, CT, USA for the reporting period:

[T88] Summary of financial data of PW1100G-JM Engine Leasing LLC

in € million	2023	2022
Income statement		
Revenue	392	396
Net income	112	36
Total comprehensive income	**112**	**36**
Group's share in the income	23	6
Dividend received from the company	**22**	**58**
Balance sheet as of Dec. 31		
Current assets	319	238
Non-current assets	1,225	1,417
Current liabilities	14	78
Non-current liabilities	70	54
Equity	1,461	1,523
Share of equity	263	274
Reconciliation to carrying amount	-6	-8
Carrying amount of company accounted for using the equity method	257	266

The aggregated, unaudited financial information of the associates that are not material when considered separately for the reporting period is presented in the following table:

[T89] Aggregated financial information on the non-material associates

in € million	2023	2022
Net income	13	12
Total comprehensive income	**13**	**12**
Group's share in the income	3	2
Carrying amount of companies accounted for using the equity method	39	37

Further details of the shareholdings can be found in *Note 38. Related party disclosures*.

Joint ventures

The joint ventures identified as material in the reporting period are, as in the previous year, MTU Maintenance Zhuhai Co. Ltd., Zhuhai, China, and EME Aero sp. z o.o., Jasionka, Poland. MTU holds a 50% interest in each of these companies. MTU Maintenance Zhuhai Co. Ltd. specializes in the maintenance, repair and overhaul of the V2500, CFM56, LEAP and PW1100G-JM engines and serves the China and Southeast Asia regions. EME Aero sp. z o.o. focuses on providing maintenance services for the Pratt & Whitney GTF engine family, which powers the Airbus A320neo family and the Airbus A220 family along with other aircraft. The material joint ventures are included in this consolidated financial statements using the equity method.

The table below provides a summary of the unaudited financial data of the material joint ventures in the MTU Group for the reporting period and the previous year:

[T90] Income statement, statement of comprehensive income and balance sheet information of the material joint ventures

in € million	2023 EME Aero sp. z o.o.	2023 MTU Maintenance Zhuhai Co. Ltd.	2022 EME Aero sp. z o.o.	2022 MTU Maintenance Zhuhai Co. Ltd.
Income statement data disclosures				
Revenue	948	1,604	729	1,296
Depreciation/amortization and write-downs	-17	-12	-19	-12
Interest income		1		1
Interest expense	-24	-13	-11	-11
Income tax credits	2		9	
Income tax expense		-24		-16
Other income and expenses	-938	-1,402	-717	-1,162
Net income	**-28**	**155**	**-9**	**96**
Other comprehensive income				9
Total comprehensive income	**-28**	**155**	**-9**	**106**
Group's share in the income	-14	77	-5	53
Balance sheet disclosures				
Non-current assets	194	188	197	179
Cash and cash equivalents	16	37	55	35
Other current assets	299	1,031	303	946
Total assets	**508**	**1,256**	**555**	**1,159**
Equity	52	579	82	514
Non-current financial liabilities		225		230
Other non-current liabilities	11		11	
Current financial liabilities	440	278	457	299
Other current liabilities	6	174	5	117
Total equity and liabilities	**508**	**1,256**	**555**	**1,159**
Reconciliation to carrying amount				
Share of equity	26	289	41	257
Reconciliation to carrying amount	0		0	
Carrying amount of companies accounted for using the equity method	**26**	**289**	**41**	**257**
Dividend received from joint ventures		**28**		**14**

The aggregated, unaudited financial information of the joint ventures that are not material when considered separately for the reporting period are presented in the following table:

[T91] Aggregated financial information on the non-material joint ventures

in € million	2023	2022
Net income	17	5
Other comprehensive income	0	0
Total comprehensive income	**17**	**6**
Group's share in the income	8	3
Carrying amount of companies accounted for using the equity method	31	27

Further details of the shareholdings can be found in *Note 38. Related party disclosures*.

Other financial assets

The carrying amounts of other financial assets included in the consolidated financial statements are presented below:

[T92] Breakdown of other financial assets

	Total		Non-current		Current	
in € million	Dec. 31, 2023	Dec. 31, 2022	Dec. 31, 2023	Dec. 31, 2022	Dec. 31, 2023	Dec. 31, 2022
Financial assets measured at purchase cost	**734**	**466**	**72**	**71**	**662**	**395**
Loans to third parties[1]	52	60	52	60		
Loans to related companies[1]	14	6	14	6		
Receivables from employees	1	1	0	0	1	1
Receivables from suppliers	4	4			4	4
Aftermarket compensation payments	487	279			487	279
Miscellaneous other financial assets	176	117	6	6	169	111
Financial assets at fair value through other comprehensive income	**17**	**4**	**17**	**4**		
Other interests in related companies	17	4	17	4		
Derivatives without hedging relationship		**5**		**1**		**4**
Derivatives with hedging relationship	**61**	**34**	**43**	**24**	**18**	**11**
Total other financial assets	**812**	**510**	**132**	**100**	**679**	**410**

[1] Included in net financial debt.

Loans to third parties are primarily attributable to the stakes in consortia granting financing for aircraft and engines as part of commercial OEM programs, especially for the GTF engine family.

The receivables from suppliers primarily include credit notes, e.g., in connection with returned goods, amendments to invoices and trade discounts received.

The program aftermarket compensation payments contain accrued compensation components payable to the consortium leader (OEM) for maintenance business within the GTF engine programs, especially the PW1100G-JM. These assets are amortized through the share of the net revenue from the engine maintenance contracts for the respective GTF engine programs. Expected inherent invoicing and credit risks relating to the above assets are taken into account by recognizing differentiated value allowances.

Miscellaneous other financial assets amounting to €176 million (previous year: €117 million) relate to numerous individual items that are not material when viewed separately, for example, security for leases and rented premises.

Other interests in related companies include the carrying amounts of MTU's investments in companies that are neither fully consolidated nor accounted for using the equity method (for further details of shareholdings see *Note 38. Related party disclosures*).

As in previous years, the present value of the derivatives without hedging relationships recognized on the balance sheet serve to hedge operational commodity price risks. As in previous years, the present value of the derivatives with hedging relationships recognized on the balance sheet serve to hedge currency risks and are composed as follows as of the reporting date:

[T93] Derivative financial instruments

in € million	Total Dec. 31, 2023	Total Dec. 31, 2022	Non-current Dec. 31, 2023	Non-current Dec. 31, 2022	Current Dec. 31, 2023	Current Dec. 31, 2022
Forward foreign exchange contracts (Derivates with a hedging relationship)	61	34	43	24	18	11
Nickel forward contracts (Derivatives without a hedging relationship)		5		1		4
Total derivative financial instruments	**61**	**39**	**43**	**25**	**18**	**15**

17. Acquired program assets, development work and other assets

Acquired program assets, development assets

In the reporting period, compensation payments for development work in an amount of €21 million (previous year: €14 million) paid to consortium leaders of commercial engine programs were capitalized. Amortization of accrued payments for acquired development assets amounted to €10 million in the reporting period (previous year: €10 million). In the reporting period, no impairment losses were recognized on compensation payments as a result of impairment testing due to indications of impairment (IAS 36) (previous year: €62 million, of which €38 million related to the PW 1400G-JM engine program and €24 million to the T408 engine program).

MTU spent €4 million on the acquisition of program assets in the reporting period (previous year: €12 million). Amortization of acquired program assets amounted to €40 million in the reporting period (previous year: €38 million). No impairment losses had to be recognized on program assets in 2023 or the previous year. In the reporting period, translation differences arising from the translation of the financial statements of foreign entities contained €24 million for acquired program assets (previous year: €-7 million).

In line with MTU's standard practice, impairment losses are determined at the level of the stake in OEM engine programs (cash-generating units) by comparing the value in use of the relevant engine programs, calculated using the DCF method, with the corresponding net program assets. In addition to capitalized development assets, program assets, compensation payments for development work (acquired development work), net program assets include the attributable property, plant and equipment, inventories, contract assets and trade receivables. Relevant program obligations, especially refund liabilities, are reflected as reductions in this context.

In the previous year, earnings were impacted by impairment losses of €71 million on assets relating to the stake in the PW1400G-JM engine program for the Russian Irkut MC-21 and the T408 engine program for the heavy duty transport helicopter Sikorsky CH-53K. €62 million of these impairment losses related to the line item "acquired program assets, development work and other assets." Further information on this matter can be found in *Note 2. Cost of goods sold and Note 12. Additional disclosures relating to the income statement*.

Additional information on impairment testing can also be found in *section I. Accounting policies and principles – Discretionary scope, measurement uncertainties and sensitivity*.

As a result of subsequent measurement of the increase in the IAE-V2500 stake, program assets increased by €3 million (previous year: decreased by €10 million). This increase in this stake is recognized analogously to IFRIC 1 because it relates to retrospective purchase costs that depend on future economic benefits and are therefore variable costs. More information can be found in *section I. Accounting policies and principles under Acquired program assets and acquired development work*.

Other assets

Other assets include claims for tax refunds amounting to €35 million (previous year: €31 million) in respect of transactional taxes, insurance premiums and rents.

18. Deferred tax assets

Deferred tax assets increased by €245 million to €328 million in the reporting period (previous year: €84 million). This was mainly due to the development of temporary differences due to earnings impact of the provisions established for expected expenses in connection with PW1100G-JM Geared Turbofan fleet management plan. Further details of deferred taxes can be found in Note 10. Income taxes and Note 34. Deferred taxes.

19. Inventories

The carrying amount of inventories, taking into account valuation allowances, comprises the following components:

[T94] Inventories

		Dec. 31, 2023			Dec. 31, 2022		
in € million	Change in Valuation allowances	Gross amount	Valuation allowances	Carrying amount	Gross amount	Valuation allowances	Carrying amount
Raw materials and supplies	-13	883	-98	785	803	-85	719
Work in progress	-12	582	-30	552	520	-18	501
Finished goods	-12	318	-75	243	311	-64	247
Advance payments		49		49	47		47
Total inventories	**-37**	**1,832**	**-203**	**1,629**	**1,681**	**-167**	**1,514**

Of the total volume of inventories, an amount of €452 million (previous year: €376 million) was considered to be impaired at the reporting date. The valuation allowances relate to volume and price risks. More information on this can be found in the section I. Accounting policies and principles – Discretionary scope, measurement uncertainties and sensitivity.

20. Trade receivables

[T95] Trade receivables

in € million	Dec. 31, 2023	Dec. 31, 2022
Third parties	603	536
Related companies	407	574
Total trade receivables	**1,010**	**1,110**

As of the reporting date, the carrying amount of trade receivables includes valuation allowances in the amount of €33 million (previous year: €34 million). Information on changes in these valuation allowances in the reporting period can be found in *Note 21. Contract assets*. Further details on trade receivables from related companies can be found in *Note 38. Related party disclosures*.

21. Contract assets

The contract assets result from performance obligations that have been satisfied, where receipt of the agreed consideration depends on acceptance of the performance obligation by the customer and the amounts becoming due for payment.

Valuation allowances on trade receivables and contract assets changed as follows in the fiscal year:

[T96] Valuation allowances

in € million	2023	2022
As of Jan. 1	**39**	**58**
Translation differences		
Transferred		
Additions	9	9
Utilized	-5	-22
Reversed	-3	-5
As of Dec. 31	**41**	**39**

Contract assets account for €8 million (previous year: €6 million) of the reported valuation allowances. The increase in valuation allowances in the reporting period are consistent with changes in the invoicing and credit risks of specific customers in the commercial engine business and are predominantly recognized on a case-by-case basis. The expenses resulting from the derecognition of trade receivables, offset against the corresponding revenue, amounted to €5 million (previous year: €9 million).

Income and expenses relating to valuation allowances for contract assets are presented in revenue as the underlying valuation allowances relate to invoicing and credit risks.

In order to minimize the non-payment risk, an active receivables management system is operated both in the OEM segment, supported in particular by the responsible engine consortium leader, and in the MRO segment.

22. Income tax receivables

At the reporting date, income tax receivables amounted to €81 million (previous year: €34 million). €78 million of this amount (previous year: €28 million) comprises income tax receivables in Germany.

23. Cash and cash equivalents

The cash and cash equivalents amounting to €883 million (previous year: €823 million) comprise cash in hand and bank deposits. This item also includes foreign-currency holdings with an equivalent value of €180 million (previous year: €170 million). The increase in foreign currency holdings corresponds to the operation development of the commercial OEM and MRO businesses, where invoicing is normally in U.S. dollars.

As of December 31, 2023, €781 million (previous year: €506 million) of the cash and cash equivalents was invested in short-term money market instruments.

24. Equity

Changes in Group equity are presented in the consolidated statement of changes in equity.

Subscribed capital

Due to the exercise of conversion options from the convertible bond issued in 2016, the company's subscribed capital increased from €53 million at year-end 2022 to €54 million at year-end 2023. It is divided into 54 million non-par-value registered shares.

Authorized capital

In accordance with Article 4 (5) of the articles of association, the Executive Board is authorized until April 20, 2026, to increase the company's capital stock by up to €16.0 million, with the prior approval of the Supervisory Board, by issuing, either in a single step or in several steps, new registered non-par-value shares in return for cash and/or contributions in kind (Authorized Capital 2021). The Authorized Capital 2021 was adopted in the Annual General Meeting on April 21, 2021; the same resolution annulled the Authorized Capital 2019.

Conditional capital

In accordance with Article 4 (6) of the articles of association, the company's capital stock may be conditionally increased by up to €3,746,888 through the issue of up to 3,746,888 new registered non-par-value shares. The purpose of this conditional capital increase is to issue shares to owners or creditors of convertible bonds and/or bonds with warrants in accordance with the authorization granted to the company under a resolution passed by the Annual General Meeting on April 15, 2015. Shares are issued at a conversion price or warrant exercise price determined on the basis of this authorization.

Until April 14, 2020, the Executive Board was authorized to issue, with the prior approval of the Supervisory Board, bearer and/or registered convertible bonds and/or bonds with warrants (collectively referred to as "bonds") with a total nominal value of up to €500 million. In 2016, MTU made use of this authorization to increase the company's capital stock by issuing a convertible bond with a nominal value of €500 million.

Further, Article 4 (7) of the articles of association stated that the company's capital stock may be conditionally increased by up to €2,600,000 through the issue of up to 2,600,000 new registered non-par-value shares (Conditional Capital 2019). The purpose of this conditional capital increase was to issue shares to owners or creditors of convertible bonds and/or bonds with warrants in accordance with the authorization granted to the company under a resolution passed by the Annual General Meeting on April 11, 2019. Shares were issued at a conversion price or warrant exercise price determined on the basis of this authorization.

The Executive Board was authorized until April 10, 2024, to issue, in a single step or in several steps and with the prior approval of the Supervisory Board, bearer and/or registered convertible bonds and/or bonds with warrants (collectively referred to as "bonds"), with or without maturity date, with a total nominal value of up to €600 million, and to grant the owners of convertible bonds and/or bonds with warrants the right, obligation or option to convert them into registered non-par-value shares of the company representing a stake in the capital stock of up to €2,600,000 under the conditions established for the issue of convertible bonds or bonds with warrants. The bonds could only be issued in return for cash contributions. They could be issued in euros or – to an equivalent value – in any other legal currency, for instance that of an OECD country. They could also be issued by an affiliated company where MTU exercises control. In such cases, and subject to the prior approval of the Supervisory Board, the Executive Board was authorized to act as guarantor for the bonds and to grant the owners of the bonds the right, obligation or option to convert them into new registered non-par-value shares in MTU.

In 2019, MTU made partial use of this authorization to increase the company's capital stock by issuing a convertible bond with a nominal value of €500 million. More details are provided in *Note 28. Financial liabilities*.

The authorization described above for the Executive Board to issue bonds with a total nominal value of up to €600 million was canceled at the Annual General Meeting on April 21, 2021, to the extent that such authorization had not been used for the €500 million convertible bond issued in 2019. The Conditional Capital 2019 in the amount of €2,600,000 in accordance with Article 4 (7) of the articles of association was also partially withdrawn and now only comprises a partial amount of €1,600,000.

Further, in accordance with Article 4 (8) of the articles of association, the company's capital stock may be conditionally increased by up to €2,600,000 through the issue of up to 2,600,000 new registered non-par-value shares (Conditional Capital 2021). The purpose of this conditional capital increase is to issue shares to owners or creditors of convertible bonds and/or bonds with warrants in accordance with the authorization granted to the company under a resolution passed by the Annual General Meeting on April 21, 2021. Shares are issued at a conversion price or warrant exercise price determined on the basis of this authorization.

The Executive Board is authorized until April 20, 2026, to issue, in a single step or in several steps and with the prior approval of the Supervisory Board, bearer and/or registered convertible bonds and/or bonds with warrants (collectively referred to as "bonds"), with or without maturity date, with a total nominal value of up to €600 million, and to grant the owners of convertible bonds and/or bonds with warrants the right, obligation or option to convert them into registered non-par-value shares of the company representing a stake in the capital stock of up to €2,600,000 under the conditions established for the issue of convertible bonds or bonds with warrants. The bonds may be issued in return for cash contributions only. They may be issued in euros or – to an equivalent value – in any other legal currency, for instance that of an OECD country. They can also be issued by an affiliated company where MTU exercises control. In such cases, and subject to the prior approval of the Supervisory Board, the Executive Board is authorized to act as guarantor for the bonds and to grant the owners of the bonds the right, obligation or option to convert them into registered non-par-value shares in MTU.

Capital reserves

Capital reserves contain premiums from the issue of shares and the equity component (net of proportional transaction costs) of convertible bonds that have been redeemed or are still outstanding.
The issue of new shares as a result of the exercise of options to convert the convertible bond 2016 increased the capital reserves by €45 million in the reporting period (previous year: €2 million).
Capital reserves also include performance-related compensation components granted and owed in connection with the Restricted Stock Plan (RSP) and realized premiums for the issue of shares in the company in connection with the Restricted Stock Plan (RSP) or the Stock Matching Program (SMP) and, previously, the Matching Stock Program (MSP).

Retained earnings

Retained earnings mainly comprise retained profits generated by the consolidated Group companies on the basis of a resolution by the responsible bodies.

Treasury shares

Purchase of treasury shares in accordance with the authorization granted by the Annual General Meeting on April 11, 2019

The Executive Board of MTU Aero Engines AG, Munich, Germany, is authorized by the resolution of the Annual General Meeting of April 11, 2019, to purchase treasury shares with an aggregate nominal value not exceeding 10% of the company's issued capital stock, as applicable on the date of the resolution, during the period to April 10, 2024, pursuant to Section 71 (1) no. 8 of the German Stock Corporation Act (AktG). At no point in time may the value of the acquired shares, together with other treasury shares in the company's possession or which are attributed to it pursuant to Section 71a et seq. of the German Stock Corporation Act (AktG), exceed 10% of the company's capital stock. These shares may be purchased on the stock market or by means of a public offering addressed to all shareholders. The consideration paid for these shares must not be more than 10% above or below the quoted share price, not taking into account any ancillary transaction costs.

