Driven by visions of tomorrow

MTU AERO ENGINES

MTU Aero Engines

FACTS, FIGURES, DATES

One in **three** commercial aircraft flies with MTU technology

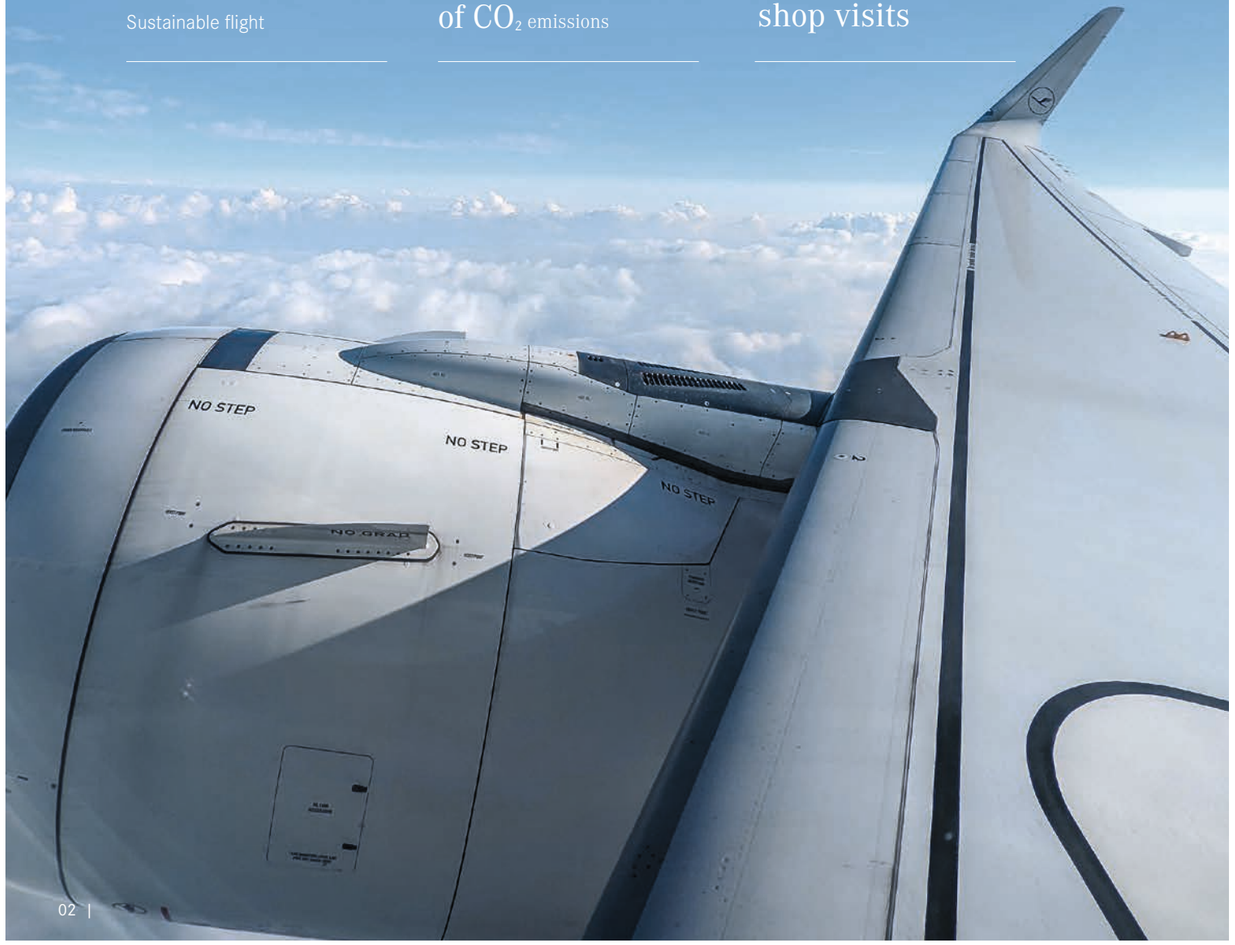
18 locations worldwide with over **11,000** employees

Developing aviation propulsion solutions for more than **85 years**

300 technology projects
Focus:
Sustainable flight

Since their launch in early 2016, **GTF engines** have avoided more than **10m metric tons of CO_2** emissions

Commercial maintenance: Over 40 years of experience and more than **23,000** shop visits



Driven by visions of tomorrow

Cleaner, quieter, more economical—and, most importantly, more sustainable. As Germany's leading engine manufacturer, MTU Aero Engines is actively shaping the future of aviation.

Emissions-free flight is the vision that drives MTU. Every day, over 11,000 employees worldwide work on innovative technologies, products, and service solutions that will ensure an emissions-free future for aircraft of all power categories.

The path to climate-neutral aviation will be the industry's key issue for the next 20 or 30 years to come. MTU is determined to pull its weight and take responsibility. Drawing on its experience, expertise and innovative strength, all its efforts are geared towards that goal. MTU is expert in the design, development, manufacture and maintenance of commercial and military engines in all thrust and power categories as well as stationary industrial gas turbines. It offers full system capability in engine construction.

Climate action plays an immensely important role in MTU's product development. The company is working hard to achieve substantial reductions in the climate impact of aircraft engines and in their energy consumption in several stages. MTU delivers the answers to the challenges of the future so as to make the vision of emissions-free flight a reality.

Driven by cutting-edge technology

MTU is working on concepts and technologies that bravely venture beyond the state of the art to provide pioneering solutions.

Aircraft and engines must become even cleaner, quieter and more efficient–the vision for the future is emissions-free flight. The guiding star is the Paris Agreement's goal of limiting global warming to 1.5 degrees Celsius if possible by the end of the century. Getting there calls for innovative technologies and groundbreaking propulsion concepts. A key driver of innovation, MTU Aero Engines is at the forefront of this development.

Claire: MTU's technology agenda

Claire, which stands for Clean Air Engine, is MTU's technology agenda. It lays out potential solutions and concepts for sustainable commercial engines with the aim of meeting global climate goals.

For MTU, one thing is clear: products that make climate-neutral flight possible must be launched on the market well before 2050. MTU experts are working intensively both on the evolutionary refinement of the gas turbine as well as on the development of new, revolutionary propulsion concepts, collaborating with its partners from industry, science and research.

Geared turbofan and WET

The evolutionary refinement of the gas turbine based on the geared turbofan is an important step toward achieving ambitious climate goals. In addition, however, this calls for new, revolutionary propulsion concepts. One such propulsion concept based on the gas turbine, called the water-enhanced turbofan (WET), takes full advantage of MTU's know-how. WET significantly reduces CO_2, nitrogen oxides (NO_x) as well as contrail formation by injecting water into the combustor and subsequently recovering it from the exhaust gas stream. Moreover, heat recovery from the exhaust gas significantly reduces fuel consumption. The water-enhanced turbofan lends itself to short-, medium- and long-haul applications, which means its full effect plays out in the areas that are responsible for almost all of aviation's climate impact.

Sustainable aviation fuels

Sustainable aviation fuels (SAF) have a major role to play in immediately reducing aviation's climate impact. At admixtures of up to 50 percent, they are already being used in the existing fleet for an immediate and significant reduction in CO_2 emissions and contrail formation. Powering WET purely with SAF makes this concept almost fully climate-neutral. In the long term, hydrogen will serve as the basis for climate-neutral propulsion of the future, due to its high weight-specific energy and because it does not emit CO_2 during combustion. Using it in a GTF is technically possible.

MTU is strongly committeed to working with numerous partners on the two propulsion concepts of gas turbines and electric flight.

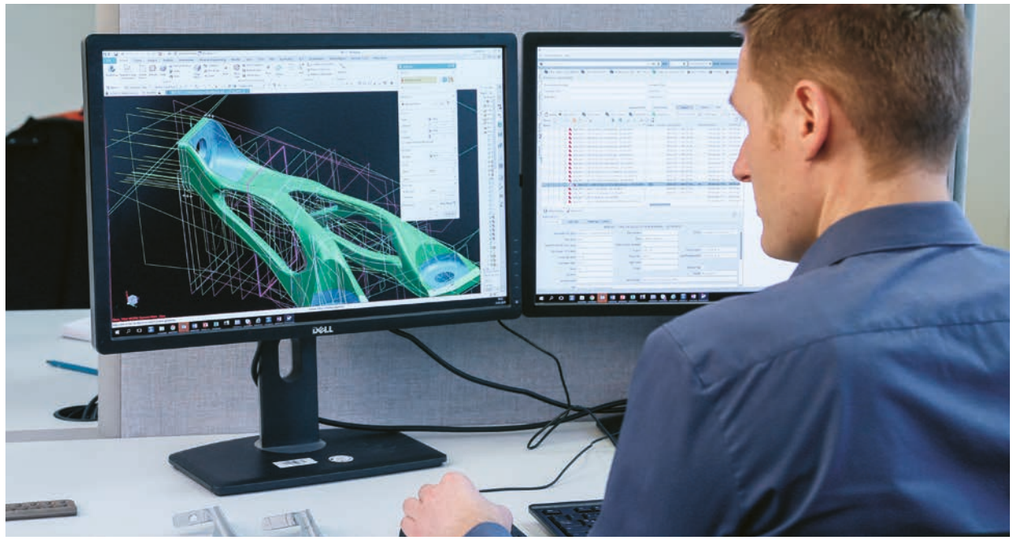
Electric flight: The Flying Fuel Cell™

Another revolutionary propulsion concept is the Flying Fuel Cell™ (FFC), which works by converting liquid hydrogen into electricity via a fuel cell to power electric engines. The FFC is virtually emissions-free since it produces neither CO_2 nor NO_x nor particulates. All it emits is water.

Powering innovation

Innovative strength and a sophisticated technology process ensure MTU's continued technological edge.

Additive manufacturing: Numerical simulation is used to develop the bionic structure of a component, which is then reproduced in metal by means of additive manufacturing.



Three letters stand for world-class technology in aviation: MTU. As a technology leader, MTU is driving the development of innovative technologies and revolutionary engine concepts for commercial and military aircraft. In the commercial segment, its major goal is emissions-free flight. MTU is already helping to ensure that the Pratt & Whitney GTF™ engine family is the most eco-efficient engine in use. MTU cooperates closely with its partners from industry, research and science to develop pioneering technologies.

In line with its technology roadmap, MTU is constantly introducing improved, more sustainable propulsion concepts.

Leading Technology Roadmaps

MTU's Leading Technology Roadmaps for commercial and military engine technologies chart the company's course for the future, focusing on the refinement and optimization of its high-tech components: high-pressure compressors, high-speed low-pressure turbines and turbine center frames. Key technologies include new materials, automated, state-of-the-art manufacturing processes and repair techniques as well as virtual design.

Robust, high-temperature materials

Any new materials for the next generation of engines have to be lightweight, extremely resistant to heat and robust against environmental influences. MTU is focusing on the top material classes for turbines, such as sixth-generation monocrystals and powder metals, as well as on anisotropic materials, such as carbon fiber reinforced polymers for the fan, and materials that are new to the company, such as diffusion layers for fuel-cell powertrains or hydrogen combustion.

Additive manufacturing

Industrial 3D printing is also playing an ever-larger role in aviation. MTU plans to gradually expand its range of additive components in order to fully tap the benefits of this method. These include greater freedom of design, shorter production times, faster innovation cycles, the ability to produce lighter components with added functionality, as well as lower development and manufacturing costs.