Holdings of treasury shares

No further treasury shares were purchased in 2023 (or in the previous year). The shares purchased by MTU in preceding years still serve the purpose of granting shares in connection with the Restricted Stock Plan (RSP). In the reporting period, 10,687 shares (previous year: 15,826 shares) were transferred to senior executives under the Restricted Stock Plan (RSP).

Reconciliation of weighted average number of outstanding shares

In fiscal year 2023, the weighted average number of outstanding shares totaled 53,691,433 (previous year: 53,366,518). A total of 53,770,914 shares in MTU Aero Engines AG, Munich, were in circulation as of December 31, 2023 (previous year: 53,388,850 shares). The company held 53,575 treasury shares as of December 31, 2023 (previous year: 64,262 shares).

Accumulated other equity

Accumulated other comprehensive income increased by €50 million to €–166 million (previous year: €–216 million) in fiscal year 2023. This was due to the increase in the fair value of cash flow hedges used in the hedging of foreign currencies as of the reporting date. This was offset to some extent by the actuarial losses from the measurement of pension provisions and exchange rate losses on the translation of the financial statements of foreign entities.

The table below shows the income and expenses recognized in other comprehensive income, including the associated deferred taxes:

[T97] Items recognized in other comprehensive income

in € million	2023 Before	2023 income taxes	2023 After	2022 Before	2022 income taxes	2022 After
Translation differences arising from the financial statements of foreign entities accounted for using the equity method	–19		–19	–3		–3
Translation differences arising from the financial statements of other consolidated foreign entities	9		9	20		20
Translation differences arising from the financial statements of foreign entities	**–10**		**–10**	**16**		**16**
Actuarial gains/losses on pension obligations and plan assets	–50	16	–34	223	–72	151
Financial instruments designated as cash flow hedges for companies not accounted for using the equity method	129	–38	90	–43	13	–30
Financial instruments designated as cash flow hedges for companies accounted for using the equity method	1		1	–4		–4
Income and expense recognized in other comprehensive income	**69**	**–22**	**47**	**192**	**–58**	**134**

Disclosures relating to capital management

MTU strives to maintain a strong financial profile in the interests of assuring the company's continuation as a going concern and its financial flexibility, as well as ensuring confidence on the part of its shareholders and lenders. As part of its capital management, the company observes the statutory requirements on capital maintenance. Formally, there are no further statutory capital requirements. Nevertheless, MTU considers itself obligated to maintain an investment-grade rating of at least Baa3 from Moody's or BBB- from Fitch or S&P.

Based on this, the dividend policy is generally aligned with a distribution between 30% and 40% of the adjusted annual net income (see *Note 12. Additional disclosures relating to the income statement – Reconciliation of the consolidated income statement*) to shareholders provided that this is permitted by the financial situation, especially debt and the development of cash flow, and the corporate bodies approve. In view of this, in an ad-hoc statement on February 21, 2024, MTU announced that, in view of the expected cash flow burdens in connection with the PW1100G-JM Geared Turbofan fleet management plan, it is suspending its previous dividend policy. The Group's capital management activities are focused on optimizing the balance between equity and net financial debt, profitable growth of the business, and free cash flow or available liquidity. A description of the financial indicators MTU is obliged to meet in the context of its liabilities to banks can be found in *Note 28. Financial assets*.

25. Pension provisions

Defined benefit plans and defined contribution plans are in place for MTU employees. For Group companies in Germany, these benefits are financed primarily by provisions recognized in the financial statements, which are covered only to a small extent by plan assets. In contrast, MTU Maintenance Canada Ltd., Delta, Canada, has a fund-based retirement benefit plan, which constitutes a funded plan within the meaning of IAS 19.

Defined contribution plans

Since January 1, 2007, no direct pension commitments have been granted to new employees in Germany other than senior executives. Instead, MTU paid contributions in the amount of €4 million in the reporting period (previous year: €4 million) to an external pension fund for employees who joined the company after that date. In addition, MTU provides direct insurance contracts funded by employee contributions.

Employer's contributions to the state pension scheme in fiscal year 2023 totaled €57 million (previous year: €55 million).

Defined benefit plans

The pension obligations of MTU are measured using the projected unit credit method in accordance with IAS 19, taking account of future salary and pension increases and other adjustments expected to be made to benefits and pension plans. The provision for defined benefit plans recognized in the balance sheet corresponds to the present value of the benefits payable for current and past service (the defined benefit obligation) of beneficiaries less the fair value of plan assets at the reporting date. An extensive actuarial analysis is carried out annually for each pension plan by independent actuaries.

Actuarial gains or losses may arise in connection with increases or decreases either in the present value of the defined benefit obligation or in the fair value of plan assets. Causes of actuarial gains or losses include the effect of changes in measurement parameters, changes in the assessment of risks on pension obligations, and differences between the actual return on plan assets and the proportional share of interest on the net liability.

In order to calculate the funding status and the pension obligations recognized, the present value of unfunded and funded obligations is offset against the fair value of the plan assets. In Germany, there are no legal or regulatory minimum funding requirements.

The present value and funding status of the defined benefit obligation is as follows:

[T98] Present value of defined benefit obligation (DBO)

in € million	Dec. 31, 2023	Dec. 31, 2022
Present value of unfunded pension obligations	743	707
Fair value of plan assets	–0	–0
Total Germany	**743**	**707**
Present value of funded pension obligations	22	22
Fair value of plan assets	–23	–23
Total other countries (negative value = plan asset surplus)	**–2**	**–1**
Recognized pension obligations (net)	**741**	**706**

The following parameters were applied to measure the pension obligations as of December 31 of the respective year and to measure the pension plan expense in the respective reporting period:

[T99] Actuarial assumptions: Germany

in %	Dec. 31, 2023	Dec. 31, 2022
Interest rate for accounting purposes	3.19	3.68
Salary trend	2.70	2.70
Pension trend	2.20	2.20

[T100] Actuarial assumptions: other countries

in %	Dec. 31, 2023	Dec. 31, 2022
Interest rate for accounting purposes	5.75	5.25
Salary trend	3.00	3.00
Pension trend	2.50	2.50

The market yields on high-quality, fixed-interest corporate bonds with similar maturities in Germany decreased significantly compared with the previous year. In view of the duration of the obligations, which currently stands at approximately 10 years (previous year: 12 years), pension obligations in Germany were discounted as of December 31, 2023, applying a discount rate of 3.19%. The mortality tables issued by Heubeck Richttafeln GmbH (2018G) were used as the biometric basis to measure the pension plan obligations in Germany. At the foreign Group companies, the obligations were calculated using a discount rate of 5.75% and current country-specific biometric assumptions. The expected salary trend refers to the expected rate of increase in salaries and other compensation, which is estimated based on inflation, the length of service of employees within the Group, as well as other factors. Employee turnover, mortality rates and disability risk were estimated on the basis of statistical data. Further information on this matter can be found in *section I. Accounting policies and principles – Pension obligations* and *section I. Accounting principles and policies – Discretionary scope, measurement uncertainties and sensitivity*.

The present value of pension obligations changed as follows in the fiscal year:

[T101] Present value of pension obligations

in € million	2023	2022
Present value of defined benefit obligation as of Jan. 1	**729**	**976**
Current service cost	10	13
Past service cost	0	0
Pension plan subscriber contributions	7	9
Interest expense	26	9
Translation differences	–0	–0
Actuarial gains (-)/losses (+)		
Financial assumptions	35	–245
Assumptions based on experience	16	19
Plan settlements/transfers	–36	–30
Pension benefit and capital payments	–23	–22
Present value of defined benefit obligation as of Dec. 31	**765**	**729**

Actuarial losses in connection with financial assumptions correspond in particular to changes in the discount rate as well as salary and pension trends. Those in connection with assumptions based on experience correspond in particular to the empirical behavior of beneficiaries of the company pension scheme when choosing the mode of payment for their company pension entitlements.

The obligations resulting from plan settlements/transfers are attributable to the conversion of pension benefits into fixed-sum payments and the Group's employee turnover rate.

Plan assets changed as follows in the fiscal year:

[T102] Fair value of plan assets

in € million	2023	2022
Fair value as of Jan. 1	**23**	**28**
Employer contributions	0	0
Interest income on plan assets	1	1
Translation differences/transfers	–0	–0
Actuarial gains/losses (-)	1	–4
Pension benefit payments	–2	–2
Fair value as of Dec. 31	**23**	**23**

[T103] Breakdown of plan assets

in %	2023	2022
Buy-in annuity	66.5	67.8
Fixed-interest securities	26.8	25.7
Shares	6.7	6.5
Total plan assets	**100.0**	**100.0**

The structure of the plan assets is reviewed annually to optimize the risk and return of the assets invested and adjusted if necessary. The statement of principles of the foreign plan assets defines restrictions to be observed when choosing investments; the investment policy was unchanged from previous years.

The expense from defined benefit pension plans and similar obligations recognized in the income statement for the reporting period comprises the following items:

[T104] Expense from defined benefit pension plans and similar obligations

in € million	2023	2022
Current service cost	10	13
Past service cost	0	0
Service cost	**10**	**13**
Interest cost on pension provisions	26	9
Interest income on plan assets	–1	–1
Net interest cost	**25**	**8**
Interest cost on liabilities from pension capital	**3**	**3**
Total expense	**38**	**24**

Current and past service costs are recognized in personnel expenses. The other components of the expense from defined benefit pension plans and similar benefit obligations are included in other financial income/expense. The measurement effects related to actuarial gains and losses are recognized in total comprehensive income as part of other comprehensive income.

Expected future pension benefit payments

For the coming years, the Group expects to settle its pension provisions and liabilities through the following series of payments:

[T105] Expected yearly amount of pension benefit payments

in € million	2024	2025	2026	2027
Expected yearly amount of pension benefit payments	31	34	37	42

The disclosures on the expected payment of pension benefits take into account the method of payment agreed as of the reporting date or, alternatively, the standard contractual terms; in the case of Executive Board members this is normally as pension capital and for other employees payment in installments.

The main actuarial assumptions used to calculate the defined benefit obligation (DBO), apart from the mode of payment, are the discount rate, salary and pension trends, and assumed life expectancy. The following sensitivity analysis shows how the DBO would have been influenced by potential changes in the underlying assumptions:

[T106] Sensitivity analysis of the defined benefit obligation

in € million	2023	2022
Discount rate 50 basis points higher	–36	–35
Discount rate 25 basis points lower	19	19
Pension trend 50 basis points higher	7	7
Assumed life expectancy 1 year longer	9	9

There are interdependencies between certain actuarial assumptions, especially between changes in the discount rate and the expected pension and salary trends. The sensitivity analysis does not take these interdependencies into account.

26. Income tax liabilities

The income tax liabilities comprise German corporation and municipal trade tax plus income taxes for Group companies outside Germany.

[T107] Income tax liabilities

in € million	2023	2022
As of Jan. 1	**70**	**9**
Utilized	-70	-9
Allocated	37	70
As of Dec. 31	**37**	**70**

Income tax liabilities are due within one year.

27. Other provisions

[T108] Other provisions

	Total		Non-current		Current	
in € million	Dec. 31, 2023	Dec. 31, 2022	Dec. 31, 2023	Dec. 31, 2022	Dec. 31, 2023	Dec. 31, 2022
Warranty obligations and risks from pending losses on onerous contracts	19	19			19	19
Personnel obligations	33	101	21	14	12	87
Outstanding invoices	77	120	7	39	70	81
Other liabilities	28	30	0	0	28	30
Total other provisions	**157**	**270**	**28**	**53**	**129**	**217**

Non-current other provisions developed as follows:

[T109] Non-current other provisions 2023

in € million	As of Jan. 1, 2023	Transferred	Utilized	Reversed	Allocated	Discount reversed	As of Dec. 31, 2023
Personnel obligations	14	-4	-0		11	0	21
Outstanding invoices	39	-24	-12		4		7
Total non-current other provisions	**53**	**-28**	**-12**		**15**	**0**	**28**

The transfers comprise transfers from non-current other provisions to current other provisions to reflect the maturity of provisions.

The following cash outflows are expected from the carrying amounts of non-current other provisions:

[T110] Expected cash outflow from non-current other provisions

in € million	Carrying amount as of Dec. 31, 2023	Expected cash outflow 2025
Personnel obligations	21	5
Obligations relating to restructuring measures		
Outstanding invoices	7	7
Total expected cash outflow from non-current other provisions	**28**	**12**

[T111] Expected cash outflow from non-current other provisions

in € million	Carrying amount as of Dec. 31, 2022	Expected cash outflow 2024
Personnel obligations	14	4
Obligations relating to restructuring measures		0
Outstanding invoices	39	11
Total expected cash outflow from non-current other provisions	**53**	**16**

MTU expects that the above obligations will become due for payment within the next five years.

Current other provisions developed as follows:

[T112] Current other provisions 2023

in € million	As of Jan. 1, 2023	Transferred	Utilized	Reversed	Allocated	Currency translation differences	As of Dec. 31, 2023
Warranty obligations and risks from pending losses on onerous contracts	19		-11	-0	11	-0	19
Personnel obligations	87	4	-88		8	0	12
Unpaid invoices/overdue accounts	81	24	-84	-10	59		70
Other liabilities	30	0	-5	-1	5	0	28
Total current other provisions	**217**	**28**	**-188**	**-12**	**83**	**0**	**129**

The cash outflows relating to current other provisions are expected to be realized in the calendar year following the reporting period.

Warranty obligations and risks from pending losses on onerous contracts

The main component of this item of provisions is an amount of €12 million (previous year: €15 million) for liabilities associated with warranty obligations in connection with the delivery of goods and services.

MTU has identified a small amount of onerous contracts in its commercial maintenance business (MRO segment) where the unavoidable costs of fulfilling contractual obligations are higher than the expected inflow of economic benefits from these contracts. A provision of €6 million (previous year: €4 million) was recognized to cover the difference.

Personnel obligations

This item includes provisions for long-service awards amounting to €7 million (previous year: €2 million) and provisions for pre-retirement part-time working arrangements based on the collective agreement on phased retirement and related works agreements. On the basis of these agreements, obligations amounting to €16 million (previous year: €13 million) were recognized at the end of the reporting period. The obligations take account of relevant plan assets amounting to €11 million (previous year: €11 million).

The item also includes provisions for profit-sharing bonuses and performance-related compensation, which amounted to €7 million (previous year: €77 million). They relate to bonus and profit-sharing payments granted outside of Germany to both employees covered by collective wage agreements and exempt employees. The performance-related compensation granted in Germany to employees covered by the collective wage agreement, exempt employees, senior executives and Executive Board members have been reclassified to other personnel-related financial liabilities (column "Transferred" or "Utilized") due to the negligible uncertainty regarding their measurement when the financial statements are prepared.

Outstanding invoices

Outstanding invoices include, in particular, accruals for cost of sales components in the form of outstanding invoices arising in particular from contracts with suppliers and service providers.

In the case of leases with third parties where MTU is obligated to meet specific maintenance conditions before returning the aircraft engine, the settlement obligations as of the reporting date are recognized as a liability. This is measured at the nominal value of the expected maintenance costs required to satisfy the return conditions set out in the lease. These provisions are at times of a long-term nature.

Other liabilities

The other liabilities contain obligations relating to the risk of legal action and lawsuits and accruals for other obligations, which are, however, immaterial when considered individually.

28. Financial liabilities

[T113] Financial liabilities

in € million	Total		Non-current		Current	
	Dec. 31, 2023	Dec. 31, 2022	**Dec. 31, 2023**	Dec. 31, 2022	**Dec. 31, 2023**	Dec. 31, 2022
Bonds and notes	607	605	597	596	9	9
Convertible bonds	489	531	489	485	0	46
Financial liabilities to banks	7		7		0	
Lease liabilities	170	166	127	109	43	57
Miscellaneous other financial liabilities (financing component)	294	333	176	288	117	45
thereof: arising from acquisition of stakes in engine programs	73	114	36	69	37	45
thereof: from compensation payments due to program participations	221	219	140	219	81	
Total gross financial debt	**1,566**	**1,635**	**1,396**	**1,478**	**170**	**158**
Derivatives without hedging relationship	7	0	1	0	6	0
Derivatives with hedging relationship	41	128	4	54	37	74
Personnel-related financial liabilities	207	112	94	79	113	33
Miscellaneous other financial liabilities	70	54			70	54
Total other financial liabilities	**324**	**294**	**99**	**133**	**225**	**161**
Total financial liabilities	**1,890**	**1,929**	**1,495**	**1,610**	**395**	**319**

Gross financial debt

Changes in gross financial debt are shown in the following tables:

[T114] Changes in gross financial debt

in € million	As of Jan. 1, 2023	Deposits and withdrawals	Addition (Non-cash items)	Interest (Non-cash items)	Transfer/other (Non-cash items)	Currency translation differences (Non-cash items)	Effect of measurement at fair value (Non-cash items)	As of Dec. 31, 2023
Bonds and notes	605	-19		20				607
Convertible bond 2016	46	-0		0	-46 [1]			
Convertible bond 2019	485	-0		4				489
Financial liabilities to banks		7						7
Lease liabilities	166	-81	92	4	-15 [2]	2		170
Miscellaneous other financial liabilities (financing component)	333	-44	-17	14	3 [3]	4		294
thereof: arising from acquisition of stakes in engine programs	114	-44	-18	3	3 [3]	15		73
thereof: from compensation payments due to program participations	219		1	11		-10		221
Total gross financial debt	**1,635**	**-137**	**76**	**42**	**-58**	**7**		**1,566**

[1] Conversion.
[2] Premature termination of the leasing contract.
[3] IFRIC1 adjustment.

[T115] Changes in gross financial debt

in € million	As of Jan. 1, 2022	Deposits and withdrawals	Non-cash items: Addition	Interest	Transfers	Currency translation differences	Effect of measurement at fair value	As of Dec. 31, 2022
Bonds and notes	604	–19		20				605
Convertible bond 2016	47	–0		0	–2 [1]			46
Convertible bond 2019	482	–0		4				485
Financial liabilities to related companies	0	–0						
Lease liabilities	176	–64	59	5	–16 [2]	6		166
Miscellaneous other financial liabilities (financing component)	142	–36	227	5	–10 [3]	5		333
thereof: arising from acquisition of stakes in engine programs	142	–36	8	5	–10 [3]	5		114
thereof: from compensation payments due to program participations			219					219
Total gross financial debt	**1,451**	**–118**	**286**	**34**	**–28**	**11**		**1,635**

[1] Conversion.
[2] Premature termination of the leasing contract.
[3] IFRIC 1 adjustment.

Bonds and notes

Registered bond

MTU Aero Engines AG issued a registered bond on June 12, 2013, for a total nominal amount of €100 million. The registered bond is repayable on June 12, 2028, and is subject to interest of 3.55% p.a. Interest is payable in arrears on June 12 of each year, for the first time on June 12, 2014. The registered bond, net of transaction costs and including a discount of €3 million, is measured at amortized cost.