Virtual design and manufacturing

Even in the digital age, real aircraft will be powered by real engines. However, engine development is shifting increasingly to the digital world. Today, MTU already uses comprehensive, cross-module and interdisciplinary simulations across the complete process chain. This approach significantly reduces the time it takes to design, develop and manufacture an engine and then bring it to market, because in part it replaces cost-intensive and time-consuming tasks such as building test platforms and validation testing. Instead, digital models are created and simulation is pushed further and further.

Technology funding programs

Sustained public funding is a key pillar for the successful development of pioneering technologies at MTU. At both the national and European levels, MTU uses its innovative strength to actively contribute to critical research projects. It plays a crucial role in the German government's aeronautics research program (LuFo), in technology development for the German Federal Ministry of Defence (BMVg) as well as in the European Clean Sky 2 and Clean Aviation programs.

Perfection in production

For MTU, a clean engine implies clean, innovative and efficient manufacturing processes.

Engines are high-tech products that call for innovative manufacturing processes and repair techniques. MTU Aero Engines pursues the full spectrum of activities, ranging from process development and implementation to new testing and measuring methods to automation and production and maintenance planning.

High-tech manufacturing

MTU is one of the world's leading manufacturers of blisks. At its facility in Munich, the company operates one of the world's most advanced manufacturing facilities for this type of compressor rotor. MTU's area of expertise extends to other high-tech manufacturing processes as well. These include laser caving to produce cooling air holes in high-pressure turbine airfoils, adaptive milling, friction welding, electrochemical and precise electrochemical machining (ECM and PECM) to manufacture turbine disks and blisks, as well as coating systems. Additive processes are playing an ever more important role. MTU intends to fully exploit the advantages of this technology– including substantially greater design freedom, significant weight reductions, shorter development and production cycles, and lower costs.

Manufacturing 4.0

In advanced manufacturing, products and the means of production are able to communicate and flexibly connect with each other. Cyber-physical systems enable components to identify themselves. MTU has already organized operations scheduling and production process control in partially and fully automated production lines. Artificial intelligence and machine learning can be used to further optimize manufacturing processes. MTU's compressor blisk and turbine blade manufacturing processes are largely automated and digitally controlled.

Revolutionary maintenance solutions

Developed in-house, MTU's high-tech repairs set worldwide standards in the maintenance of commercial aircraft engines and industrial gas turbines, ensuring unparalleled levels of restoration and long on-wing times. The company's CORTEX fleet management software is revolutionary as well. A combination of technical data, algorithms and artificial intelligence helps reduce the costs per available seat mile, while increasing the engines' availability for airlines. MTU's engine trend monitoring enables predictive maintenance planning by digitally and comprehensively monitoring the engine parameters. All in the spirit of efficiency through advance knowledge.

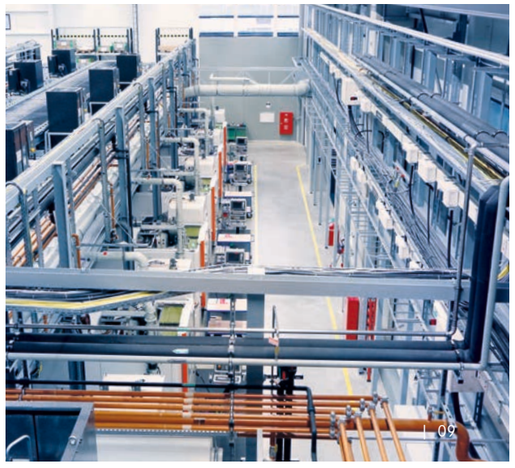
Testing and instrumentation

MTU's expertise in engine testing is also unparalleled. On its high-tech test stands, MTU tests materials and coatings, components and complete engines. Of course, only the latest in measuring technology, refined by MTU, is used in these sophisticated and challenging tests.

Over decades, MTU Aero Engines has built up a global test stand infrastructure, without which modern engine construction and reliable maintenance would be unthinkable.

MTU possesses unique testing expertise to put parts, components and fully assembled engines through their paces.

Titanium blisks are made in the blisk center of excellence in Munich, the world's most modern production facility of its kind.



Cutting-edge technology

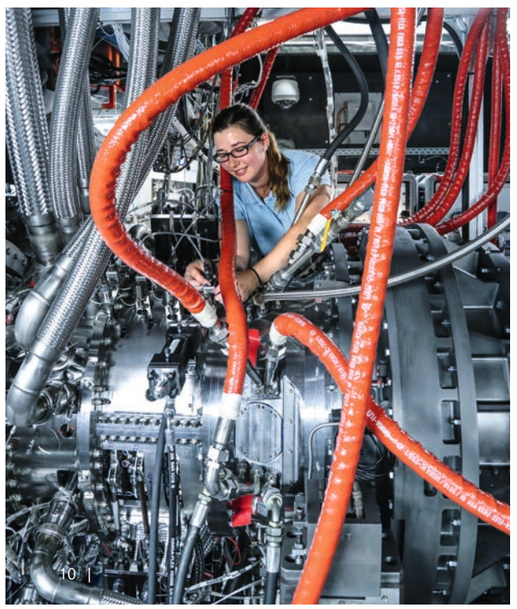
Advanced and highly efficient: MTU produces world-class engine components.

MTU Aero Engines has established itself as a leader in essential engine technologies: its low-pressure turbines, high-pressure compressors and turbine center frames are among the finest to be found in the global marketplace. Engine control and monitoring systems—another area of MTU expertise—play an increasingly important role.

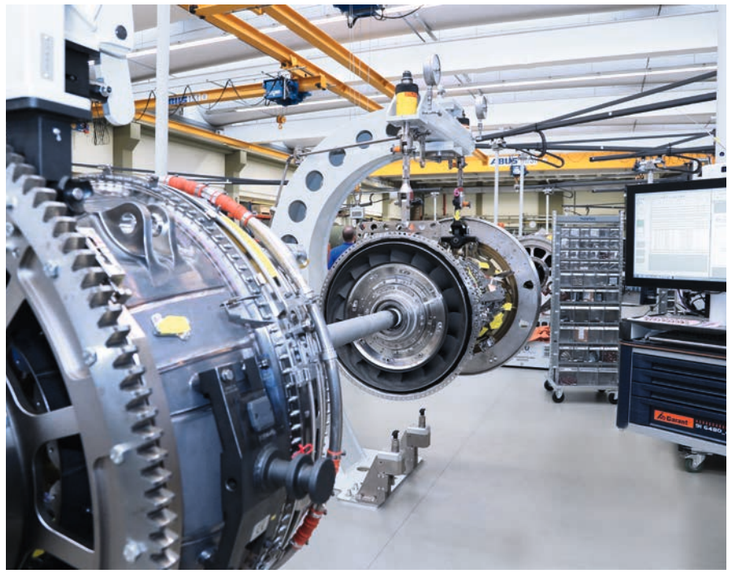
Efficient compressors

MTU's compressors are some of the best in the world. They are the centerpiece of an engine. MTU has been developing, manufacturing, repairing and overhauling this engine module for decades. MTU's advanced compressors are, for the most part, built on the blisk principle, where the disk and blades are manufactured as a single part. The advantages are greater tensile strength, lower weight, enhanced aerodynamic characteristics, no wear and tear and no assembly costs. In collaboration with Pratt & Whitney, MTU has developed the commercial high-pressure compressor for the eco-efficient GTF engine family, which has helped determine the course of aviation in today's world.

MTU systematically refines and optimizes its components: Rig 268 is used to refine the high-pressure compressor for the GTF.



In the upper thrust category, MTU is renowned for its turbine center frame, a component it develops and builds for long-haul aircraft engines.



GTF engine family: MTU's high-speed low-pressure turbine is connected to the core engine.

Award-winning turbines

MTU is the world leader when it comes to low-pressure turbines that operate at maximum efficiency. The breadth of its expertise ranges from conventional models for business jet engines and power turbines for heavy-lift helicopters all the way to large conventional low-pressure turbines for turbofan engines powering medium- and long-haul airliners. MTU's masterpiece is the high-speed low-pressure turbine, a key component of the geared turbofan and a one-of-a-kind technology.

But a technology leader never rests. That is why MTU is exploring novel structures that are less complex. The company is also looking at new lightweight materials that significantly reduce the turbine's weight.

Turbine center frames

MTU manufactures turbine center frames for engines in the upper thrust category. In operation, these sophisticated components are exposed to extreme stresses—high mechanical loads, plus high temperatures. The material and design must therefore satisfy the highest of standards. This in turn requires manufacturing technology at its best—which is precisely what MTU delivers. MTU builds this highly engineered component for the GEnx engine, which powers the Boeing 787 Dreamliner and Boeing 747-8, and the GE9X, the exclusive engine for the Boeing 777X.

Quieter, more economical, lower emissions: MTU's high-speed low-pressure turbine is a key component of the innovative geared turbofan.

Comprehensive systems expertise

Engine control and monitoring ensure the performance, safety and commercial viability of advanced engines. Knowing that MTU has more than 40 years of experience in this area provides peace of mind. The company's product portfolio includes the complete control and monitoring system, electronic and hydraulic subsystems and equipment, plus the associated software. Its expertise runs the gamut from equipment, software and system development to system validation, production support and maintenance.

Driven by passion

When it comes to effecting lasting change in aviation, it is MTU's employees who provide the necessary passion and expertise.

Day after day, MTU Aero Engines' global workforce of over 11,000 employees strives to shape the future of aviation. For decades, their experience, expertise and enthusiastic passion for aviation have enabled the company to offer innovative solutions and outstanding services to its customers and partners.

Powering personal development

Competitiveness and innovative capabilities are the keys to success in the aviation industry. That's why MTU invests in carefully targeted training and development programs to enhance its employees' skills. Life-long learning is high on the agenda at MTU. Well trained and highly qualified, our employees not only uphold the exacting quality standards of the company, its partners and customers, but also demonstrate the motivation and commitment required to shape sustainable technological change in aviation.

Diversity is an asset

MTU firmly believes that a diverse workforce is a genuine asset. Different ideas, experiences and perspectives broaden people's horizons and enrich collaboration within teams. Particularly during times of transformation, diversity, equality of opportunity and integration are crucial to achieving successful and lasting change.

An inspirational working environment

MTU creates a working environment that inspires and connects people. This includes a respectful leadership culture in which we support our employees' commitment, acknowledge outstanding performance, promote flexible, hybrid and digital working arrangements and actively welcome feedback. We also focus on creating modern workplaces, new forms of collaboration and a future-proof system of knowledge management.

Corporate responsibility

MTU places a great deal of emphasis on sustainability. It embraces a broad understanding of responsibility that covers everything from the product itself to its development, manufacture and repair. As a signatory to the UN Global Compact, MTU also acknowledges its responsibility to protect the environment, tackle the climate crisis and combat corruption. MTU fully respects and upholds internationally recognized human rights as set out in the United Nations' Universal Declaration of Human Rights. It is committed to ensuring compliance with these rights within the Group and in the upstream value chain. MTU regularly reports on its sustainability activities and progress in its Sustainability Report and its non-financial statement.

Environmental protection and climate action

As well as providing products and services that are safe, reliable and of the highest quality, MTU is also constantly striving to manufacture them in ever more resource-efficient and ecologically sustainable ways in order to meet its environmental commitments. MTU's long-term goal is to achieve carbon-neutral production at all its locations. Environmental protection and climate action are enshrined in the Code of Conduct that applies to all employees. MTU acts in accordance with the principle of avoid–reduce–offset.

The goal of conserving resources and protecting the environment applies to all MTU locations worldwide.

Driven by inspiration

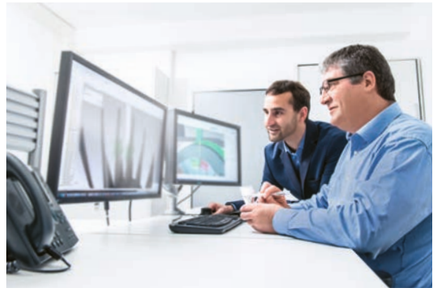
MTU collaborates successfully with industry and research partners to make commercial engines even more sustainable.