Corporate bond

On July 1, 2020, MTU Aero Engines AG issued an unsecured corporate bond with a nominal value of €500 million. The bond has a maturity of five years until July 1, 2025, and is available in units of €1,000. The coupon is 3.0% p.a., payable annually in arrears. At the emission date, the bond was rated by Moody's (Baa3) and Fitch (BBB) and is listed on the regulated market on the Luxembourg Stock Exchange.

Convertible bonds

In 2016, MTU Aero Engines AG issued an unsecured convertible bond for a total nominal amount of €500 million. This bond was convertible into new and/or existing registered non-par-value shares in MTU. The initial conversion price was set at €124.7701, which represented a premium of 50% above the reference rate at the bond issue date. The bond was divided into units of €100,000 and had a nominal interest rate of 0.125% p.a. It matured on May 17, 2023.

Taking into account the partial redemption of bond units in 2019 at a nominal value totaling €275 million and their cancellation as well as the conversion notices received since then from creditors of this convertible bond, the nominal amount outstanding and repaid on the due date was €100,000 (previous year: €46 million).

In connection with the aforementioned partial redemption of the convertible bond issued in 2016, MTU Aero Engines AG issued an unsecured convertible bond in 2019 for a total nominal amount of €500 million at an issue price of 103%. This bond is convertible into registered non-par-value shares in MTU.

The convertible bond has an original maturity of 7.5 years and is divided into units of €100,000. It bears an interest rate of 0.05% p.a., payable annually in arrears.

Bondholders are entitled to convert their certificates into common shares in MTU Aero Engines AG for the first time on September 18, 2024. The initial conversion price was set at €378.4252, which represents a premium of 55% above the reference rate.

Under the terms of issue of the convertible bond, MTU has the right to recall the issued bond units at their nominal value (plus accrued unpaid interest) at any time on or after April 8, 2025, subject to a period of notice of minimum 30 days and maximum 60 days, either (i) if the quoted price of the common share rises to or above 130% of the applicable conversion price over a defined period, or (ii) if no more than 20% of the nominal value of the convertible bond issue is outstanding. In the event of such cancellation by MTU, and within the above-mentioned notice period of minimum 30 and maximum 60 days, the bondholders have the right to request that MTU convert their bonds into shares, rather than repurchase them.

For information on the effect of transactions with the convertible bonds on the company's subscribed capital and capital reserves, see *Note 24. Equity* in the notes to the consolidated financial statements.

Financial liabilities to banks

KfW development loans
In 2023, MTU applied to KfW for development loans for the construction of an installation for sourcing deep geothermal energy. The applications were submitted via one of our banks. Three loan agreements for a total of €17 million were signed. The loans will be drawn at different project stages. As of December 31, 2023, an amount of €7 million had been drawn. The loans are subject to interest at customary market rates. Unused amounts are subject to a loan commitment fee. The company can obtain repayment grants from KfW if the project is completed in accordance with the conditions for such grants. These loan repayment grants end on September 30, 2027, and September 30, 2029.

Revolving credit facility
In 2022, a €500 million revolving credit facility was concluded with nine banks. This credit facility had an original term of five years, ending on June 29, 2027, with the option to extend it twice by one year in each case at the company's request. In the reporting period, the company used the first option to extend this facility to June 29, 2028. The credit facility had not been drawn down as of the reporting date (previous year: €0 million).

The available amount secures the mid-term financial flexibility of the MTU Group. Any credit utilized is subject to interest at the customary market reference rates plus an additional margin. The unused amount of the revolving credit facility is subject to a loan commitment fee.

The revolving credit facility is linked to a continued investment-grade credit rating. If, and only if, the rating drops below this level, the Group is required to meet specific financial covenants. As of December 31, 2023, the credit rating was adequate.

Lease liabilities

Lease liabilities relate to liabilities under leases, particularly from the areas of real estate and engine leasing, recognized using the effective interest rate method. For information on their accounting treatment and an overview of the corresponding capitalized right-of-use assets, please refer to *Note 36. Leases*.

Miscellaneous other financial liabilities (financing component)

Financial liabilities arising from acquisition of stakes in engine programs
This item includes the deferred payment components arising from the increase in the stake in IAE V2500 and the acquisition of stakes in engine programs. In view of the structure of the underlying agreements, these liabilities are considered to be financing transactions. For information on the corresponding program assets, please refer to *Note 17. Acquired program assets, development work and other assets*.

The purchase price agreement signed by MTU in the fiscal year 2012 in order to increase its stake in the IAE V2500 engine program by 5 percentage points to 16% made it necessary, among other things, to recognize a purchase price liability contingent upon the number of flight hours performed over the next 15 years by the fleet of V2500 engines in service at the time of the stake increase.

The liability matures in 2027 and, as of the closing date, reflects a nominal amount of U.S.$80 million (previous year: U.S.$122 million). Translated at the closing rate, that was €72 million (previous year: €114 million). The carrying amount of the purchase price liability was €69 million as of December 31, 2023 (previous year: €108 million).

The other financial liabilities arising from new stakes in engine programs mainly concern financial liabilities from program lifetime-related payments in the form of compensation payments to the consortia leaders independent of engine development work for the acquisition of shares in commercial engine programs.

Compensation payments due to program participations

In the previous year, an agreement was concluded with the OEM Pratt & Whitney to repay the cumulative production-related compensation payments within the scope of MTU's membership in the consortium for the PW1100G-JM engine program that had accumulated up to the end of 2021. In previous periods, this compensation payment obligation was accounted for as a component of current refund liabilities, taking account of the estimations regarding amount and maturity. The agreement concluded with the OEM in 2022 comprises a fixed settlement amount with a nominal value of U.S.$265 million and a payment plan comprising fixed installments over a six-year period. Taking into account the closing exchange rate as well as an interest rate in line with the risks and maturities concerned, the amount capitalized under other financial liabilities totals €221 million as of the closing date (previous year: €219 million).

Other financial liabilities

Derivatives

The derivatives of €47 million with and without hedging relationships recognized as financial liabilities as of the reporting date (December 31, 2022: €128 million) are used to offset currency and commodity price risks. The decrease in liabilities is mainly attributable to an increase in the fair value of forward foreign exchange contracts due to the development of the U.S. dollar exchange rate as of the reporting date relative to the agreed hedging rates.

Personnel-related financial liabilities

The personnel-related financial liabilities of €207 million (previous year: €112 million) result principally from pension capital claims of €111 million (previous year: €92 million) arising from direct pension commitments under company pension schemes and obligations arising from performance-related and other special compensation components totaling €76 million. In the previous year, an amount of €76 million was recognized for this in other provisions as personnel obligations.

The Executive Board members and senior executives receive target direct compensation comprising non-performance-related components (fixed compensation and fringe benefits) and performance-related components. The performance-related components are divided into the STI, as a performance-related component with no long-term incentive effect, and the Restricted Stock Plan, as a performance-related component with a long-term incentive effect.

The STI is based on the extent to which the Group's financial targets are met in the form of adjusted EBIT and free cash flow. The extent to which the respective performance-related target components are met is measured on a scale of 0% to 200%. How these incentives are paid is controlled by the achievement of non-financial Group targets – ESG targets – which are expressed by a discretionary factor of between 0.8 and 1.2 applied to the performance-related bonus payment.

The Restricted Stock Plan entails a cash payment, which must be immediately re-invested in MTU shares. These shares are subject to a specific vesting period, defined according to the beneficiary's rank in the management hierarchy. The target compensation granted for the purchase of shares essentially depends on the proportionate target direct compensation weighted by the average achievement of the adjusted EBIT group target calculated over a period of several years; in the case of the Executive Board, it also depends on the performance of the MTU share relative to the STOXX Europe Total Market Aerospace & Defense index over a period of several years. Detailed explanatory notes on the compensation system for members of the Executive Board are provided in the Management compensation report in the section *The MTU share*.

In addition, personnel-related financial liabilities include obligations of €12 million (previous year: €12 million) relating to the employee stock option program (MAP), which the Executive Board of MTU Aero Engines AG, Munich, offered again in fiscal year 2023. Through the employee stock option program (MAP), MTU offers all eligible employees within and outside of the collective wage agreement and senior executives the opportunity to invest in MTU shares. At the end of a two-year vesting period, employees within and outside of the collective wage agreement receive a taxable "matching" payment corresponding to 50% of the amount invested by the employee in MTU shares at the beginning of the program. Senior executives receive a taxable "matching" payment at the end of the two-year vesting period corresponding to one-third of the amount individually invested. The total expense for the "matching" payment in connection with the employee stock option program (MAP) in fiscal year 2023 amounted to €11 million (previous year: €11 million).

Miscellaneous other financial liabilities

This item is used to present numerous liabilities that are immaterial when viewed separately such as customer credit balances.

29. Trade payables

[T116] Trade payables

in € million	Dec. 31, 2023	Dec. 31, 2022
Accounts payable to:		
Third parties	256	271
Related companies	69	13
Total trade payables	**325**	**284**

Trade payables include open purchase invoices and accruals for purchased goods and services. The total amount of trade payables is due in less than one year.

30. Contract liabilities

The contract liabilities contain advance payments by customers for the delivery of engine modules and components and for maintenance services. In addition to the specific progress with performance of the underlying customer contracts, changes in the reporting period were related to revenue. A further factor affecting contract liabilities was the change in the US dollar exchange rate from U.S.$1.07 per euro in the previous year to U.S.$1.11 per euro at year-end 2023.

31. Refund liabilities

[T117] Refund liabilities

	Total		Non-current		Current	
in € million	**Dec. 31, 2023**	Dec. 31, 2022	**Dec. 31, 2023**	Dec. 31, 2022	**Dec. 31, 2023**	Dec. 31, 2022
Warranty and liability risks	1,097	203			1,097	203
Invoice corrections / subsequent costs	2,145	1,838			2,145	1,838
Total refund liabilities	**3,242**	**2,041**			**3,242**	**2,041**

Refund liabilities from warranty and liability risks are related in particular to obligations to make compensation payments due to participation in consortia for commercial engine programs (OEM).

Refund liabilities often arise from the multi-step invoicing system for commercial engine programs (OEM). Sales typically occur under commercial engine programs in connection with:

- delivery of new engines to aircraft manufacturers,
- delivery of spare parts to MRO service providers, and
- provision of repair and maintenance services to airlines and leasing companies,

with reference to the catalog list price. Consortium leaders (OEMs) frequently make supplementary agreements with program customers that grant effective discounts as the program's supplies and services are utilized.

New parts business: series engines are sold at the catalog list price to the aircraft manufacturer, which sells the entire aircraft – aircraft including engine – to an airline for a total price. In turn, engine programs frequently grant airlines a fleet introductory allowance (i.e., a credit) for selecting their engine for their aircraft. As a consortium partner, MTU participates in this invoicing sequence initially through its share in the sale to the aircraft manufacturer and subsequently through the credit to the airline. Revenue from these transactions is recognized in profit or loss by accruing a refund liability.

Spare parts business: spare parts are sold at the catalog list price to the MRO service provider, which combines the spare parts with repair and assembly services in the course of the engine maintenance and repair services and markets this bundled service (shop visit) to the engine owner or operator (e.g., airline, leasing company). In turn, the engine program generally grants the engine owner or operator that procures the maintenance and repair services a credit ("warranty" or "discretionary" reduction) based on the pre-existing damage or the remaining lifecycle of the engine parts. As a consortium partner, MTU participates in this invoicing sequence initially through its share in the sale of spare parts to the MRO service provider and subsequently through the credit to the aircraft owner or operator. Revenue from these transactions is recognized in profit or loss by accruing a refund liability.

To this extent, the changes in the balances of the refund liabilities correspond to the growth of stakes in commercial engine programs and their revenue structure – share of new engine and spare parts business and their respective profitability. Invoicing in connection with commercial engine programs is regularly carried out in U.S. dollars. Consequently, changes in the exchange rate at the reporting date are a key driver of the measurement of liability balances due to their monetary character.

The increase in refund liabilities from warranty and liability risks mainly related to the stake in the consortium for the GTF engine programs. In the reporting period, U.S.$934 million related to the exceptional expenses for the Geared Turbofan fleet management program to compensate for the powder metal problem. Further details of the special item "Geared Turbofan fleet management plan" can be found in *section I. Accounting principles and policies / PW1100G-JM Geared Turbofan fleet management plan (powder metal problem)*.

The increase in refund liabilities for invoice corrections/subsequent costs in the reporting period corresponds to the growth in the operational business in 2023.

As already outlined, accounting for these refund liabilities requires estimates by the management, which have to take account, in particular, of information and estimates made by the OEMs of the various engine programs in which the Group has a stake. There are estimation uncertainties arising, in particular, from the effects of the PW1100G-JM Geared Turbofan fleet management plan, the climate protection debate and geopolitical occurrences, particularly those in connection with Russia's war of aggression in Ukraine, and these need to be considered when making estimates. Given the complexity of these parameters, equally reliable and meaningful sensitivity data cannot be shown correctly either for individual engine programs or at company level. For more information, see *section I. Accounting policies and principles – Refund liabilities* and *section I. Accounting policies and principles – Discretionary scope, measurement uncertainties and sensitivity*.

32. Other liabilities

[T118] Other liabilities

	Total		Non-current		Current	
in € million	**Dec. 31, 2023**	Dec. 31, 2022	**Dec. 31, 2023**	Dec. 31, 2022	**Dec. 31, 2023**	Dec. 31, 2022
Personnel-related liabilities						
Social security	2	1			2	1
Other personnel-related liabilities	43	34			43	34
Other tax liabilities	65	59			65	59
Other liabilities	29	14	19	14	10	0
Total other liabilities	**139**	**109**	**19**	**14**	**120**	**95**

Personnel-related liabilities

Other personnel-related liabilities relate, in particular, to vacation entitlements and flex-time credits.

Other tax liabilities

The tax liabilities relate to payable wage and church taxes, solidarity surcharges, and transactional taxes.

Other liabilities

The other liabilities relate to accrued expenses for a large number of items that are no material when viewed separately.

33. Additional disclosures relating to financial instruments

Carrying amounts, measurement/recognition methods and fair value by measurement category

In the following overview, the carrying amounts of financial instruments are aggregated by measurement category. The information presented also includes separate amounts for each measurement category.

The carrying amounts of the measurement categories are compared with the fair values at the end.

The financial instruments presented in the table that are not within the scope of either IFRS 7 or IFRS 9 relate to personnel-related liabilities and the corresponding plan assets accounted for in accordance with IAS 19.

[T119] Disclosures relating to financial instruments: Carrying amounts, measurement/recognition methods and fair values as of Dec. 31, 2023

	Carrying amount as of Dec. 31, 2023	Measurement category acc. to IFRS 9			Amount carried in balance sheet IFRS 16	Fair value not allocated to any measurement category	Total	Fair value as of Dec. 31, 2023
in € million		Measured at amortized cost	Fair value through other comprehensive income	Fair value through profit or loss				
ASSETS								
Trade receivables	1,010	1,010					1,010	1,010
Cash and cash equivalents	883	102		781			883	883
Other financial assets								
Other interests in related companies	17	17					17	17
Loans and receivables	734	729				5	734	734
Derivative financial assets								
Derivatives without hedging relationship								
Derivatives with hedging relationship	61					61	61	61
EQUITY AND LIABILITIES								
Refund liabilities	3,242	3,242					3,242	3,242
Trade payables	325	325					325	325
Financial liabilities								
Bonds and notes	607	607					607	597
Convertible bonds (2016 and 2019)	489	489					489	440
Financial liabilities to banks	7	7					7	7
Lease liabilities	170				170		170	
Miscellaneous other financial liabilities (financing component)								
thereof: arising from acquisition of stakes in engine programs	73	73					73	71
thereof: arising from compensation payments due to program participations	221	221					221	221
Derivative financial liabilities								
Derivatives without hedging relationship	7			7			7	7
Derivatives with hedging relationship	41					41	41	41
Personnel-related financial liabilities	207					207	207	207
Miscellaneous other financial liabilities	70	70					70	70

[T120] Disclosures relating to financial instruments: Carrying amounts, measurement/recognition methods and fair values as of Dec. 31, 2022

in € million	Carrying amount as of Dec. 31, 2022	Measurement category acc. to IFRS 9			Amount carried in balance sheet IFRS 16	Fair value not allocated to any measurement category	Total	Fair value as of Dec. 31, 2022
		Measured at amortized cost	Fair value through other comprehensive income	Fair value through profit or loss				
ASSETS								
Trade receivables	1,110	1,110					1,110	1,110
Cash and cash equivalents	823	316		506			823	823
Other financial assets								
Other interests in related companies	4	4					4	4
Loans and receivables	466	461				5	466	466
Derivative financial assets								
Derivatives without hedging relationship	5			5			5	5
Derivatives with hedging relationship	34					34	34	34
EQUITY AND LIABILITIES								
Refund liabilities	2,041	2,041					2,041	2,041
Trade payables	284	284					284	284
Financial liabilities								
Bonds and notes	605	605					605	593
Convertible bonds (2016 and 2019)	531	531					531	522
Lease liabilities	166				166		166	
Miscellaneous other financial liabilities (financing component)								
thereof: arising from acquisition of stakes in engine programs	114	114					114	111
thereof: arising from compensation payments due to program participations	219	219					219	219
Derivative financial liabilities								
Derivatives without hedging relationship	0			0			0	0
Derivatives with hedging relationship	128					128	128	128
Personnel-related financial liabilities	112					112	112	112
Miscellaneous other financial liabilities	54	54					54	54

The financial assets and liabilities carried at amortized cost contain cash and cash equivalents, trade receivables, other receivables, trade payables, refund liabilities and other liabilities which are generally due within a relatively short time. The carrying amounts of these assets and liabilities therefore correspond approximately to their fair value at the reporting date.

The fair value of the financial assets and liabilities measured at fair value was derived from stock market prices or, alternatively, using a discounted cash flow method.

Classification of fair value measurements of financial assets and liabilities in accordance with the fair value hierarchy

To take account of the relevance of the estimated parameters used in the fair value measurement of financial assets and liabilities, MTU's financial assets and liabilities are allocated to three levels.

The three levels of the fair-value hierarchy are described below, together with their utilization when measuring financial assets and liabilities:

Level 1 quoted prices in active markets for identical assets or liabilities (unadjusted input);

Level 2 prices of assets or liabilities that can be observed directly or indirectly (derived);

Level 3 unobservable inputs used to measure prices of assets or liabilities.

The convertible bond (2019), which is traded on the stock exchange and is carried at amortized cost, and the corporate bond were assigned to Level 1. All other qualifying financial instruments, especially the derivative financial instruments measured at fair value through other comprehensive income or at fair value through profit or loss are valued using a discounted cash flow (DCF) method and are therefore assigned to Level 2.