Indispensable partner

Partnerships are a key prerequisite for MTU Aero Engines' long-term success. Thanks to its innovative capabilities and technological prowess, it has established itself as an indispensable partner in the industry. The company forms part of a strong network and conducts numerous cooperative ventures at the highest level–from research collaborations to strategic partnerships.

Research and development

Progress requires unconventional ideas and regular injections of fresh momentum. That's why MTU's research and development activities rely on close cooperation with institutes and schools of higher education. To step up these efforts, MTU has established centers of competence (CoCs) in collaboration with leading German universities and research institutes. It also teamed up with various partners to launch Bauhaus Luftfahrt, an internationally oriented think tank that develops innovative approaches for future air transport systems. Experts at Bauhaus Luftfahrt devise visionary aircraft and propulsion concepts, investigate ecological aspects of aviation, such as alternative fuels and hybrid-electric propulsion systems, and study revolutionary technologies.



At Technikum Blisk, MTU and Fraunhofer ITP are developing the blisks of tomorrow.

In collaboration with Bauhaus Luftfahrt, MTU is developing configurations for new low-emission engines.

Applied research with excellent university partners serve as a key catalyst and source of knowledge for MTU

Partnerships are a key prerequisite for MTU's long-term success.

Manufacturing

Collaboration based on partnership also plays an important role in MTU's dealings with suppliers. Suppliers provide MTU with the premium materials, machinery, products and repairs that form an indispensable basis for high-tech engine manufacturing and maintenance. Around 6,300 suppliers supply MTU locations worldwide.

Programs

In its commercial engine programs, MTU cooperates with industry giants such as GE Aerospace and Pratt & Whitney, successfully contributing its unique capabilities and experience as the world's largest subsystem supplier. In its military programs, MTU works with all leading industry partners at the European level. It is the cooperation partner for all major engines flown by the German Armed Forces as well as a partner in European and U.S. military programs.

MRO

When it comes to premium MRO services, MTU and its partners are driven by the goal of delivering outstanding quality and performance. MTU maintains a number of successful joint ventures in these areas, for example with China Southern Airlines in maintenance and with Lufthansa Technik in airfoil repair. It is also a reliable partner to original equipment manufacturers (OEMs) in the global MRO network for the Pratt & Whitney GTF™ engine family. To repair these innovative engines, MTU and Lufthansa Technik established their EME Aero joint venture in Poland. Equally important are MTU's commercial maintenance partnerships with the airlines that rely on MTU Maintenance's comprehensive MRO services. In military maintenance, MTU cooperates closely with the German Armed Forces.

Driven by **perfection**

As a technology leader, MTU has a reputation for reliability, sustainability and the highest standards of quality in all its products and services.

Partners and customers of MTU Aero Engines benefit from its outstanding systems expertise across the entire lifecycle of commercial and military engines—from research and development to manufacturing, maintenance and support including comprehensive services.

Focus on the entire lifecycle

MTU covers all the key stages of a product's service life, evaluating each product throughout its entire lifecycle to assess its impact on health, safety and the environment. Continual progress is assured thanks to the company's development strategy, which seeks to make every new engine MTU collaborates on quieter, more sustainable and more fuel-efficient than its predecessor.

Geared for more power: MTU is responsible for the final assembly of one in three PW1100G-JM engines for the A320neo.

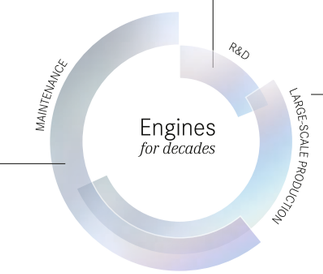
MTU OFFERS SOLUTIONS FOR THE ENTIRE ENGINE LIFECYCLE

01 R&D:

As a technology leader, MTU is driving forward the development of advanced technologies and revolutionary engine concepts.
Its overarching goal is emissions-free flight.

03
Maintenance:

In the maintenance of engines and industrial gas turbines, MTU sets global standards with its comprehensive services and innovative repair techniques.



02
Large-scale production:

MTU harnesses high-tech processes and digitalization in production. Its products meet the highest standards of quality and safety.

Combining digital excellence and high-tech solutions

MTU lives and breathes digitalization in all areas of its business. In the long term, the company will intelligently connect every aspect of the value chain and reproduce each step as a virtual model. Data analysis and artificial intelligence are delivering major improvements in development, manufacturing/quality assurance and MRO. As a high-tech company, MTU maintains a steady focus on the latest developments in information technology and the deployment of innovative IT solutions.

Top quality ensures reliable products

MTU regards safe flight operations as much more than just a statutory requirement. Reliable and high-quality products are its hallmark. That's why it insists on strict standards of quality and safety in every process along the entire value chain—and why it guarantees that customers will enjoy the same high level of quality at every MTU location worldwide.

Digitalization offers a wealth of opportunities for the engine business in particular—and MTU is seizing them.

GTF engine family: The new engines offer double-digit percentage reductions in fuel consumption, pollution and noise emissions.

State-of-the-art technology for commercial engines

Three letters stand for innovative engine solutions in aviation: MTU.

One-third of the world's commercial aircraft takes to the skies with MTU technology on board. With high-tech components such as its high-pressure compressor, low-pressure turbine and turbine center frame, MTU has established itself as an indispensable partner to industry giants GE Aerospace and Pratt & Whitney. MTU's cutting-edge technology can be found in engines for all common aircraft types, from business jets to narrowbody and widebody aircraft.