The following tables show the allocation of financial assets and liabilities measured at fair value to the three levels of the fair value hierarchy for 2023 and 2022:

[T121] Classification within the fair-value hierarchy for the 2023 fiscal year

in € million	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Derivative financial instruments		61		61
Total financial assets		**61**		**61**
Financial liabilities measured at fair value				
Derivative financial instruments		47		47
Total financial liabilities		**47**		**47**

[T122] Classification within the fair-value hierarchy for the 2022 fiscal year

in € million	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value				
Derivative financial instruments		39		39
Total financial assets		**39**		**39**
Financial liabilities measured at fair value				
Derivative financial instruments		128		128
Total financial liabilities		**128**		**128**

Cash outflows for financial liabilities

The following tables list the contractually agreed interest and principal payments for the financial liabilities.

[T123] Cash outflows for financial liabilities 2023

		Cash flow 2024			Cash flow 2025			Cash flow 2026			Cash flow 2027 and subsequent years		
in € million	Carrying amount as of Dec. 31, 2023	Fixed interest	Variable interest	Principal	Fixed interest	Variable interest	Principal	Fixed interest	Variable interest	Principal	Fixed interest	Variable interest	Principal
Refund liabilities	3,242			3,242									
Trade payables	325			325									
Bonds and notes	607	19			19		500	4			7		100
Convertible bonds	489	0			0			0			0		500
Miscellaneous other financial liabilities (financing component)	294	11		106	7		54	6		44	6		79
thereof: arising from acquisition of stakes in engine programs	73			37			21			10			5
thereof: from compensation payments due to program participations	221	11		69	7		32	6		34	6		74
Financial liabilities to banks	7			0	0		2	0		2	0		2
Lease liabilities	170	5		42	4		39	3		16	15		63
Derivatives without hedging relationship	7			6			1						
Derivatives with hedging relationship	41			724			181						
Personnel-related financial liabilities	207			114			23			18			70
Other financial liabilities	70			70									

[T124] Payment cash flows for financial liabilities 2022

		Cash flow 2023			Cash flow 2024			Cash flow 2025			Cash flow 2026 and subsequent years		
in € million	Carrying amount as of Dec. 31, 2022	Fixed interest	Variable interest	Principal	Fixed interest	Variable interest	Principal	Fixed interest	Variable interest	Principal	Fixed interest	Variable interest	Principal
Refund liabilities	2,041			2,041									
Trade payables	284			284									
Bonds and notes	605	19			19			19		500	11		100
Convertible bonds	531	0		46	0			0			1		500
Miscellaneous other financial liabilities (financing component)	333			45	12		109	8		56	12		123
thereof: arising from acquisition of stakes in engine programs	114			45			37			22			11
thereof: from compensation payments due to program participations	219				12		72	8		34	12		112
lease liabilities	166	5		58	4		35	4		9	26		32
Derivatives with hedging relationship	128			881			769			150			
Personnel-related financial liabilities	112			36			19			16			55
Other financial liabilities	54			54									

These include all financial instruments in the portfolio at the reporting date for which payment terms had been contractually agreed. Amounts reported for derivatives represent net outflows. Amounts denominated in a foreign currency are translated at the exchange rate at the respective reporting date. Variable-rate interest payments on the financial instruments are based on the most recent interest rate fixed prior to the reporting date. The cash flows relating to the liabilities are assigned to the relevant date on the basis of their contractual repayment dates. If there is no contractually agreed repayment date, they are assigned to the earliest likely repayment date.

Within the scope of its partnerships in engine programs, MTU is a party to aircraft financing agreements for the purpose of promoting sales. Such commitments are always made collectively and in favor of the consortium leader (OEM). They are provided in two basic forms: predelivery payments (PDP) and backstop commitments. In both cases, any funds made available to the aircraft purchaser are always transferred directly to the aircraft manufacturer solely by the consortium leader (OEM).

MTU classifies loan commitments granted up to the reporting date with a total nominal amount, translated into euros, of €831 million (previous year: €776 million), as part of its gross liquidity risk in accordance with the requirements of IFRS 7. However, based on experience, it is considered to be very unlikely that all these nominal loan amounts will actually be utilized to their full extent. This is because the financing terms offered take account of the creditworthiness of the purchaser of the aircraft, based on market practice, through clauses in the credit agreement. The terms for backstop commitments are deliberately prohibitive. In the case of predelivery payments (PDP), the consortium has collateral rights to the aircraft while it is still in production and thus in the possession of the aircraft manufacturer. In the case of backstop commitments, the aircraft is collateral under substantive law. It is to be expected that third parties arrange relevant portions of the financing commitments directly with the purchaser of the aircraft, not least due to the financing conditions.

In addition, as of the reporting date, there were unutilized financing commitments for equity investments in the form of capital contributions or shareholder loans totaling €141 million (previous year: €142 million).

With respect to the notional impact on MTU's liquidity of the financing offers and commitments, the company ensures that it has sufficient liquidity and additional credit lines (see Note 28. Financial liabilities), even in the unlikely event of all financing offers being taken up at the same time, and monitors scope to extend these credit lines to back up future financing offers. In the event that loan commitments are utilized, MTU considers the associated liquidity and credit risks to be manageable.

Explanatory comments relating to net gain/loss on financial instruments by measurement category

The tables below show the gains/losses arising from transactions involving financial instruments, aggregated by measurement category, for the reporting period and the previous year. Interest income and expense in connection with financial assets and liabilities that are measured at fair value through profit or loss are not included:

[T125] Net gain/loss on financial assets and liabilities 2023

in € million	from interest	from investments	from remeasurement	Currency translation	Valuation allowances	Net gain / loss 2023
Financial assets measured at amortized cost	29	3		71	-7	96
Financial assets measured at fair value through profit or loss			11			11
Financial liabilities measured at amortized cost	-37		-0	136		99
Financial liabilities measured at fair value through profit or loss			-22			-22
Total	**-8**	**3**	**-11**	**207**	**-7**	**184**

[T126] Net gain/loss on financial assets and liabilities 2022

in € million	from interest	from investments	from remeasurement	Currency translation	Valuation allowances	Net gain / loss 2022
Financial assets measured at amortized cost	5	3		-54	-17	-63
Financial assets measured at fair value through profit or loss			25			25
Financial liabilities measured at amortized cost	-24		-7	-159		-189
Financial liabilities measured at fair value through profit or loss			-29			-29
Total	**-19**	**3**	**-11**	**-212**	**-17**	**-257**

Explanatory comments relating to net interest income/expense

The net interest income/expense on financial assets and liabilities includes interest income from long-term loans and interest expenses arising from bonds and notes, convertible bonds, loan agreements with banks and lease liabilities. The interest relating to financial instruments that are not within the scope of either IFRS 7 or IFRS 9 is recognized in other financial income/expense. The amount stated for "financial liabilities measured at amortized cost" mainly results from reversing the discount on this category of financial instruments and is recognized in net interest income/expense. With the exception of interest expense relating to pension obligations and leases, interest expense is generally calculated using the effective interest rate method.

Explanatory comments on net gain/loss from equity investments

The profit contributions from equity investments comprise profit transfers from MTU Versicherungsvermittlungs- und Wirtschaftsdienst GmbH, Munich, Germany, and the military program companies.

Explanatory comments on net gain/loss from remeasurement
The net gain/loss on financial instruments measured at fair value through profit or loss mainly comprises exchange rate gains and losses on derivatives not designated in a hedging relationship and is recognized in other financial income/expense.

Explanatory comments on net gain/loss from currency translation
The amounts recognized for currency translation of financial assets and liabilities, measured at cost, result principally from foreign currency measurement of trade receivables, trade payables, and refund liabilities. Amounts relating to receivables and refund liabilities are recognized in revenue, while amounts relating to trade payables are recognized in the associated function costs.

Explanatory comments on net gain/loss from valuation allowances
Alongside the recognition of impairment losses and reversals of impairment losses, the valuation allowances recognized in profit or loss in the reporting period include the derecognition of financial assets for which no valuation allowance has previously been recognized.

The gain/loss from remeasurement in connection with valuation allowances for financial assets (particularly trade receivables and contract assets) is recognized in selling expenses or revenue (revenue-reducing effect).

Further information on the impact on profit/loss can be found in *section II. Notes to the consolidated income statement.*

Offsetting financial assets and financial liabilities
The following financial assets and financial liabilities subject to offsetting agreements existed at the reporting date:

[T127] Offset amounts of financial assets and financial liabilities as of Dec. 31, 2023

	(a)	(b)	(c)	(d)	(e) = (c) − (d)
in € million	Gross amounts of recognized financial assets / liabilities	Gross amounts of recognized financial assets / liabilities offset in the balance sheet	Net financial assets / liabilities recognized in the balance sheet	Related amounts not offset in the balance sheet	Net amount
ASSETS					
Trade receivables	1,493	483	1,010		1,010
Cash and cash equivalents	883		883		883
Other financial assets					
Other interests in related companies	17		17		17
Loans and receivables	734		734		734
Derivative financial assets					
Derivatives without hedging relationship					
Derivatives with hedging relationship	61		61	41	20
EQUITY AND LIABILITIES					
Refund liabilities	3,242		3,242		3,242
Trade payables	808	483	325		325
Financial liabilities					
Bonds and notes	607		607		607
Convertible bonds	489		489		489
Financial liabilities to banks	7		7		7
Lease liabilities	170		170		170
Miscellaneous other financial liabilities (financing component)					
thereof: arising from acquisition of stakes in engine programs	73		73		73
thereof: arising from compensation payments due to program participations	221		221		221
Derivative financial liabilities					
Derivatives without hedging relationship	7		7		7
Derivatives with hedging relationship	41		41	41	−0
Personnel-related financial liabilities	207		207		207
Other financial liabilities	70		70		70

[T128] Offset amounts of financial assets and financial liabilities as of Dec. 31, 2022

	(a)	(b)	(c)	(d)	(e) = (c) − (d)
in € million	Gross amounts of recognized financial assets / liabilities	Gross amounts of recognized financial assets / liabilities offset in the balance sheet	Net financial assets / liabilities recognized in the balance sheet	Related amounts not offset in the balance sheet	Net amount
ASSETS					
Trade receivables	1,483	373	1,110		1,110
Cash and cash equivalents	823		823		823
Other financial assets					
Other interests in related companies	4		4		4
Loans and receivables	466		466		466
Derivative financial assets					
Derivatives without hedging relationship	5		5		5
Derivatives with hedging relationship	34		34	18	17
EQUITY AND LIABILITIES					
Refund liabilities	2,041		2,041		2,041
Trade payables	657	373	284		284
Financial liabilities					
Bonds and notes	605		605		605
Convertible bonds	531		531		531
Lease liabilities	166		166		166
Miscellaneous other financial liabilities (financing component)					
thereof: arising from acquisition of stakes in engine programs	114		114		114
thereof: arising from compensation payments due to program participations	219		219		219
Derivative financial liabilities					
Derivatives without hedging relationship	0		0		0
Derivatives with hedging relationship	128		128	18	110
Personnel-related financial liabilities	112		112		112
Other financial liabilities	54		54		54

The "Related amounts not offset in the balance sheet" presented in the table refer to financial assets and liabilities arising from derivatives that can be offset against debt if the issuer becomes insolvent.

34. Deferred taxes

Deferred tax assets and liabilities arise on temporary differences between the tax bases of assets and liabilities of the individual Group companies and the corresponding carrying amounts in the consolidated balance sheet. Deferred tax assets were also recognized for tax credits and losses available for carry-forward.

Deferred tax assets and liabilities were recognized in OCI in connection with the subsequent measurement of pension obligations and the corresponding plan assets and in connection with the fair value measurement of derivative financial instruments which were part of an effective hedging relationship, and in respect of the difference between the fair value and carrying amounts of the equity components of the convertible bonds.

[T129] Changes in deferred tax assets and liabilities

in € million	Dec. 31, 2023 Deferred tax assets in the balance sheet	Dec. 31, 2023 Deferred tax liabilities in the balance sheet	Dec. 31, 2022 Deferred tax assets in the balance sheet	Dec. 31, 2022 Deferred tax liabilities in the balance sheet	2023 Tax income / expense (-) in the income statement	2023 Recognized in equity / OCI
Assets						
Intangible assets	0	225		219	-5	-0
Property, plant and equipment	16	89	13	89	2	1
Financial assets	2	9	1	1	-7	-0
Inventories	64		69		-5	0
Acquired program assets and development work	65	37	77	37	-10	-3
Receivables and other assets	111	4	46	4	65	0
Total assets	**257**	**364**	**206**	**350**	**39**	**-2**
Equity						
Gains and losses from the measurement of derivatives with hedging relationship	2	9	31			-38
Equity portion of convertible bond		12		12		
Actuarial gains/losses on pension obligations and plan assets	96		80			16
Total equity	**98**	**21**	**112**	**12**		**-22**
Liabilities						
Pension provisions		29		26	-3	
Other provisions	10	0	13	0	-2	0
Refund liabilities	303		33		270	
Liabilities	97	41	98	7	-39	3
Total liabilities	**411**	**71**	**144**	**33**	**226**	**4**
Deferred taxes on assets and liabilities	**766**	**456**	**461**	**395**	**266**	**-21**
Tax credits and tax loss carry-forwards						
Tax credits available for carry-forward	37		38		-3	2
Tax loss carry-forwards	2		3		-1	-0
Valuation allowances and unrecognized recoverable tax payments						
Valuation allowances on tax credits carried forward	-3		-8		4	1
Valuation allowances on tax loss carry-forwards	-1		-2		1	0
Temporary differences for which no deferred tax assets were recognized	-17		-14		-2	-2
Total tax credits and loss carry-forwards	**18**		**18**		**-1**	**1**
Deferred tax assets/liabilities before offset	**784**	**456**	**479**	**395**	**265**	**-20**
Offset	-456	-456	-395	-395		
Net deferred tax assets/liabilities	**328**	**0**	**84**	**0**	**265**	**-20**

Please refer to *Note 10. Income taxes* for further information relating to current and deferred income tax assets and liabilities resulting from the balance sheet items listed above and to the tax reconciliation between the expected and recognized tax expense.

Tax assets and liabilities are offset against one another only if they relate to the same type of tax levied by the same tax jurisdiction and are due within the same period.

Deferred tax assets were recognized for deferred tax losses/credits available for carry-forward in the case of the following Group companies:

[T130] Deferred tax assets recognized for tax losses/credits available for carry-forward as of Dec. 31

in € million	USA 2023	Poland 2023	**Total 2023**	Total 2022
Tax credits available for carry-forward	1	36	37	38
Tax losses available for carry-forward	1	1	2	3
Potential tax impact of tax losses/ credits available for carry-forward	**2**	**37**	**39**	**41**
Valuation allowances on tax credits carried forward		–3	–3	–8
Valuation allowances on tax losses carried forward	–1		–1	–2
Deferred tax assets recognized for tax losses/credits available for carry-forward	**1**	**34**	**35**	**32**

USA

Tax losses available for carry-forward at MTU Aero Engines North America Inc., (AENA), Rocky Hill, CT, USA, as of December 31, 2023, relate exclusively to state tax, which, after the application of valuation allowances, amounted to the equivalent of €4 million (previous year: €5 million).

Furthermore, recoverable tax credits are recognized for the tax types that mainly result from development activities. For these recoverable tax credits, deferred tax assets were also recognized.

Poland

MTU Aero Engines Polska sp. z o.o. receives government support through Poland's economic development program by virtue of its location in a special economic zone. Because its business investments help to create jobs, the company has been awarded tax credits in respect of the profits it expects to achieve through its production activities, with separate amounts being accorded each year through to 2026. Deferred tax assets amounting to €33 million (previous year: €30 million) were recognized on the basis of the business investments realized up to the reporting date, taking into account the currently expected earnings from the activities for which tax credits were awarded.

At the reporting date, there were temporary differences amounting to €91 million (previous year: €73 million) for which no deferred tax assets were recognized, in view of the relevant income expectations for the next five years. The resulting tax relief effect of €17 million (previous year: €14 million) was therefore not taken into account in the calculation of the income tax expense.

The reduction in current tax expense resulting from tax credits was €5 million. In Poland, deferred tax assets for tax credits were written up by €5 million. Tax credits that have not yet been utilized and for which no deferred tax assets are recognized on the balance sheet amount to €3 million. They expire in 2027.

Serbia

In connection with the establishment and ramp-up of the facility in Serbia, MTU was granted an incentive, including a "tax holiday," based on the amount invested and the creation of new jobs. In the reporting period, this incentive did not meet the requirements for recognition in the financial statements, so it did not have any impact on the Group's deferred taxes and thus on profit/loss.

Deferred tax liabilities for taxable differences arising from investments in subsidiaries and joint ventures

In accordance with IAS 12, no deferred tax liabilities were recognized for temporary differences amounting to €123 million (previous year: €194 million) that arose in connection with investments in subsidiaries and joint ventures. If, in the future, these differences meet the requirements for recognizing deferred tax liabilities, they would result in a tax liability amounting to €12 million (previous year: €15 million), based on the current tax legislation.

IV. Other disclosures

35. Financial risks

In the ordinary course of business, MTU is exposed to credit risks, liquidity risks and market risks. The objective of financial risk management is to minimize the risks arising from operating activities and the resulting financing requirements through the use of selected derivative and non-derivative hedging instruments.

Risks in connection with the procurement, financing and sale of MTU's products and services are described in detail in the management report. In order to counter financial risks, MTU has put in place an integrated risk management system, which is monitored by the Supervisory Board. The principles of this system aim at promptly identifying, analyzing, and communicating risks and taking countermeasures. Market risks, particularly the net exposure from currency risks and commodity price risks, are analyzed in respect of their potential impact on the Group's assets, financial position and results of operations and mitigated through the targeted use of derivative financial instruments.

Credit risks

MTU is exposed to credit risks arising from its operating activities in both the OEM and MRO segments. From the perspective of the MTU Group, the risk situation deteriorated further in the reporting period, especially given the geopolitical developments in connection with the Russia-Ukraine war and the Israel-Palestine conflict in the Middle East. The more difficult refinancing conditions led to a reduction in the credit ratings of some customers of direct relevance for MTU and customers of the program consortia in which it has stakes.

In view of the importance of managing credit risks, engine and aircraft financing arrangements to which MTU is a party as a result of its engine program and MRO alliances are managed by a team of sales specialists, supported by advice from the central Legal and Treasury departments. Further details of engine and aircraft financing arrangements can be found in *Note 33. Additional disclosures relating to financial instruments*.

Financing transactions in connection with liquidity management, e.g., time deposits or forward foreign exchange contracts, also expose the Group to a certain degree of credit risk. MTU's internal guidelines therefore stipulate that such transactions may only be entered into centrally by the central Treasury department, and only with contracting parties with a credit rating of at least investment grade. Counterparty limits are assigned and monitored on the basis of credit rating and company size.

The carrying amounts of the financial assets recognized on the balance sheet, i.e., trade receivables, contract assets, cash and cash equivalents, and other financial assets, plus the amount of financial guarantees and financing commitments, reflect their maximum credit risk. The reduction in the carrying amounts is attributable to lower potential for netting against corresponding liabilities and collateral under substantive law, and to the business growth in both the OEM and the MRO segment. The unsecured portions of financial assets were included in the calculation of the expected credit losses using an impairment matrix. For this purpose, the assets were allocated to groups with credit standings A, B and C, for which the respective credit loss rate was determined using published information and/or credit ratings from international agencies:

[T131] Expected credit losses as of Dec. 31, 2023

in € million	Credit standing A	Credit standing B	Credit standing C	**Total**
Expected credit loss rate	0.07%	1.43%	4.68%	
Gross amount	2,734	162	202	3,098
Expected credit losses	2	2	9	14

[T132] Expected credit losses as of Dec. 31, 2022

in € million	Credit standing A	Credit standing B	Credit standing C	Total
Expected credit loss rate	0.07%	1.42%	4.78%	
Gross amount	2,838	146	184	3,168
Expected credit losses	2	2	9	13

In addition, individual value allowances are recognized in cases where credit losses are specifically expected. Further details can be found in *Note 21. Contract assets*. Other than participation in collateralization rights relating to engine and aircraft financing arrangements, there were no material agreements at the reporting date that could reduce the maximum credit risk. Nonetheless, MTU is exposed to other, pro rata liability risks as a result of its membership in engine consortia and therefore to potential additional credit risks, especially in the commercial engine business. More details are provided in *Note 37. Contingent liabilities and financial liabilities*.

Market risks

Currency risks

More than 85% of MTU's revenue is currently generated in U.S. dollars. It is assumed that over 75% of the currency risk relating to the revenue generated is naturally hedged by expenditures in U.S. dollars. Most other costs are incurred in euros, and to a lesser extent in Canadian dollars and Polish zloty. As standard practice, the Group applies the hedging strategy outlined below for its exposure to U.S. dollar currency risks that are not naturally hedged. With regard to the remaining currency risks, which are not deemed to be material and are not part of the hedging strategy, changes in exchange rates have a direct impact on net income and the cash flow.

Hedging strategy

MTU uses a defined hedging model to hedge defined portions of its expected foreign currency risk from revenue-generating transactions in U.S. dollars (hedged item). The purpose is to minimize the impact of the volatility of the U.S. dollar exchange rate on net income and the cash flow. The forward foreign exchange contracts generally used for this purpose are designated as financial instruments to hedge cash flows from expected sales realized in U.S. dollars. The hedge ratio decreases the longer the hedging horizon is.

An economic hedging relationship exists between the hedged item and the hedging instrument, since the terms of the forward foreign exchange contracts correspond to the terms of the highly probable forecast transactions (this is true for the nominal amount and the expected payment date). MTU uses the hypothetical derivative method to measure the effectiveness of the hedge and prospectively compares the changes in fair value of the hedging instrument with the changes in fair value of the hedged items that are attributable to the hedged risk.

Hedge ineffectiveness can arise for a number of reasons:

- when the timing of the cash flows from the hedged item and the hedging instruments differs or the expected amount of cash flows from the hedged item and the hedging instrument changes.
  MTU considers it unlikely that an effective risk could arise in such cases since only the amount of the expected foreign currency risk is hedged and sufficient gross foreign currency inflows (revenue in U.S. dollars) are available to service the hedging instruments.
- different effects of the counterparty credit risk on the changes in fair value of the hedged item and the hedging instrument.
  MTU believes that this poses a low effective risk because all banks with which MTU enters into hedging transactions and MTU itself must have an investment grade rating. The priced credit risk between MTU and the commercial banks is therefore very low at present and thus immaterial.

Translation differences arising from the translation of financial statements of international subsidiaries into the Group's functional currency and effects from measurement at the closing rate (translations risks) are not included when deriving the hedging volume.

As of December 31, 2023, MTU held open forward foreign exchange contracts with maturities up to March 2027 in a nominal amount of U.S.$2,920 million. That translates into €2,643 million at the exchange rate prevailing on the reporting date. The fair values of the open forward foreign exchange contracts maturing in and after 2024 increased by €50 million in the reporting period (previous year: decreased by €69 million for maturities in and after 2023). Changes in the value of the hedged item correspond to those of the hedging instrument, so that the hedging instruments were effective. As of December 31 of the previous year, MTU had hedged cash flows for fiscal years 2023 through 2026 amounting to U.S.$3,000 million (which translates into €2,813 million at the exchange rate prevailing on December 31, 2022).

The forward foreign exchange contracts open at the reporting date had the following maturities:

[T133] Cash flow hedges

	Dec. 31, 2023			
	Due in less than 1 year	Due in more than 1 year and less than 2 years	Due in more than 2 years	Total
Forward foreign exchange contracts				
Nominal amounts (in U.S.$ million)	1,460	1,020	440	2,920
Average forward rate (€/U.S.$)	1.13	1.10	1.09	1.12
thereof recognized as				
Financial assets				
Nominal amounts (in U.S.$ million)				1,920
Carrying amounts of the spot component (in € million)				98
Financial liabilities				
Nominal amounts (in U.S.$ million)				1,000
Carrying amounts of the spot component (in € million)				15

[T134] Cash flow hedges

	Dec. 31, 2022			
	Due in less than 1 year	Due in more than 1 year and less than 2 years	Due in more than 2 years	Total
Forward foreign exchange contracts				
Nominal amounts (in U.S.$ million)	1,400	1,040	560	3,000
Average forward rate (€/U.S.$)	1.13	1.14	1.09	1.13
thereof recognized as				
Financial assets				
Nominal amounts (in U.S.$ million)				1,080
Carrying amounts of the spot component (in € million)				53
Financial liabilities				
Nominal amounts (in U.S.$ million)				1,920
Carrying amounts of the spot component (in € million)				94

As of the reporting date at the end of fiscal year 2023, the following amounts were recognized in equity for financial instruments measured at fair value through other comprehensive income:

[T135] Impact of hedging relationships on equity

in € million	Hedge reserves	Hedging costs reserves	Total
Carrying amount as of Jan. 1, 2022	**0**	**–30**	**–29**
Changes in fair value of (derivative) financial instruments that are part of hedging	48	45	93
Amounts recycled to profit or loss, to revenues or other operating income/expense	–84	–48	–133
Deferred taxes	12	1	13
Carrying amount as of Jan. 1, 2023	**–24**	**–32**	**–56**
Changes in fair value of (derivative) financial instruments that are part of hedging	120	44	164
Amounts recycled to profit or loss, to revenues or other operating income/expense	–9	–52	–61
Deferred taxes	–36	2	–33
Carrying amount as of Dec. 31, 2023	**51**	**–37**	**14**

No transactions were hedged in prior periods that are no longer expected to occur.

As a further element of its hedging strategy, MTU employs derivative financial instruments to which hedge accounting under IFRS 9 is not applied.

Currency swaps

In the course of the 2023 reporting period, U.S. dollars were sold or purchased at the daily rate. The transactions were closed after a short time through swaps. As the selling and buying rates differ only marginally, these swaps are immaterial in terms of risk. The purpose of these transactions was to optimize liquidity in U.S. dollars. There were no open currency swaps as of December 31, 2023 (previous year: U.S.$5 million).

Exchange rate sensitivity analysis

The sensitivity analysis showing the effects of hypothetical changes in exchange rates on net income and equity relates to the foreign currency positions included in the respective balance sheet items at the reporting date. In this context, it is assumed that the volume at the reporting date is representative of the full year.

As of December 31, 2023, significant proportions of trade receivables (U.S.$934 million), other financial assets (U.S.$779 million), refund liabilities (U.S.$3,467 million), trade payables (U.S.$229 million) and finance lease liabilities (U.S.$71 million) were invoiced in U.S. dollars and thus exposed to exchange rate fluctuations. All other non-derivative financial instruments to which hedge accounting is not applied are already denominated in the Group's functional currency (the euro), and are therefore not included in the exchange rate sensitivity analysis. The equity instruments held by the Group are not of a monetary nature and therefore do not present a currency risk as defined by IFRS 7.

If the exchange rate of the euro to the U.S. dollar at December 31, 2023, or at the prior-year reporting date had been 10% higher or lower, this would have produced the following hypothetical effects on net income and equity, particularly due to the effects of measurement of foreign currency receivables and liabilities on the reporting date:

[T136] Exchange rate sensitivity analysis

	2023		2022	
in € million	-10%	+10%	-10%	+10%
Exchange rate sensitivity (€/U.S.$)				
Closing exchange rate Dec. 31, 2023: 1.1050 (Dec. 31, 2022: 1.0666)	0.99	1.22	0.96	1.17
Net income	**–185**	**152**	**–98**	**79**
Equity [1]	**–153**	**126**	**–177**	**147**

[1] After tax.

Interest rate risks

MTU is exposed to interest rate risks directly in connection with increases in financial liabilities and indirectly in calculating the present values of assets, liabilities and provisions (e.g., program liabilities, goodwill and pension provisions). After deducting present values, MTU is in a net debt position in relation to financial liabilities. The interest rates on financial liabilities are currently stipulated in the agreements, while interest income from investing cash and cash equivalents is aligned with the short-term money market indices. MTU has thus limited the existing direct interest rate risk for current liabilities while also benefiting from the present increase in money market interest rates.

Interest rate sensitivity analysis

Interest rate risk is presented in accordance with IFRS 7 using sensitivity analysis, which shows the effects of changes in market interest rates on interest payments, interest income and expense, other income statement items, net income and equity. The interest rate sensitivity analysis is based on the following assumptions:

Changes in the market interest rate of non-derivative financial instruments bearing fixed market interest rates have an effect on net income and equity only if these financial instruments are measured at fair value through profit or loss or were classified as such at initial recognition. Consequently, all fixed-interest financial instruments measured at amortized cost have no interest-rate-induced effects on net income and equity that have to be accounted for, apart from future amounts to be charged to net interest income/expense.

In fiscal year 2023, floating-rate financial instruments and financial instruments measured at fair value held at the reporting date were not exposed to any significant interest rate risks.

Price risks

There is a general risk of price increases for commodities. This risk is mitigated mainly by procuring goods with appropriate price agreements and only to a small extent by entering into derivative financial instruments for nickel forward contracts.

As of December 31, 2023, MTU had entered into nickel forward contracts with credit institutions for a volume of 1,050 metric tons of nickel (previous year: 850 metric tons) for the years 2024 through 2025 and contracted fixed prices for nickel of between U.S.$18.2 thousand and U.S.$31.2 thousand per metric ton (previous year: between U.S.$18.3 thousand and U.S.$31.2 thousand per metric ton).

If the market price for nickel on the respective maturity date exceeds the agreed fixed price, MTU will receive a payment for the difference from the bank. In the opposite case, MTU is obligated to make a payment to the bank. Hedge accounting within the meaning of IFRS 9 was not applied to these transactions. The change in fair value of €-13 million (previous year: €6 million) arising from these forward commodity purchases is recognized in other financial income/expense. For further information see *section II. Notes to the consolidated income statement, Note 9. Other financial income/expense*.

If the market prices in nickel forward contracts had been 10% higher or lower, net income would have been €1 million (previous year: €2 million) higher or lower.

Liquidity risks

MTU's liquidity risk relates to the potential inability to meet payment obligations as due, including meeting potential obligations related to financing commitments, because insufficient cash or cash equivalents are available. In order to ensure the solvency and financial flexibility of MTU at all times, credit lines and liquid funds are managed on the basis of multi-year corporate planning and rolling monthly liquidity planning.

Liquidity is invested mainly in demand deposits, money market funds and other short-term money market papers. The maturity profile of invested amounts is based on liquidity planning and takes into account the availability of a suitable amount of reserves at all times. In addition, MTU has access to a long-term, syndicated credit facility in the amount of €500 million. The liquidity reserves available from credit facilities that have not been drawn down and available cash and cash equivalents support MTU's estimation that the company is adequately prepared in terms of liquidity to ensure solvency in times of business growth and advancement, as well as against a backdrop of multiple crises negatively impacting the macroeconomic environment.

For further information, see *section III. Notes to the consolidated balance sheet, Note 28. Financial liabilities*, and *section III. Notes to the consolidated balance sheet, Note 33. Additional disclosures relating to financial instruments* as well as *section I. Accounting principles and policies – Discretionary scope, measurement uncertainties and sensitivity*.

36. Leases

Group as lessee

The Group has entered into leases for land and buildings, technical equipment and machinery, and operational and office equipment.

The Group primarily acts as lessee in the following cases:

- Real estate leases for production, logistics and office capacities (land and buildings). Some of the underlying contracts include price escalation clauses linked to the consumer price index. The lease terms are between two and 17 years; some leases have renewal options.
- Leasing of vehicles and industrial trucks (operational and office equipment). The underlying leases regularly take into account variable components of the lease rates. The lease terms are between two and five years; some leases have renewal options.
- Engine leasing (operational and office equipment): The underlying leases may take into account variable components of the lease rates. The lease terms are between one and ten years; some leases have renewal options. Engines are provided to MRO customers on the basis of sub-leases.

The tables below show the changes in carrying amounts and depreciation expenses of the right-of-use assets recognized in the balance sheet:

[T137] Right-of-use assets 2023

in € million	As of Jan. 1, 2023	Currency translation differences	Additions	Transfers	Disposals	As of Dec. 31, 2023
Purchase cost						
Land, leasehold rights and buildings, including buildings on third-party land	115	-1	30		-0	144
Technical equipment, plant and machinery	2					2
Other equipment, operational and office equipment	119	0	66		-73	112
Total purchase cost	**236**	**-1**	**96**		**-73**	**258**
Depreciation						
Land, leasehold rights and buildings, including buildings on third-party land	-32	0	-13		0	-44
Technical equipment, plant and machinery	-2					-2
Other equipment, operational and office equipment	-43	-0	-41		34	-50
Total depreciation	**-77**	**0**	**-54**		**34**	**-97**
Carrying amount	**158**	**-1**	**43**		**-39**	**161**

[T138] Right-of-use assets 2022

in € million	As of Jan. 1, 2022	Currency translation differences	Additions	Transfers	Disposals	As of Dec. 31, 2022
Purchase cost						
Land, leasehold rights and buildings, including buildings on third-party land	110	0	4	-0		115
Technical equipment, plant and machinery	2					2
Other equipment, operational and office equipment	133	-0	59	0	-73	119
Total purchase cost	**245**	**0**	**63**		**-73**	**236**
Depreciation						
Land, leasehold rights and buildings, including buildings on third-party land	-21	-0	-11	0		-32
Technical equipment, plant and machinery	-2					-2
Other equipment, operational and office equipment	-61	0	-26	-0	44	-43
Total depreciation	**-84**	**-0**	**-37**		**44**	**-77**
Carrying amount	**161**	**0**	**26**		**-29**	**158**

In the reporting period, additions to right-of-use assets in the area of land, leasehold rights and buildings, including buildings on third-party land, mainly relate to the lease of space at the Munich site, a central external logistics warehouse in Meitingen and warehouse space in Berlin. The maturity analysis for lease liabilities is presented in *Note 33. Additional disclosures relating to financial instruments*.

[T139] Additional information on leases:

in € million	2023	2022
Income		
Income from subleasing right-of-use-assets	69	51
Gains arising from sale and leaseback transactions		1
Lease income	**69**	**51**
Expenses		
Depreciation of right-of-use assets	54	36
Impairment losses on right-of-use assets	–0	1
Interest expense for lease liabilities	4	4
Short-term lease expense	3	3
Low-value asset lease expense	2	2
Variable lease payment expense not included in the measurement of lease liabilities	26	16
Lease expense	**89**	**62**

In the reporting period, the Group's cash outflows for leases amounted to €114 million (previous year: €89 million). Future cash outflows for amounts not recognized on the balance sheet are presented below in *section IV. Other disclosures, Note 37. Contingent liabilities and other financial obligations*.

Group as lessor

MTU leases out engines that are owned by the Group as well as engines that are leased by MTU. The leases generally have terms of between a few weeks and three years. In this context, tailored engine leases are offered by the Group to its customers, especially airlines, and the Group offers engine maintenance services (MRO). The engines are primarily leased out under operating leases. Extension and premature termination options are granted on a case-by-case basis.

The maturity analyses of lease receivables are as follows:

[T140] Maturity analysis of operating lease payments

in € million	Dec. 31, 2023	Dec. 31, 2022
Expected cash inflows from operating leases		
Less than 1 year	27	16
1 to 2 years	8	3
2 to 3 years	1	2
3 to 4 years	1	1
4 to 5 years	0	1
More than 5 years	0	0
Total	**37**	**23**

Lease revenue of €108 million was earned from operating leases in the reporting period (previous year: €82 million).

37. Contingent liabilities and other financial obligations

Contingent liabilities

The following table contains an overview of the contingent liabilities of the MTU Group on the reporting date for 2023 and the previous year.

[T141] Contingent liabilities

in € million	Dec. 31, 2023	Dec. 31, 2022
Bank guarantees	44	32
Guarantees and other contingent liabilities	364	152
Total contingent liabilities	**408**	**185**

The increase in the reporting period corresponds primarily to the development of potential liability for credit and litigation risks in connection with stakes in commercial engine programs, which are included in other contingent liabilities.

Analogously to previous years, bank guarantees and guarantees and other contingent liabilities, other than the pro rata liability relating to consortia, principally comprise contract fulfillment and customs bonds of a customary amount and guarantees assumed for credit facilities and investment subsidies.

Founded in 2019 and consolidated for the first time in 2021, MTU Maintenance Serbia d.o.o. received public sector grants related to the site's establishment and construction. MTU also receives a small amount of public sector grants and assistance to subsidize new production and logistics buildings and research and development expenses. The risk of repayment obligations exists until such time as the relevant project has been completed and all the conditions associated with it have been met. At the reporting date, the probability that risks of this kind could materialize was deemed to be very low.

In fiscal year 2019, MTU incurred income tax losses due to the partial repayment of a convertible bond in the amount of €276 million. Even though MTU assumes that the losses will be confirmed by the tax audit, reference is made to the potential for a different opinion on the side of the administration.

In addition, as of the reporting date, there were unutilized financing commitments for equity investments in the form of committed capital contributions or shareholder loans totaling €141 million (previous year: €142 million) and further commitments to OEM customers relating to shares in sales financing commitments in respect of commercial engine programs. As of the reporting date, the unutilized nominal amount of such financing commitments was €831 million (previous year: €776 million). MTU treats these commitments as a component of its gross liquidity risk within the meaning of IFRS 7. For further information, please see *section III. Notes to the consolidated balance sheet, Note 33. Additional disclosures relating to financial instruments.*

Other financial obligations

Obligations arising from leases

The breakdown by maturity of future cash outflows for leases for which lease liabilities have not (yet) been recognized is as follows:

[T142] Future cash outflows from leases

in € million	Dec. 31, 2023	Dec. 31, 2022
Leases that have not yet commenced		
Due in less than 1 year	2	0
Due in more than 1 year and less than 5 years	9	2
Due in more than 5 years		2
Total future cash outflows from leases	**11**	**4**

Purchase commitments for financial obligations

As of December 31, 2023, purchase commitments amounted to €7 million (previous year: €6 million) for the purchase of intangible assets and to €220 million (previous year: €184 million) for the purchase of property, plant and equipment and were therefore in the normal range for the business.