The highly efficient GTF engine family

MTU plays a key role in developing more efficient, lower-emission engines. The best examples are the high-efficiency engines from the Pratt & Whitney GTF™ engine family that power next-generation commercial aircraft such as the Airbus A220 and A320neo and the Embraer E-Jet E2. Even in its first generation, the geared turbofan (GTF) is regarded as a technical tour de force that offers double-digit percentage reductions in fuel consumption, environmental emissions, engine noise and operating costs. Yet–determined to reach even greater heights–MTU is already hard at work together with Pratt & Whitney on the next generation of the GTF. Its goal is to make the second generation even cleaner, quieter and more fuel-efficient by further optimizing the high-pressure compressor and the high-speed low-pressure turbine and harnessing new processes and materials to get the most out of geared turbofan technology.

Powering state-of-the-art widebodies

MTU's world-class technology is also found in long-haul engines. The GE9X, which powers the world's largest twin-engine passenger jet, the Boeing 777X, is the mainstay of MTU's business in today's cutting-edge generation of widebody aircraft. MTU develops and builds the turbine center frame for the GE9X, a highly complex engine module that, once again, benefits from the company's remarkable expertise and experience. It also supplies this high-tech component for the GEnx engine that powers the Boeing 787 Dreamliner.

Strong alliances

For next-generation engines such as the Pratt & Whitney GTF™ engine family, MTU's solid partnership with OEMs in the commercial OEM business is increasingly being extended to maintenance. For example, the global MRO network for GTF engines gives customers access to shops that have experience and know-how and offer first-class performance and service.

Drawing on its unique expertise, MTU spares no effort to make commercial engines even more efficient and environmentally friendly.

The PW1100G-JM powers the A320neo, the latest generation of short- and medium-haul aircraft.

MTU technology on board: The GE9X powers the world's largest twinjet, the Boeing 777X.

Tailored MRO solutions

Everything MTU Maintenance does is centered on engines and providing outstanding customer service.

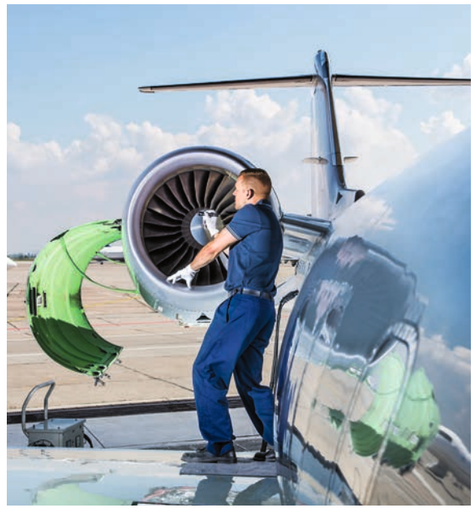
In commercial MRO, MTU Maintenance is the world's leading provider of customized services for commercial aircraft engines. Its impressive credentials include more than 40 years of experience and over 22,000 shop visits. Other strengths include its global MRO network and the world's biggest portfolio of over 30 engine types for all common aircraft types, from business jets to widebody aircraft. Its tailored services cover the entire engine lifecycle.

Services of the highest standard

As a maintenance expert, MTU offers innovative and cost-effective services that are tailored to the needs of its customers. These include on-site services, engine leasing, high-tech repairs and predictive maintenance with engine trend monitoring, as well as optimized fleet management with CORTEX software and full management of accesories and LRUs. The company's effective end-of-life management maximizes the value of engines reaching the end of their lifecycle.

A GE90 on the test stand: MTU is known the world over for its testing and inspection expertise.

On-wing inspection of a PW300: MTU's on-site service ensures smooth flight operations.



Assembly of a CFM56-7 engine: With its repair techniques, MTU Maintenance achieves globally unparalleled levels of restoration and long on-wing times.

As an expert in commercial engine MRO, MTU offers innovative services that are tailored to the needs of its customers.

The perfect solution for each customer

MTU does its utmost to be a reliable, responsive and flexible service partner for its customers. It offers every customer the perfect solution–whether that means repairing an engine on-site or arranging a visit to one of its worldwide MRO locations so the engine can be readied to re-enter service. In addition to fully integrated services, MTU customers also benefit from a wide range of individual MRO services. Whether selected individually or combined into a customized overall package, MTU customers receive exactly the service that meets their needs.

Preferred partner of airlines, leasing companies and OEMs

MTU is a reliable partner to more than 1,400 customers, including more than 270 airlines as well as leasing companies and engine manufacturers. Airlines benefit from integrated MRO services over the entire lifecycle of their engines. As a long-term partner in the OEM network, MTU Maintenance supports OEMs with standardized MRO solutions–for example in the maintenance of eco-efficient Pratt & Whitney GTF™ engines. MTU's maintenance capabilities have established it as the preferred joint venture partner for airlines all over the world.

EJ200 teamwork: Specialists from the German Air Force work shoulder to shoulder with MTU experts as part of their collaboration.

Committed to the mission

For decades, MTU has been a reliable partner in military programs on both a national and international level.

Military aircraft are built to withstand extreme stress and undertake extreme missions. The demands placed on their engines are correspondingly high. MTU Aero Engines has successfully upheld these standards for decades. Its outstanding technologies, products and services ensure that customers can count on the full availability of their fleets at all times.

A key role in major military engine programs

MTU brings its skills and expertise to the fore as the leading industrial company for practically all aircraft engines operated by the German Armed Forces. It also plays a key role in Europe's most important military engine programs and works closely with U.S. partners. Its activities encompass the entire engine lifecycle–from development and production to innovative repair and maintenance solutions. Thanks to its experience and technological expertise, MTU can always be confident of developing the best solution for its customers.

MTU's technologies for military aircraft are geared toward maximum availability and long on-wing times.

Systems expertise from a single source

As well as developing and manufacturing innovative engine modules and components, MTU offers first-class maintenance solutions, smart repairs, and a comprehensive range of additional engine services. Working closely with each customer, it develops and implements tailor-made MRO concepts. Partners such as the German Armed Forces benefit from valuable expertise and seamless support during the entire life-cycle of their engines.