38. Related party disclosures

Related companies

Transactions between Group companies and joint ventures or associates were, without exception, entered into in the normal course of business and, on principle, on an arm's length basis.

Transactions between consolidated companies were eliminated in the consolidated financial statements and are therefore not disclosed separately in this Note.

Business with related companies

In the reporting period, intragroup transactions involving the supply of goods and services were conducted by Group companies as part of their normal operating activities (e.g., development, repairs, assembly, IT support). In the reporting period and the previous year, the following transactions resulting in current receivables and liabilities were entered into on an arm's length basis with related companies that are not consolidated:

[T143] Trade receivables from and trade payables to related companies

in € million	Trade receivables Dec. 31, 2023	Trade receivables Dec. 31, 2022	Trade payables Dec. 31, 2023	Trade payables Dec. 31, 2022
Associates	311	438	19	
Joint ventures	89	127	50	13
Subsidiaries accounted for at fair value	7	9	0	1
Total	**407**	**574**	**69**	**13**

[T144] Income/expense from invoiced deliveries and services from related companies

in € million	Income Dec. 31, 2023	Income Dec. 31, 2022	Expenses Dec. 31, 2023	Expenses Dec. 31, 2022
Associates	2,442	2,045	-1,114	-1,140
Joint ventures	552	435	-710	-396
Subsidiaries accounted for at fair value	3	3	-35	-28
Total	**2,997**	**2,483**	**-1,859**	**-1,565**

Furthermore, there is a guarantee of €136 million for credit lines of the joint venture EME Aero sp. z o.o. This guarantee is recognized as a contingent liability (guarantees and other contingent liabilities).

In addition, there are unutilized financing commitments to EME Aero sp. z o.o., Ceramic Coating Center S.A.S and Airfoil Services Sdn.Bhd. in the form of committed capital contributions or shareholder loans totaling €141 million. More details are provided in *Note 37. Contingent liabilities and financial liabilities.*

Major shareholdings

The list of major shareholdings shows the equity investments of MTU Aero Engines AG, Munich, and the equity of each company as of December 31, 2023:

[T145] List of shareholdings

Name and registered office of entity	Consolidation method [2]	Shareholding (in %) Dec. 31, 2023
I. Investments in subsidiaries		
eMoSys GmbH, Starnberg, Germany	At (amortized) cost	100.00
MS Engine Leasing LLC, Rocky Hill, USA [1]	Full	75.22
MTU Aero Engines Finance Netherlands B.V., Amsterdam, Netherlands	At (amortized) cost	100.00
MTU Aero Engines North America Inc., Rocky Hill, USA	Full	100.00
MTU Aero Engines Polska sp. z o.o., Jasionka, Poland	Full	100.00
MTU Aero Engines (Shanghai) Ltd., Shanghai, China	At (amortized) cost	100.00
MTU Maintenance Berlin-Brandenburg GmbH, Ludwigsfelde, Germany	Full	100.00
MTU Maintenance Canada Ltd., Delta, Canada	Full	100.00
MTU Maintenance Dallas Inc., Grapevine, USA	At (amortized) cost	100.00
MTU Maintenance Hannover GmbH, Langenhagen, Germany	Full	100.00
MTU Maintenance do Brasil LTDA, Cotia, Brazil	At (amortized) cost	100.00
MTU Maintenance Lease Services B.V., Amsterdam, Netherlands	Full	100.00
MTU Maintenance Serbia d.o.o., Nova Pazova, Serbia	Full	100.00
MTU Maintenance Service Centre Australia Pty. Ltd., Perth, Australia	At (amortized) cost	100.00
MTU Maintenance Service Centre Ayutthaya Ltd., Ayutthaya, Thailand	At (amortized) cost	100.00
MTU Maintenance Singapore Pte. Ltd., Singapore	At (amortized) cost	100.00
MTU Versicherungsvermittlungs- und Wirtschaftsdienst GmbH, Munich, Germany	At (amortized) cost	100.00
II. Investments in associates		
IAE International Aero Engines AG, Zurich, Switzerland	At equity	25.25
IAE International Aero Engines LLC, East Hartford, USA	At equity	18.00
PW 1100G_JM Engine Leasing LLC, East Hartford, USA	At equity	18.00
III. Equity investments in joint ventures		
AES Aerospace Embedded Solutions GmbH, Munich, Germany	At equity	50.00
Airfoil Services Sdn. Bhd., Kota Damansara, Malaysia	At equity	50.00
Ceramic Coating Center S.A.S., Paris, France	At equity	50.00
Engine Maintenance Europe Aero sp.z.o.o., Jasionka, Poland	At equity	50.00
EPI Europrop International GmbH, Munich, Germany	At (amortized) cost	28.00
EUMET GmbH, Munich, Germany	At (amortized) cost	50.00
EUROJET Turbo GmbH, Hallbergmoos, Germany	At (amortized) cost	33.00
MTU Maintenance Hong Kong Ltd., Hong Kong, China [1]	At (amortized) cost	50.00
MTU Maintenance Zhuhai Co. Ltd., Zhuhai, China	At equity	50.00
MTU Turbomeca Rolls-Royce GmbH, Hallbergmoos, Germany	At (amortized) cost	33.33
MTU Turbomeca Rolls-Royce ITP GmbH, Hallbergmoos, Germany	At (amortized) cost	25.00
Pratt & Whitney Canada Customer Service Centre Europe GmbH, Ludwigsfelde, Germany [1]	At equity	50.00
Turbo Union GmbH, Hallbergmoos, Germany	At (amortized) cost	39.98
GSB - Sonderabfall-Entsorgung Bayern GmbH, Baar-Ebenhausen, Germany	At (amortized) cost	0.10

[1] Indirect shareholding.
[2] - Full = fully consolidated.
- Fair value = measured at fair value (with no impact on profit or loss).
- At equity = carrying amount of investment increased or decreased in proportion to Group's interest in equity.

Non-controlling interests

The non-controlling interests comprise Sumitomo Group's 25% interest in MS Engine Leasing LLC.

[T146] Non-controlling interests

in € million	Dec. 31, 2023
Percentage of non-controlling interests	**25%**
Non-current assets	263
Current assets	11
Non-current liabilities	
Current liabilities	
Net assets	**274**
Net assets of non-controlling interests companies	**70**
Revenue	
Gains (+)/Losses (-)	21
Other comprehensive income	
Comprehensive income	**21**
Non-controlling interests assigned profit	**5**
Non-controlling interests assigned other comprehensive income	
Cash flow from operating activities	22
Cash flow from investing activities	
Cash flow from financing activities	19
thereof: dividend for minority-owned companies	3

Related persons

Other than the transactions specified in Other related party transactions, no Group companies entered into transactions subject to disclosure requirements with members of the Group's Executive Board or Supervisory Board, or with close members of their families.

Members of the Executive Board

As of December 31, 2023, the Executive Board of MTU Aero Engines AG, Munich, had the following members:

[T147] Members of the Executive Board

Lars Wagner
Chief Executive Officer

Peter Kameritsch
Chief Financial Officer and Chief Information Officer

Michael Schreyögg
Chief Program Officer

Dr. Silke Maurer
Chief Operating Officer

Executive Board compensation

Detailed information on the compensation system for MTU's Executive Board members is provided in the *management compensation report* in the section *The MTU share.*

The members of the Executive Board received total compensation amounting to €11 million (previous year: €11 million) for their work as board members in fiscal year 2023. Total compensation breaks down into the following components:

[T148] Compensation of the Executive Board

	2023 in € million	2023 in %	2022 in € million[1]	2022 in %
Short-term employee benefits				
Non-performance-related components	3		3	
Performance-related components without long-term incentive effect[1]	2		4	
Performance-related components with long-term incentive effect[1]	3		3	
Total	**8**	**72**	**10**	**92**
Post-employment benefits				
Pension expenses (IAS 19)	3		1	
Total	**3**	**28**	**1**	**8**
Total compensation	**11**	**100**	**11**	**100**

[1] Components granted for the reporting period (or previous year) that are paid out in the year after they were granted.

In the reporting period, the former CEO, Reiner Winkler, received a short-term incentive payment of €1,642,500 and payments of €1,171,610 under the Restricted Stock Plan. These amounts were already presented in 2022 as compensation granted and owed.

Members of the Executive Board did not receive any compensation for board appointments in Group companies.

In the reporting period, as in the previous year, no loans or advances were granted to members of the Executive Board. Similarly, as in the previous year, no contingent liabilities were assumed by the company in favor of members of the Executive Board.

Provisions for pensions and entitlements of former Executive Board members were €22 million as of December 31, 2023 (previous year: €10 million).

Details of the compensation awarded to individual members of the Executive Board, and other related information, are presented in the *management compensation report* in the section *The MTU share.*

Compensation of the Supervisory Board members

Detailed information on the compensation system for MTU's Supervisory Board members is provided in the *management compensation report* in the section *The MTU share.*

As in the previous year, members of the Supervisory Board did not receive any additional compensation for board appointments over and above that received for their appointment to the Supervisory Board of MTU Aero Engines AG, Munich. The compensation amounted to €2 million (previous year: €2 million).

In fiscal year 2023, MTU employees appointed as employee representatives to the Supervisory Board of MTU Aero Engines AG received salaries under their normal employment contracts (excluding Supervisory Board compensation) totaling €1 million (previous year: €1 million). The total amount represents the sum of their respective gross salaries.

In the reporting period, as in the previous year, no loans or advances were granted to members of the Supervisory Board. Similarly, as in the previous year, no contingent liabilities were assumed by the company in favor of members of the Supervisory Board.

Details of the compensation awarded to individual members of the Supervisory Board, and other related information, are presented in the *management compensation report* in the section *The MTU share.*

V. Segment information

39. Segment reporting

MTU reports on two operating segments: the OEM segment (commercial and military engine business) and the MRO segment (commercial maintenance business). Segmentation is based on the internal organizational structure and the corresponding management reporting system, which takes into account the different risk and return structures for both segments. A detailed description of the operating segments is provided in the *consolidated segment report*.

Commercial and military engine business (OEM segment)

In the commercial and military engine business, the Group develops, manufactures, assembles and delivers commercial and military engines and components. The maintenance, repair and overhaul of military engines is also included in this segment.

Commercial maintenance business (MRO segment)

In the commercial maintenance business, the Group maintains, repairs and overhauls aircraft engines and industrial gas turbines. In addition to complete engine maintenance, the services provided include engine module and parts repairs as well as related services, such as engine leasing.

Profit/loss of companies accounted for using the equity method

The carrying amount and the share in profit/loss of Group companies accounted for using the equity method are included in the consolidated financial statements if these companies can be directly allocated to an operating segment.

Segment assets and segment liabilities

Segment assets comprise all assets that can be directly allocated to specific operating activities and whose positive or negative operating results have an impact on earnings before interest and tax (EBIT/adjusted EBIT). Assets and liabilities are allocated to the operating segment in which they are used to generate business. To determine segment assets, the carrying amounts of subsidiaries and receivables between the segments were consolidated. Further details are provided in the *consolidated segment report*.

The cash and cash equivalents of the German Group companies are managed centrally by the parent company in a cash pooling system. The parent company's operating activities are allocated to the OEM segment, which is why the associated interest income and expense arise mainly in that segment.

Segment capital expenditures

Segment capital expenditures relate to additions to intangible assets, property plant and equipment, acquired program assets and acquired development work.

[T149] Capital expenditure on intangible assets & goodwill, property, plant and equipment, acquired program assets and acquired development work

in € million	2023	2022
Germany	374	289
Europe (excluding Germany)	157	177
North America	5	6
Total capital expenditure	**536**	**472**

Approximately 70% (previous year: approximately 61%) of capital expenditure on intangible assets, property, plant and equipment, acquired program assets and acquired development work relates to Group companies in Germany.

Consolidation / reconciliation column

The amounts in the "consolidation/reconciliation" column for earnings before interest and tax (EBIT/adjusted EBIT) are used to eliminate the effect of intersegment sales.

Segment information by region

External revenue, capital expenditure on intangible assets, property, plant and equipment and non-current assets are divided into the following regions: Germany, Europe (excluding Germany) and North America. Revenue from business with third parties is allocated according to the country where the customer is domiciled. Further details of the segment breakdown by region is presented in *section II. Notes to the consolidated income statement, Note 1. Revenue*.

The regional allocation of capital expenditure and non-current assets is based on the location of the respective asset or where it is mainly used.

[T150] Non-current assets

in € million	2023	2022
Germany	3,531	2,888
Europe (excluding Germany)	734	713
North America	340	545
Total non-current assets	**4,604**	**4,146**

VI. Events after the reporting date

MTU is not aware of any events of material importance that occurred after the reporting date that could have a significant impact on the net assets, financial position and results of operations of the MTU Group as presented in this report.

VII. Determination of the net profit available for distribution on the basis of the annual financial statements

Unlike the consolidated financial statements, which are based on the IFRSs issued by the IASB and endorsed by the EU, the annual financial statements of MTU Aero Engines AG, Munich, are prepared in accordance with the requirements of the German Commercial Code (HGB) and German Stock Corporation Act (AktG).

[T151] Income statement of MTU Aero Engines AG

				Change against previous year (adjusted)	
in € million	2023	2022 adjusted*	2022 as reported	in € million	in %
Revenue	**2,738**	**2,908**	**4,194**	**–170**	**–5.8**
Cost of goods sold	–3,283	–2,537	–3,912	–746	–29.4
Gross profit	**–545**	**371**	**282**	**–916**	**<-100**
Selling expenses	–97	–98	–98	1	1.0
General administrative expenses	–58	–64	–64	6	9.4
Net other operating income/expenses	65	–30	59	95	>100
Net financial income/expense	229	216	216	13	6.0
Earnings before tax	**–406**	**395**	**395**	**–801**	**<-100**
Tax expense	151	–128	–128	279	>100
Net profit for the year	**–255**	**267**	**267**	**–522**	**<-100**
Withdrawal from other retained earnings	363			363	–0
Allocation to other retained earnings		–96	–96	96	100.0
Net profit available for distribution	**108**	**171**	**171**	**–63**	**–36.8**

* In the reporting period, the definition of cost of goods sold/revenue and other operating income/expense in the accounts prepared in accordance with the German Commercial Code (HGB) was sharpened; this had no impact on profit/loss. Further information can be found in the annual financial statements of MTU Aero Engines AG as of December 31, 2023, in the section on the principles and methods used.

Proposed profit distribution

Subject to the approval of the Supervisory Board, a proposal will be put to the Annual General Meeting that the entire net profit available for distribution be used to pay a dividend of €2.00 per non-par-value shares eligible for the dividend (previous year: €3.20).

In accordance with Section 58 (4) (2) of the German Stock Corporation Act (AktG) as applicable since January 1, 2017, the claim to payment of the dividend is on the third business day following the resolution passed at the Annual General Meeting – and therefore on May 14, 2024.

Company register

The annual financial statements, consolidated financial statements and combined management report of MTU Aero Engines AG, Munich, are published in the company register. Printed copies can be obtained on request from MTU Aero Engines AG, 80995 Munich, Germany.

Declaration of conformity with the German Corporate Governance Code

The declaration of conformity by the Executive Board and Supervisory Board of MTU Aero Engines AG, Munich, pursuant to Section 161 of the German Stock Corporation Act (AktG) is published in the MTU Annual Report 2023 and has also been made permanently available to shareholders on the MTU website at www.mtu.de.

Munich, March 18, 2024

signed
Lars Wagner
Chief Executive Officer

signed
Peter Kameritsch
Chief Financial Officer and
Chief Information Officer

signed
Dr. Silke Maurer
Chief Operating Officer

signed
Michael Schreyögg
Chief Program Officer

Responsibility statement and independent auditor's report

Responsibility statement

We hereby affirm that, to the best of our knowledge, the consolidated financial statements of the MTU Group and the separate annual financial statements of MTU Aero Engines AG present a true and fair view of their respective net assets, financial position and results of operations in accordance with the applicable financial reporting standards, and that the combined management report provides a faithful and accurate review of the business performance of the MTU Group and of MTU Aero Engines AG, including business performance and position, and outlines the significant opportunities and risks of the MTU Group's and MTU Aero Engines AG's likely future development.

Munich, March 18, 2024

signed Lars Wagner Chief Executive Officer	signed Peter Kameritsch Chief Financial Officer and Chief Information Officer
signed Michael Schreyögg Chief Program Officer	signed Dr. Silke Maurer Chief Operating Officer

Note: This is a translation of the German original. Solely the original text in German language is authoritative.

Independent Auditor's Report

To MTU Aero Engines AG, Munich

Report on the Audit of the Consolidated Financial Statements and of the Combined Management Report

Opinions

We have audited the consolidated financial statements of MTU Aero Engines AG, Munich and its subsidiaries (the Group), which comprise the consolidated balance sheet as at December 31, 2023, and the consolidated income statement, consolidated statement of comprehensive income, consolidated statement of changes in equity and consolidated cash flow statement for the financial year from January 1 to December 31, 2023, and notes to the consolidated financial statements, including a summary of significant accounting policies. In addition, we have audited the combined management report of MTU Aero Engines AG and the Group for the financial year from January 1 to December 31, 2023.

In accordance with German legal requirements we have not audited the content of those components of the combined management report specified in the "Other Information" section of our auditor's report.

The combined management report includes cross-references that are not provided for by law and are marked as unaudited. We have not audited these cross-references in terms of content or the information to which the cross-references refer in accordance with German statutory provisions.

In our opinion, on the basis of the knowledge obtained in the audit,

/ the accompanying consolidated financial statements comply, in all material respects, with the IFRSs as adopted by the EU, and the additional requirements of German commercial law pursuant to Section 315e (1) HGB [Handelsgesetzbuch: German Commercial Code] and, in compliance with these requirements, give a true and fair view of the assets, liabilities, and financial position of the Group as at December 31, 2023, and of its financial performance for the financial year from January 1 to December 31, 2023, and

/ the accompanying combined management report as a whole provides an appropriate view of the Group's position. In all material respects, this combined management report is consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development. Our opinion on the combined management report does not cover the content of those components of the combined management report specified in the "Other Information" section of the auditor´s report. The combined management report includes cross-references, marked as unaudited, that are not provided for by law. Our audit opinion does not cover these cross-references or the information they refer to.

Pursuant to Section 322 (3) sentence 1 HGB, we declare that our audit has not led to any reservations relating to the legal compliance of the consolidated financial statements and of the combined management report.

Basis for the Opinions

We conducted our audit of the consolidated financial statements and of the combined management report in accordance with Section 317 HGB and the EU Audit Regulation No. 537/2014 (referred to subsequently as "EU Audit Regulation") and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW). Our responsibilities under those requirements and principles are further described in the "Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Combined Management Report" section of our auditor's report. We are independent of the group entities in accordance with the requirements of European law and German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements. In addition, in accordance with Article 10 (2) point (f) of the EU Audit Regulation, we declare that we have not provided non-audit services prohibited under Article 5 (1) of the EU Audit Regulation. We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinions on the consolidated financial statements and on the combined management report.

Key Audit Matters in the Audit of the Consolidated Financial Statements

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements for the financial year from January 1 to December 31, 2023. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, we do not provide a separate opinion on these matters.

The amount of revenue from commercial engine business in the OEM segment and the measurement of refund liabilities.

Please refer to section I of the notes to the consolidated financial statements for the accounting principles applied.

Information on the amount of revenue from commercial engine business in the OEM segment and reimbursement liabilities in general can be found in the notes to the consolidated financial statements under II. 1 and III. 31.

RISKS FOR THE FINANCIAL STATEMENTS

Revenue generated in the commercial engine business in the Group's OEM segment amounted to EUR 583 million in the 2023 financial year (previous year: EUR 1,453 million). These revenues are generated as part of program partnerships, so-called risk- and revenue-sharing partnerships, with other engine manufacturers. These program partnerships are controlled by other companies (consortium leaders). The main performance obligations relate in particular to the production, assembly and delivery of engine parts and the provision of technology.

In accordance with IFRS 15, the consortium leaders or, in individual cases, specific consortium companies were identified as customers. The basis for the amount of revenue recognized for deliveries and services by the Group is a list price fixed in the consortium agreement. By participating in risk and revenue sharing partnerships, all income and expenses of the program are also allocated to the program participants on a pro rata basis. These constitute variable consideration for the performance obligations or payments to the customer and therefore increase or decrease the amount of revenue. As a rule, they are only finally determined at a later date when the consortium leader delivers the product to its end customers or fulfills the other obligations arising from the contracts with the end customers.

A refund liability within the meaning of IFRS 15 is recognized if the company receives consideration from a customer and expects to refund all or part of this consideration to the customer. A refund liability is measured in the amount of the consideration received that is not expected to be due to the company as at the reporting date. This relates to the above-mentioned variable consideration and payments to the customer. The revenue-reducing accrual is recognized in the refund liabilities, which amounted to EUR 3,242 million as at the reporting date, corresponding to 31.8 % of total assets. The Executive Board's estimates for the amount of variable consideration and payments to customers are complex and discretionary. They are essentially based on the customers' program reports, which are assessed by the Executive Board and adjusted if there are deviating estimates.

There is a risk for the consolidated financial statements that the amount of variable consideration and payments to customers may be inaccurately estimated and thus the sales revenue and the refund liability may be incorrectly calculated or measured.

OUR AUDIT APPROACH

For the audit of revenue recognition, we assessed the design, implementation and effectiveness of selected internal controls with regard to the determination of the transaction price, including the estimation of variable consideration and payments to the customer. In addition, we assessed the accounting policy for revenue recognition in the commercial engine business in the OEM segment for compliance with IFRS 15.

On the basis of representatively selected samples, we verified the preliminary revenue recognition upon delivery to the customer by inspecting delivery bills and other underlying documentation. In doing so, we compared the underlying prices with the price lists of the program partnerships.

In addition, we reconciled a representative sample of variable consideration and payments to the customer with the program reports and assessed the valuation methods and significant assumptions and data used in the estimate. We also verified the mathematical accuracy of the calculation. We discussed and evaluated the underlying contracts, agreements and correspondence with the program partners as well as other relevant documentation with the responsible parties. Furthermore, we assessed the quality of the estimates to date by comparing the originally estimated values for variable consideration and payments to the customer with the program reports received.

OUR CONCLUSIONS

The company's approach to recognizing revenue is appropriate. The assumptions and data used to estimate the variable consideration and payments to the customer and therefore the measurement of the refund liability are appropriate.

The recognition and measurement of the refund liabilities in connection with the Geared Turbofan fleet management plan and the recognition of the resulting negative impact on earnings in the consolidated income statement

Please refer to section I of the notes to the consolidated financial statements for information on the accounting policies applied and the assumptions made.

Information on the Geared Turbofan fleet management plan ("GTF fleet management plan") and the resulting refund liabilities can be found in section III. 31 of the notes to the consolidated financial statements and in the combined management report in the "Economic report" section.

RISKS FOR THE FINANCIAL STATEMENTS

As at December 31, 2023, refund liabilities in connection with the GTF fleet management plan amounting to EUR 917 million were recognized in the consolidated financial statements of MTU Aero Engines AG, reducing revenue.

The consortium leader of the PW1100G-JM engine program, Pratt & Whitney, has initiated an extraordinary GTF fleet management plan that results in MTU's participation in expected financial burdens. These charges include obligations arising from the consortium leader's public commitment to pay compensation to PW1100G-JM program customers as a result of restrictions on the use of the aircraft resulting from the GTF fleet management plan. The Group holds an 18% stake in the PW1100G-JM engine program (program share) via the associated company IAE International Aero Engines LLC ("IAE LLC"). In accordance with the agreements with the program partners, the obligations arising from the program are allocated to the program partners on a pro rata basis as part of ongoing billings. The Group therefore participates with 18% in the respective external obligations of the program.

For the recognition and measurement of the refund liabilities in connection with the GTF fleet management plan, the Executive Board must rely on discretionary estimates made by the management of the consortium leader Pratt & Whitney, which controls IAE LLC. As a program partner, MTU has only limited rights to inspect the documents on which the valuation is based and limited influence on the amount of the program's external obligation. The amount of the reimbursement liabilities is therefore based to a large extent on the estimates of the consortium leader Pratt & Whitney, which the Executive Board has adopted on the basis of its own assessment.

There is a risk for the consolidated financial statements that the requirements for the recognition of refund liabilities in connection with the GTF fleet management plan are not met or that these are incorrectly measured. There is also a risk that the resulting negative impact on earnings, which reduces revenue, has been incorrectly recognized in the consolidated income statement.

OUR AUDIT APPROACH

We performed the audit of the refund liabilities in connection with the GTF fleet management plan with the support of the component auditor of IAE LLC, as the key assumptions are based on estimates made by the consortium leader Pratt & Whitney.

We obtained an overview of the process for recognizing and determining the refund liabilities from the GTF fleet management plan and the related controls with regard to the assessment by the consortium leader. In addition, we have understood the process for transferring the data provided by IAE LLC to the consolidated financial statements.

We inspected the relevant documentation and assessed whether an external obligation exists with regards to the GTF fleet management plan. We performed inquiries to obtain an understanding of the assumptions made and data used in relation to the expected compensation payments to PW1100G-JM program customers. We interviewed representatives of MTU's Executive Board and program controlling as well as representatives of Pratt & Whitney's finance and program functions during a site visit to Pratt & Whitney. The assumptions made and data used in the determination were compared with the consortium leader's end customer contracts in representatively selected samples. We also assessed the assumptions made and data used on the basis of historical experience, the documentation of the engine fleet and the technical documentation. We verified the calculation of the refund liability resulting from the assumptions and data. Furthermore, we compared compensation agreements already concluded with end customers of the program with the assumptions originally made in order to assess the quality of the estimate.

The estimates regarding the resulting income and cost risks of the portfolio of long-term maintenance contracts in the PW1100G-JM program were reviewed in representatively selected samples on the basis of the contracts and the associated income and cost estimates of the consortium leader. Other cost components of the contracts were vouched on a risk-oriented basis.

By inspecting the program agreements, we assessed whether a revenue-reducing disclosure of the burden on earnings resulting from the recognition of the refund liability as a liability in the consolidated income statement is appropriate.

OUR CONCLUSIONS

The recognition of the refund liabilities in connection with the GTF fleet management plan is appropriate. The assumptions and data on which the valuation is based are appropriate overall. The recognition in the consolidated income statement of the negative impact on earnings resulting from the recognition of the refund liability is appropriate.

The recoverability of program assets and program-related capitalized development costs

Please refer to section I of the notes to the consolidated financial statements for information on the accounting policies applied and the assumptions made.

Information on the amount of program assets and capitalized development costs can be found in the notes to the consolidated financial statements under III. 13, 14 and 17.

RISKS FOR THE FINANCIAL STATEMENTS

The Group participates in risk- and revenue-sharing partnerships with other engine manufacturers. Program entry payments and pro rata cost absorptions are made to enter into these partnerships in the commercial OEM segment. These program-lifetime-related payments to customers are capitalized as “Acquired program assets, development work and other assets” under non-current assets in the consolidated financial statements. In addition, self-financed development services are provided, which are capitalized as development services and reported under “Intangible assets & goodwill”.

The aforementioned assets amounted to EUR 1,330 million as at December 31, 2023 and represent a significant proportion of assets at 13.0 % of total assets.

At each reporting date, the company uses a multi-stage process to analyze at the level of the programs identified as cash-generating units whether the acquired program assets, development work and other assets as well as internally generated development assets could be impaired. To test for impairment, the company determines the recoverable amount of the program if certain indicators are present and compares this with the respective carrying amount. A discounted cash flow method is used to determine the recoverable amount.

The impairment test of the acquired program assets, development work and other assets as well as internally generated development assets is complex and is based on a number of discretionary assumptions. These include, in particular, the expected business and earnings development of the programs for the expected remaining program life and the discount rate used, which was derived with the help of an external valuation specialist.

There is a risk for the consolidated financial statements that an existing impairment was not recognized.

OUR AUDIT APPROACH

The Group participates in risk- and revenue-sharing partnerships with other engine manufacturers. Program entry payments and pro rata cost absorptions are made to enter into these partnerships in the commercial OEM segment. These program-lifetime-related payments to customers are capitalized as “Acquired program assets, development work and other assets” under non-current assets in the consolidated financial statements. In addition, self-financed development services are provided, which are capitalized as development services and reported under “Intangible assets & goodwill”.

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The impairment test of the acquired program assets, development work and other assets as well as internally generated development assets is complex and is based on a number of discretionary assumptions. These include, in particular, the expected business and earnings development of the programs for the expected remaining program life and the discount rate used, which was derived with the help of an external valuation specialist.

There is a risk for the consolidated financial statements that an existing impairment was not recognized.

OUR CONCLUSIONS
The calculation method underlying the impairment test of the acquired program assets, development costs and other assets as well as internally generated development assets is appropriate and in line with the applicable valuation principles. The company's assumptions and data on which the valuation is based are appropriate.

Other Information
Management respectively supervisory board are responsible for the other information. The other information comprises the following components of the combined management report, whose content was not audited:

- The combined non-financial statement which is included in section "Non-financial statement" of the combined management report,
- the combined corporate governance statement of the company and the group included in section "Corporate governance statement" of the combined management report, and

The other Information includes also the remaining parts of the annual report. The other Information does not include the consolidated financial statements, the combined management report information audited for content and our auditor's report thereon.

Our opinions on the consolidated financial statements and on the combined management report do not cover the other information, and consequently we do not express an opinion or any other form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the above-mentioned other information and, in so doing, to consider whether the other information

- is materially inconsistent with the consolidated financial statements, with the combined management report information audited for content or our knowledge obtained in the audit, or
- otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of Management and the Supervisory Board for the Consolidated Financial Statements and the Combined Management Report
Management is responsible for the preparation of the consolidated financial statements that comply, in all material respects, with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to Section 315e (1) HGB and that the consolidated financial statements, in compliance with these requirements, give a true and fair view of the assets, liabilities, financial position, and financial performance of the Group. In addition, management is responsible for such internal control as they have determined necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud (i.e., fraudulent financial reporting and misappropriation of assets) or error.

In preparing the consolidated financial statements, management is responsible for assessing the Group's ability to continue as a going concern. They also have the responsibility for disclosing, as applicable, matters related to going concern. In addition, they are responsible for financial reporting based on the going concern basis of accounting unless there is an intention to liquidate the Group or to cease operations, or there is no realistic alternative but to do so.

Furthermore, management is responsible for the preparation of the combined management report that, as a whole, provides an appropriate view of the Group's position and is, in all material respects, consistent with the consolidated financial statements, complies with German legal requirements, and appropriately presents the opportunities and risks of future development. In addition, management is responsible for such arrangements and measures (systems) as they have considered necessary to enable the preparation of a combined management report that is in accordance with the applicable German legal requirements, and to be able to provide sufficient appropriate evidence for the assertions in the combined management report.

The supervisory board is responsible for overseeing the Group's financial reporting process for the preparation of the consolidated financial statements and of the combined management report.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Combined Management Report

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the combined management report as a whole provides an appropriate view of the Group's position and, in all material respects, is consistent with the consolidated financial statements and the knowledge obtained in the audit, complies with the German legal requirements and appropriately presents the opportunities and risks of future development, as well as to issue an auditor's report that includes our opinions on the consolidated financial statements and on the combined management report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Section 317 HGB and the EU Audit Regulation and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer (IDW) will always detect a material misstatement. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements and this combined management report.

We exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements and of the combined management report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinions. The risk of not detecting a material misstatement resulting from fraud is higher than the risk of not detecting a material misstatement resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit of the consolidated financial statements and of arrangements and measures (systems) relevant to the audit of the combined management report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of these systems.
- Evaluate the appropriateness of accounting policies used by management and the reasonableness of estimates made by management and related disclosures.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in the auditor's report to the related disclosures in the consolidated financial statements and in the combined management report or, if such disclosures are inadequate, to modify our respective opinions. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to be able to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements present the underlying transactions and events in a manner that the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Group in compliance with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to Section 315e (1) HGB.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express opinions on the consolidated financial statements and on the combined management report. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our opinions.

- Evaluate the consistency of the combined management report with the consolidated financial statements, its conformity with German law, and the view of the Group's position it provides.
- Perform audit procedures on the prospective information presented by management in the combined management report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by management as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with the relevant independence requirements, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, the actions taken or safeguards applied to eliminate independence threats.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter.

Other Legal and Regulatory Requirements

Report on the Assurance on the Electronic Rendering of the Consolidated Financial Statements and the Combined Management Report Prepared for Publication Purposes in Accordance with Section 317 (3a) HGB

We have performed assurance work in accordance with Section 317 (3a) HGB to obtain reasonable assurance about whether the rendering of the consolidated financial statements and the combined management report (hereinafter the "ESEF documents") contained in the electronic file "MTUKA-2023-12-31-de.zip" (SHA256 hash value: dec7318219902b11a05bd9ceb8a9fb0871fefda617f8e35e57f3dda7672c6b5c) made available and prepared for publication purposes complies in all material respects with the requirements of Section 328 (1) HGB for the electronic reporting format ("ESEF format"). In accordance with German legal requirements, this assurance work extends only to the conversion of the information contained in the consolidated financial statements and the combined management report into the ESEF format and therefore relates neither to the information contained in these renderings nor to any other information contained in the file identified above.

In our opinion, the rendering of the consolidated financial statements and the combined management report contained in the electronic file made available, identified above and prepared for publication purposes complies in all material respects with the requirements of Section 328 (1) HGB for the electronic reporting format. Beyond this assurance opinion and our audit opinion on the accompanying consolidated financial statements and the accompanying combined management report for the financial year from January 1 to December 31, 2023 contained in the "Report on the Audit of the Consolidated Financial Statements and the Combined Management Report" above, we do not express any assurance opinion on the information contained within these renderings or on the other information contained in the file identified above.

We conducted our assurance work on the rendering of the consolidated financial statements and the combined management report contained in the file made available and identified above in accordance with Section 317 (3a) HGB and the IDW Assurance Standard: Assurance Work on the Electronic Rendering of Financial Statements and Management Reports Prepared for Publication Purposes in Accordance with Section 317 (3a) HGB (IDW AsS 410 (06.2022)) and the International Standard on Assurance Engagements 3000 (Revised). Our responsibility in accordance therewith is further described below. Our audit firm applies the IDW Standard on Quality Management 1: Requirements for Quality Management in Audit Firms (IDW QS 1).

The Company's management is responsible for the preparation of the ESEF documents including the electronic rendering of the consolidated financial statements and the combined management report in accordance with Section 328 (1) sentence 4 item 1 HGB and for the tagging of the consolidated financial statements in accordance with Section 328 (1) sentence 4 item 2 HGB.

In addition, the company's management is responsible for such internal control that they have considered necessary to enable the preparation of ESEF documents that are free from material intentional or unintentional non-compliance with the requirements of Section 328 (1) HGB for the electronic reporting format.

The supervisory board is responsible for overseeing the process of preparing the ESEF documents as part of the financial reporting process.

Our objective is to obtain reasonable assurance about whether the ESEF documents are free from material intentional or unintentional non-compliance with the requirements of Section 328 (1) HGB. We exercise professional judgement and maintain professional scepticism throughout the assurance work. We also:

- Identify and assess the risks of material intentional or unintentional non-compliance with the requirements of Section 328 (1) HGB, design and perform assurance procedures responsive to those risks, and obtain assurance evidence that is sufficient and appropriate to provide a basis for our assurance opinion.
- Obtain an understanding of internal control relevant to the assurance on the ESEF documents in order to design assurance procedures that are appropriate in the circumstances, but not for the purpose of expressing an assurance opinion on the effectiveness of these controls.
- Evaluate the technical validity of the ESEF documents, i.e. whether the file made available containing the ESEF documents meets the requirements of the Delegated Regulation (EU) 2019/815, as amended as at the reporting date, on the technical specification for this electronic file.
- Evaluate whether the ESEF documents provide an XHTML rendering with content equivalent to the audited consolidated financial statements and the audited combined management report.
- Evaluate whether the tagging of the ESEF documents with Inline XBRL technology (iXBRL) in accordance with the requirements of Articles 4 and 6 of the Delegated Regulation (EU) 2019/815, as amended as at the reporting date, enables an appropriate and complete machine-readable XBRL copy of the XHTML rendering.

Further Information pursuant to Article 10 of the EU Audit Regulation
We were elected as auditor by the annual general meeting on May 11, 2023. We were engaged by the supervisory board on October 12, 2023. We have been the auditor of the MTU Aero Engines AG without interruption since the financial year 2023.

We declare that the opinions expressed in this auditor's report are consistent with the additional report to the audit committee pursuant to Article 11 of the EU Audit Regulation (long-form audit report).

We have provided the following services, which are not disclosed in the consolidated financial statements or Group management report, in addition to the audit of the financial statements for the company and its controlled subsidiaries:

We have performed other permissible quality assurance services in connection with the non-financial statement 2022.

Other matter – Use of the Auditor's Report
Our auditor´s report must always be read together with the audited consolidated financial statements and the audited combined management report as well as the examined ESEF documents. The consolidated financial statements and combined management report converted to the ESEF format – including the versions to be entered in the company register – are merely electronic renderings of the audited consolidated financial statements and the audited combined management report and do not take their place. In particular, the ESEF report and our assurance opinion contained therein are to be used solely together with the examined ESEF documents made available in electronic form.

German Public Auditor Responsible for the Engagement
The German Public Auditor responsible for the engagement is Johannes Hanshen.

Munich, March 19, 2024

KPMG AG
Wirtschaftsprüfungsgesellschaft
Original German version signed by:

Huber-Straßer	Hanshen
Wirtschaftsprüfer	Wirtschaftsprüfer
German Public Auditor	German Public Auditor

Assurance Report of the Independent Auditor regarding the Consolidated Non-Financial Statement [1)]

To the Supervisory Board of MTU Aero Engines AG, Munich

We have performed a limited assurance engagement on the Consolidated Non-Financial Statement of MTU Aero Engines AG (further 'Company' or 'MTU') and the Group included in the "Other disclosures" section of the Consolidated Management Report as well as the section "The MTU Group" of the Combined Management Report, which has been qualified as part of the Consolidated Non-Financial Statement by reference for the period from January 1 to December 31, 2023.