A strong and capable partner

MTU's cooperation with the German Armed Forces is an excellent example of how it creates MRO concepts tailored to customers' specific needs. MTU experts and specialists from the German Air Force work shoulder to shoulder to maintain the military's EJ200, RB199 and MTR390 engines. The combination of MTU's technical expertise and the military's operational experience ensures highly industrialized and cost-effective maintenance operations.

Powering the new European fighter jet

The Next European Fighter Engine (NEFE) is the high-performance propulsion system that will power the next-generation fighter aircraft that is the core element of Europe's Future Combat Air System (FCAS). Through their EUMET (European Military Engine Team) joint venture, engine specialists MTU and Safran have teamed up with principal partner ITP Aero to develop the outstanding technologies required to meet FCAS requirements. As part of this partnership, MTU is taking responsibility for its flagship products–the high-pressure and low-pressure compressors and the compressor intermediate case–as well as for elements of the control systems. It will also provide maintenance and support services from development through to operation.

MTU is involved in the Next European Fighter Engine, which will power Europe's next-generation fighter aircraft.

Experts in industrial gas turbines

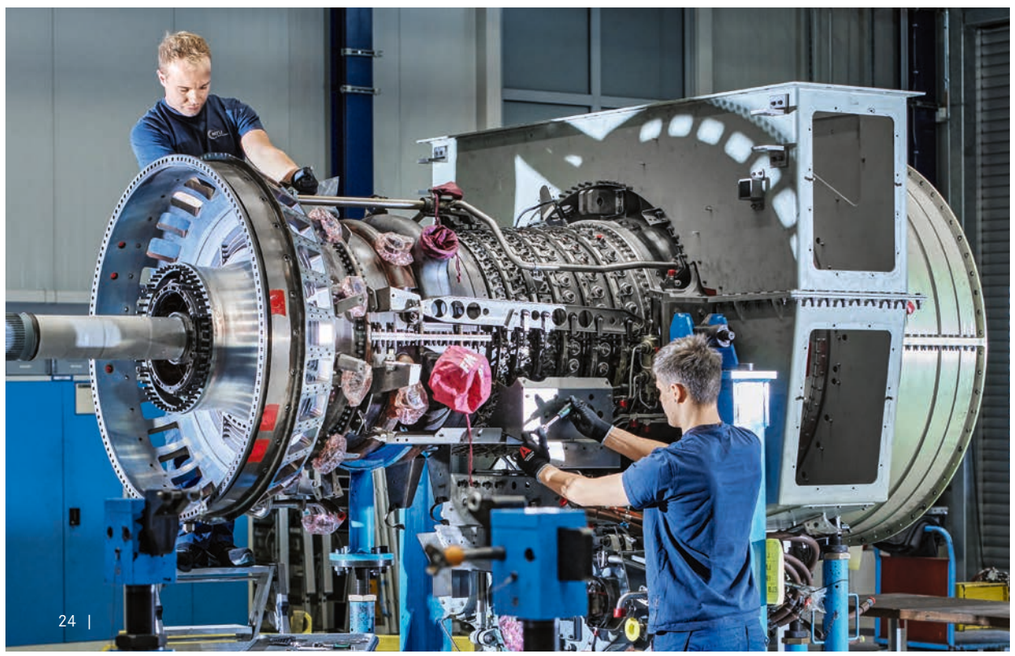
MTU Power provides comprehensive service solutions to MTU customers.

Reliable, flexible and cost-effective: MTU Power is one of the world's leading providers of services for industrial gas turbines and third-party manufacturing. MTU Power is an expert in compressors, turbines, drives and components. Its expertise ranges from the developing and manufacturing components and modules for original equipment manufacturers (OEMs) to comprehensive aftermarket support for LM™ series stationary industrial gas turbines. As part of the MTU Group, MTU Power is at home in the world of aviation, where the highest standards of technology and quality apply.

Top-quality IGT services

MTU's Berlin-Brandenburg location is the Center of Excellence for maintenance, repair and overhaul (MRO) of manufacturer GE's LM™ series IGTs and home to one of the largest and most advanced IGT test facilities in the world. Specialized repair processes, individual work-scoping and fast turnaround times ensure top-quality

Assembly of an LM6000™: MTU Power provides reliable, flexible and cost-effective MRO solutions for industrial gas turbines..



Individual service or fully integrated performance: MTU Power's strength is its customer-specific service solutions.

services. MTU Power's international customers are as diverse as the range of applications for the products: power generators, navies, oil platform operators and compressor stations. MTU Power customers benefit from a worldwide service network and the experience gained from more than 1,500 LM™ shop visits over the past 40 years. Field service teams are available around the clock and can quickly reach any location in the world for their international customers.

Customer-specific solutions

MTU Power's strength is its customer-specific service solutions, which range from individual on-site repairs and intelligent, cost-effective parts solutions to full-package services from a single source–including lease engines and IGT package services. Whether for an individual service or fully integrated performance, MTU's experts combine technological know-how with practical experience and innovative approaches. They will not be satisfied until they have found the ideal solution for the customer.

OEM services

MTU Power's engineering and manufacturing unit specializes in the development, testing, design optimization and production of turbines, compressors and brush seals for original equipment manufacturers (OEMs). MTU provides fully integrated, state-of-the-art solutions from program management through to the final product–including the very highest standards of quality control. MTU Power markets the skills and services of MTU's engineering and manufacturing locations to customers in the gas turbine segment, including power suppliers and energy providers, operators of oil and natural gas platforms, customers in the marine and auto manufacturing sectors and, of course, aviation companies.

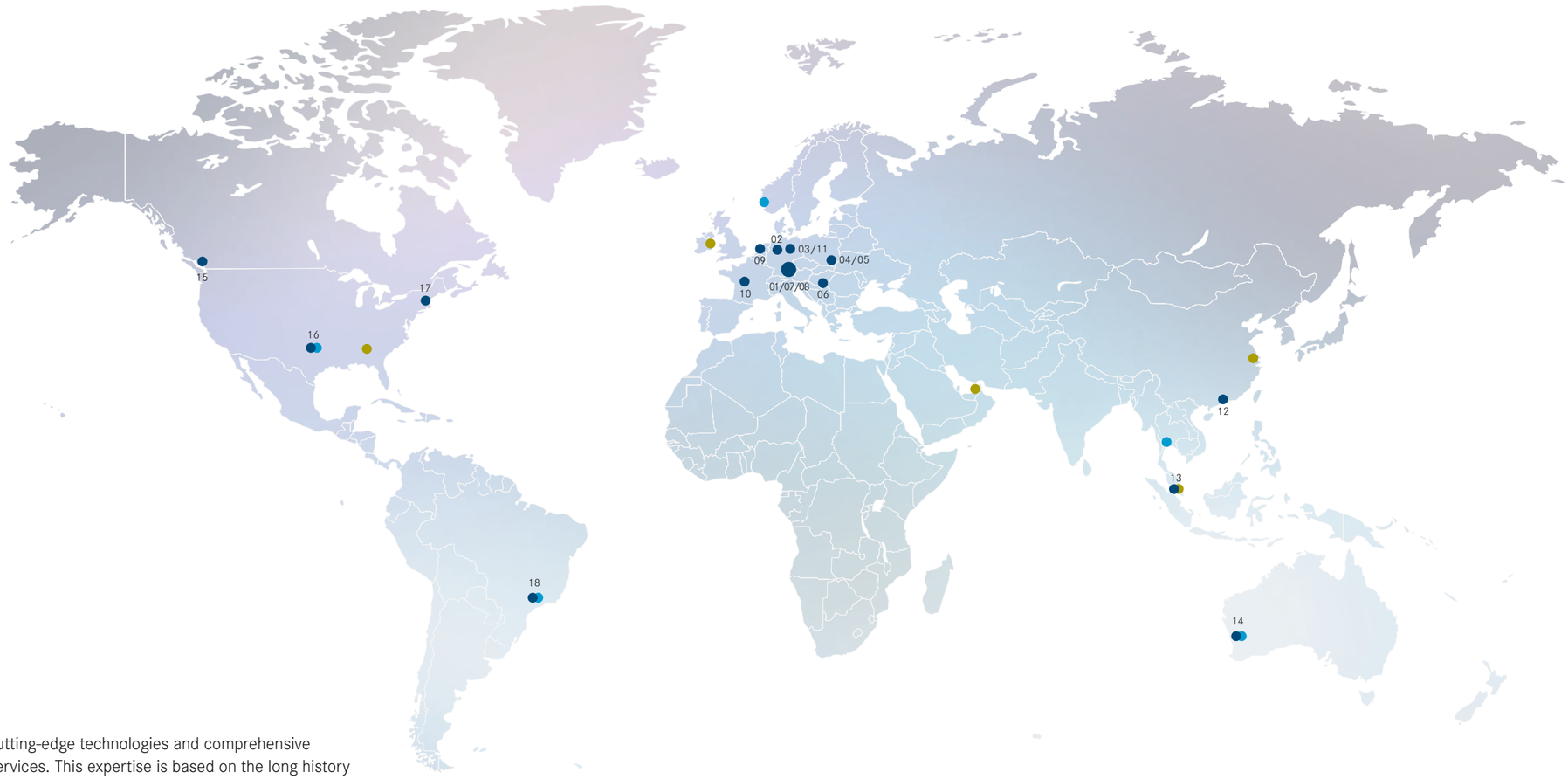
Power for the world: MTU Power serves its international customers 24 hours a day, 365 days a year.

Power for the world

Thanks to its network of locations around the world, MTU has a global presence that guarantees customer proximity and outstanding service around the clock.

15 MTU Maintenance Canada
16 MTU Maintenance Dallas
17 MTU Aero Engines North America
18 MTU Maintenance do Brasil

01 **MTU Aero Engines, Headquarters**
02 MTU Maintenance Hannover
03 MTU Maintenance Berlin-Brandenburg
04 MTU Aero Engines Polska
05 EME Aero
06 MTU Maintenance Serbia
07 Aerospace Embedded Solutions
08 eMoSys
09 MTU Maintenance Lease Services
10 Ceramic Coating Center
11 P&WC Customer Service Centre Europe GmbH
12 MTU Maintenance Zhuhai
13 Airfoil Services
14 MTU Maintenance Service Centre Australia



Major locations and participations
IGT Service Centers
Representative offices

For MTU Aero Engines, customer proximity is key. This is delivered by more than 11,000 employees from over 60 nations at 18 locations worldwide. MTU Aero Engines is headquartered in Munich, which is the largest of the company's locations. The company is present in all key regions and markets thanks to its network of subsidiaries and joint ventures.

There from the outset

MTU makes aviation safer, more efficient and more sustainable with its innovative engines, cutting-edge technologies and comprehensive services. This expertise is based on the long history of a company whose roots date back to the early days of powered aviation. Over the decades, MTU has continued to set technological benchmarks and further expand its worldwide network of locations.

A global player

MTU's shops in Europe, Asia, Australia and North America guarantee customer proximity and outstanding service–anywhere, anytime. The company's global presence is rounded off with a network of representative offices, IGT service centers and joint ventures. In addition, its on-site service teams are ready and able to carry out repairs anywhere in the world at short notice.

New shops, first-class service

MTU is continuing to expand its global presence so it can serve the market even more effectively. Examples include its new engine parts repair shop near Belgrade–MTU Maintenance Serbia–as well as a second state-of-the-art shop at MTU Maintenance Zhuhai. Thanks to these new developments, MTU can offer its customers additional capacity for high-quality maintenance services.

All MTU locations around the world have one thing in common: they do everything they can to provide MTU customers with superb and sustainable technologies, products and services.

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