For the following non-financial disclosures, we performed a reasonable assurance engagement:

/ Maximum residual CO_2 emissions (Scope 1 and Scope 2) at the MTU production sites in Munich, Hannover, Ludwigsfelde, Rzeszów (Poland), Vancouver (Canada) and Nova Pazova/Belgrade (Serbia)
/ CO_2 savings through sustainable measures at the MTU production sites in Munich, Hannover, Ludwigsfelde, Rzeszów (Poland), Vancouver (Canada) and Nova Pazova/Belgrade (Serbia) compared to the base year 2019
/ Residual CO_2 emissions (Scope 1 and Scope 2) at the MTU production sites in Vancouver (Canada) and Nova Pazova/Belgrade (Serbia) for the base year 2019
/ Training days per employee at the sites in Munich, Hannover and Ludwigsfelde

The selected non-financial disclosures are referred to below as "Maximum residual CO_2 emissions", "CO_2 savings through sustainable measures" and "Training days per employee".

Responsibilities of Management

The legal representatives of MTU for the period from January 1 to December 31, 2023 are responsible for the preparation of the non-financial statement in accordance with sections 315c in conjunction with 289c to 289e HGB and with Article 8 of REGULATION (EU) 2020/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of June 18, 2020 on establishing a framework to facilitate sustainable investment and amending Regulation (EU) 2019/2088 (hereinafter the "EU Taxonomy Regulation") and the Delegated Acts adopted thereunder, as well as for making their own interpretation of the wording and terms contained in the EU Taxonomy Regulation and the delegated acts adopted thereunder as set out in section "Disclosures on the EU taxonomy" of the consolidated non-financial statement.

[1)] Our engagement applied to the German version of the consolidated non-financial statement 2023. This text is a translation of the Independent Assurance Report issued in German, whereas the German text is authoritative.

This responsibility includes the selection and application of appropriate non-financial reporting methods and making assumptions and estimates about individual non-financial disclosures of the group that are reasonable in the circumstances. Furthermore, management is responsible for such internal control as they consider necessary to enable the preparation of a consolidated non-financial statement that is free from material misstatement, whether due to fraud or error.

The EU Taxonomy Regulation and the Delegated Acts issued thereunder contain wording and terms that are still subject to considerable interpretation uncertainties and for which clarifications have not yet been published in every case. Therefore, management has disclosed their interpretation of the EU Taxonomy Regulation and the Delegated Acts adopted thereunder in section "Disclosures on the EU taxonomy" of the consolidated non-financial statement. They are responsible for the defensibility of this interpretation. Due to the immanent risk that indeterminate legal terms may be interpreted differently; the legal conformity of the interpretation is subject to uncertainties.

Independence and Quality Assurance of the Assurance Practitioner's firm

We have complied with the independence and quality assurance requirements set out in the national legal provisions and professional pronouncements, in particular the Professional Code for German Public Auditors and Chartered Accountants (in Germany) and the IDW Standard on Quality Management 1: Requirements for Quality Management in Audit Firms (IDW QMS 1 (09.2022)).

Responsibility of the Assurance Practitioner

Our responsibility is to express a conclusion with limited on the non-financial statement and with reasonable assurance on the selected non-financial disclosures "Maximum residual CO_2 emissions", "CO_2 savings through sustainable measures" and "Training days per employee" based on our work performed.

We conducted our assurance engagement in accordance with International Standard on Assurance Engagements (ISAE) 3000 (Revised): "Assurance Engagements other than Audits or Reviews of Historical Financial Information" issued by the IAASB. This standard requires that we plan and perform the assurance engagement to obtain limited assurance about whether any matters have come to our attention that cause us to believe that the company's non-financial statement, are not prepared, in all material respects, in accordance with sections 315c in conjunction with 289c to 289e HGB and the EU Taxonomy Regulation and the Delegated Acts issued thereunder as well as the interpretation by management disclosed in section "Disclosures on the EU taxonomy" of the consolidated non-financial statement.

In a limited assurance engagement, the procedures performed are less extensive than in a reasonable assurance engagement, and accordingly, a substantially lower level of assurance is obtained. The selection of the assurance procedures is subject to the professional judgment of the assurance practitioner.

In the course of our assurance engagement we have, among other things, performed the following assurance procedures and other activities:

- Interviewing employees at Group level in order to gain an understanding of the approach to identifying material issues and corresponding reporting boundaries of MTU
- A risk analysis, including media research, to identify relevant sustainability aspects for MTU in the reporting period
- Reviewing the suitability of internally developed Reporting Criteria
- Evaluation of the design and implementation of the systems and processes for determining, processing and monitoring of disclosures relating to environmental, employee and social matters, respect for human rights and combating corruption and bribery, including the consolidation of the data
- Inquiries of personnel at Group level responsible for determining disclosures on concepts, due-diligence processes, results and risks, for conducting internal controls and consolidation of the disclosures
- Evaluation of selected internal and external documentation
- An analytical review of the data and trend explanations of quantitative information submitted by all sites for consolidation at Group level
- Evaluation of local data collection, validation and reporting processes as well as the reliability of reported data based on samples at Munich, Hannover, Ludwigsfelde and Vancouver (Canada)
- Reconciliation of disclosures in the combined separate non-financial report with the corresponding disclosures in the consolidated financial statements and the Combined Management Report
- Assessment of the overall presentation of the disclosures
- Inquiries of Group level personnel to understand the processes for identifying relevant economic activities according to the EU Taxonomy Regulation
- Understanding the design and implementation of systems and processes for the identification, processing and monitoring of turnover, capital expenditure and operating expenditure disclosures for taxonomy-eligible and taxonomy-aligned economic activities
- Evaluation of the process for the identification of taxonomy-eligible and taxonomy-aligned economic activities and the corresponding disclosures in the combined separate non-financial report

In determining the disclosures in accordance with Article 8 of the EU Taxonomy Regulation, management is required to interpret undefined legal terms. Due to the immanent risk that undefined legal terms may be interpreted differently, the legal conformity of their interpretation and, accordingly, our assurance engagement thereon are subject to uncertainties.

For the selected non-financial disclosures “Maximum residual CO_2 emissions”, “CO_2 savings through sustainable measures” and “Training days per employee”, we conducted our work in the form of a reasonable assurance engagement in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (Revised). Accordingly, we must comply with our professional duties and to plan and perform the assurance engagement in such a way that we, respecting the principle of materiality, reach our conclusion with a reasonable level of assurance. The choice of assurance procedures is subject to the auditor's own judgement.

Within the scope of our reasonable assurance engagement we performed, amongst others, the following procedures:

- A risk analysis, including media research of relevant information about Infineon's sustainability performance in the reporting period with respect to the selected non-financial disclosures “Maximum residual CO_2 emissions”, “CO_2 savings through sustainable measures” and “Training days per employee”.
- Evaluation of the design and implementation of systems and processes for identifying, processing and monitoring disclosures, including the consolidation of data for the selected non-financial disclosures “Maximum residual CO_2 emissions” and “Training days per employee”.
- Performing control-based assurance procedures to assess the design and effectiveness of internal controls for determining, processing and monitoring of disclosures, including the consolidation of data at the Group level for the selected non-financial disclosures “Maximum residual CO_2 emissions” and “Training days per employee”.
- Performing substantive assurance procedures, in particular reviewing internal and external documentation for the selected non-financial disclosures “Maximum residual CO_2 emissions”, “CO_2 savings through sustainable measures” and “Training days per employee”.
- Analytical evaluation of data and trends of quantitative disclosures for the selected non-financial disclosures “Maximum residual CO_2 emissions” and “CO_2 savings through sustainable measures” which are reported by all sites to Group level for consolidation.

- Evaluation of local data collection, validation and reporting processes as well as the reliability of reported data for the selected non-financial disclosures “Maximum residual CO_2 emissions” and “CO_2 savings through sustainable measures” at the sites in Munich, Hannover, Ludwigsfelde and Vancouver (Canada).

In our opinion, we obtained sufficient and appropriate evidence for reaching a conclusion for the assurance engagement.

Assurance Opinion

Based on the assurance procedures performed and the evidence obtained, nothing has come to our attention that causes us to believe that the consolidated non-financial statement of MTU Aero Engines AG for the period from January 1 to December 31, 2023 has not been prepared, in all material respects, in accordance with sections 315c in conjunction with 289c to 289e HGB and the EU Taxonomy Regulation and the Delegated Acts issued thereunder as well as the interpretation by management as disclosed in section “Disclosures on the EU taxonomy” of the consolidated non-financial statement.

In our opinion, the selected non-financial disclosures “Maximum residual CO_2 emissions”, “CO_2 savings through sustainable measures” and “Training days per employee” of MTU for the period from January 1 to December 31, 2023 have been prepared, in all material respects, in accordance with sections 315c in conjunction with 289c to 289e HGB.

Restriction of Use

This assurance report is solely addressed to the Supervisory Board of MTU Aero Engines AG, Munich. We take no responsibility towards third parties in this respect.

Our assignment for MTU and professional liability is governed by the General Engagement Terms for Wirtschaftsprüfer (German Public Auditors) and Wirtschaftsprüfungsgesellschaften (German Public Audit Firms) (Allgemeine Auftragsbedingungen für Wirtschaftsprüfer und Wirtschaftsprüfungsgesellschaften) in the version dated January 1, 2017 (https://www.kpmg.de/bescheinigungen/lib/aab_english.pdf). By reading and using the information contained in this assurance report, each recipient confirms having taken note of provisions of the General Engagement Terms (including the limitation of our liability for negligence to EUR 4 million as stipulated in No. 9) and accepts the validity of the attached General Engagement Terms with respect to us.

Munich, March 19, 2024

KPMG AG
Wirtschaftsprüfungsgesellschaft
[Original German version signed by:]

gez.	gez.
Hanshen	Vogl
Wirtschaftsprüfer	Wirtschaftsprüferin
[German Public Auditor]	[German Public Auditor]

Additional information

Glossary of engine terms

Claire technology agenda
Clean Air Engine (Claire) is MTU's technology agenda. It formulates possible solutions and potential for sustainable commercial engines as part of the shift to emission-free flying. The aim of these endeavors is to reduce the climate impact, in other words, CO_2 and NOX emissions and condensation trails. Reducing energy consumption is also important. The focus is on evolutionary development of gas turbine technology based on the Geared Turbofan and completely new, revolutionary propulsion concepts like the water-enhanced turbofan and the Flying Fuel Cell. Sustainable aviation fuels (SAFs) and hydrogen play a key role.

Compressor
The task of the compressor is to ingest air and compress it before it is fed into the combustor. Compressors consist of bladed disks (rotors) that rotate at very high speed between stationary guide vanes (stators). In order to achieve a compression ratio of over 40:1, which is standard in all modern two-shaft engines, it is necessary to use multi-stage low-pressure and high-pressure compressors rotating at different speeds on dual concentric shafts. These are driven by the corresponding turbines.

Fan
The first rotor of the low-pressure compressor is called the fan. It accelerates the bypass stream flowing aftward and provides the engine's main thrust. It is driven by the low-pressure turbine via the low-pressure shaft.

Flying Fuel Cell™
Revolutionary new propulsion concepts are needed to meet the ambitious targets of the Paris Agreement on Climate Change. MTU is driving forward a revolutionary concept of this type for the fullest possible electrification of the powertrain. The company considers that converting liquid hydrogen into water with the aid of a fuel cell has the greatest potential. This concept is known as the Flying Fuel Cell™ or FFC for short. The FFC would initially be used for short regional flights. It has the potential to reduce climate impact by 95 percent to almost zero, making it almost emission-free. The only emission is water. Improved efficiency should also allow the FFC to be used on short- and medium-haul flights from 2050, which would further reduce the climate impact of commercial aviation

Geared Turbofan™
What sets the Geared Turbofan™ propulsion system apart is that it features a reduction gearbox between the fan and low-pressure shaft on which the low-pressure compressor and low-pressure turbine that drives the fan are seated. The gearbox allows the fan with its large diameter to rotate more slowly and, at the same time, the low-pressure compressor and turbine to rotate much faster. This enables lower fan pressure ratios and therefore higher bypass ratios to be achieved so the individual components can operate at their respective optimum speeds. As a result, the efficiency of the Geared Turbofan is greatly boosted. Therefore, fuel consumption as well as carbon dioxide and noise emissions are significantly reduced. The propulsion system is moreover lighter than a conventional engine owing to the reduced compressor and turbine stage count. In addition, the maintenance costs are lower.

Industrial gas turbines
The operating principle of an industrial gas turbine is essentially the same as that of an aero engine. However, instead of the customary low-pressure turbine used in aircraft, industrial gas turbines have a power turbine. This turbine delivers the power, either directly or via a gear unit, to an additional attached power unit such as a pump or generator. Nearly all industrial gas turbines of the lower and intermediate power classes are aero-engine derivatives.

MRO business
MRO stands for maintenance, repair and overhaul. At MTU, the term "MRO business" is also used more specifically to designate one of the company's operating segments, where it refers to maintenance services for commercial engines, or commercial MRO.

OEM business
OEM stands for original equipment manufacturer. At MTU, the term "OEM business" is used to designate one of the company's operating segments, where it refers to the development, manufacture and assembly of (new) commercial and military engines. Spare parts for (in-service) commercial and military engines and maintenance services for military engines are also included in this operating segment.

Risk- and revenue-sharing partnership
In a risk- and revenue-sharing partnership, each partner contributes a certain share of the resources needed for a specific engine program (work capacity and funding), thus bearing part of the risk. In return, each partner is entitled to a corresponding percentage of the overall sales revenue from that program.

Subsystem
A complete aircraft engine is made up of a number of subsystems. These include the high-pressure and low-pressure compressors, the combustor, the high-pressure and low-pressure turbines and the engine control system.

Thrust class
Jet engines are generally grouped into three thrust classes: engines with a thrust of between 2,500 and around 20,000 pounds (roughly 10 to 90 kN), mainly used to power business and regional jets; engines with a thrust of between 20,000 and approximately 50,000 pounds (roughly 90 to 225 kN), used to power medium-haul aircraft; and engines with a thrust ranging from 50,000 to over 100,000 pounds (roughly 225 to 450 kN), used to power long-haul aircraft.

Turbine
In a turbine, the energy contained in the gases emerging from the combustor is converted into mechanical energy. Like the compressor, the turbine is subdivided into a high-pressure and a low-pressure section, each of which is directly connected to the corresponding compressor via the respective shaft. The turbine has to withstand much higher stresses than the compressor, as it has to deal not only with the high gas temperatures but also with extreme centrifugal forces of several tons acting on the outer rim of its disks.

Turbine center frame
The turbine center frame connects the high-pressure to the low-pressure turbine. It has to be able to withstand high mechanical and thermal loads. The center frame includes struts, clad with an aerodynamic fairing, to support the shaft bearings and the air and oil supply lines.

Turbofan engine
The turbofan is an advancement of the turbojet principle, the main difference being its enlarged first compressor stage, the fan. While in turbojet engines all of the ingested air flows consecutively through the compressor, the combustor and the turbine, turbofans separate the air stream behind the fan. Part of the air flows through further compressor stages to the combustor and then the turbine, flowing through the core engine. The rest, however – which constitutes a much larger fraction – is channeled around the inner components, providing the engine's main thrust. The ratio between these two airflows is known as the bypass ratio. The greater the bypass ratio, the more economical, environmentally compatible and silent the engine.

Turboprop engine
The most noticeable external feature of a turboprop is its propeller. Inside, however, the engine differs only slightly from the turbojet and the turbofan. The turbine is larger and drives not only the compressor but also the propeller, the latter via a gear unit. Consequently, more energy has to be drawn from the exhaust gas stream in the turbine of a turboprop than in other engine types. Over 90% of the energy is required for the compressor and the propeller. Turboprop airplanes can achieve flight speeds of up to 800 km/h. They are thus slower than turbojet or turbofan airplanes, but they do have the advantage of consuming far less fuel. This predestines them for use in roles where speed is less important, such as on short-haul routes or for air freight.

Turboshaft engine
Turboshaft engines are used in helicopters and are similar to turboprops.

Water-enhanced turbofan
Revolutionary new propulsion concepts are needed to meet the ambitious targets of the Paris Agreement on Climate Change. MTU is working towards this. The concept that it favors is the water-enhanced turbofan (WET) – a gas turbine with energy recovery and wet combustion. This concept can be used in all thrust and power classes. The WET can run on SAFs or hydrogen and could reduce climate impact by about 80 percent by 2035. In addition, enhanced efficiency would enable savings in costs and valuable resources.

Overview of engines

COMMERCIAL ENGINES

Development/ Manufacturing	**Widebody jets**	**Narrowbody / regional jets**	**Business jets**
	CF6	JT8D-200	PW300
	GE9X	GTF™ engine family	PW500
	GEnx	PW2000	PW800
	GP7000	V2500	
	PW4000		
Maintenance	**Widebody jets**	**Narrowbody / regional jets**	**Business jets**
	CF6-80C[1]	CF34-8/-10E	PW300
	GE90-110B/-115B	CFM56-5B/-7B[1]	PW500
	GE9X – TCF MRO (planned)	GTF™ engine family (PW1100G-JM, PW1500G/1900G)	PW800 – LPT MRO (engine MRO planned)
	GEnx – TCF MRO	LEAP-1A/-1B	
	GP7000 – LPT MRO	PW2000	
		V2500-A5[1]	
	Helicopters		
	PW200		

MILITARY ENGINES

Development/ Manufacturing	**Fighter jets**	**Helicopters**	**Transporters**
	EJ200	MTR390	TP400-D6
	F110	T408	
	F414	T64	
	Larzac		
	RB199		
Maintenance[2]	**Fighter jets**	**Helicopters**	**Transporters**
		T64	TP400-D6
Maintenance within the scope of the cooperation with Germany's armed forces	**Fighter jets**	**Helicopters**	**Transporters**
	EJ200	MTR390	
	RB199		

1 incl. military applications: F108, F138 and V2500-E5.
2 Maintenance conducted by MTU Aero Engines.
LPT = low-pressure turbine, TCF = turbine center frame.

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List of charts and tables

Financial calendar

April 30, 2024	Quarterly Statement as of March 31, 2024
	Conference calls with journalists, analysts and investors
May 08, 2024	Annual General Meeting
August 01, 2024	Interim Report as of June 30, 2024
	Conference calls with journalists, analysts and investors
October 24, 2024	Quarterly Statement as of September 30, 2024
	Conference calls with journalists, analysts and investors

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The annual report follows the rules for the use of inclusive language at MTU.

This annual report of MTU Aero Engines AG is also available in German. It can be found as a PDF in German and English on the MTU website.

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GER 03/24/MUC/00000/SP/E