



# Engine programs

MTU AERO ENGINES



# Consolidated expertise in engines

Full power ahead for innovation: MTU's advanced technologies and first-class products are on board in all thrust and power categories.

Three letters stand for innovative engine solutions in aviation: MTU. As Germany's leading engine manufacturer, MTU Aero Engines constantly drives the development of advanced technologies and first-class products. The company specializes 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. Its innovative capabilities make MTU an indispensable partner that is actively shaping the future of aviation.

## State-of-the-art technology for commercial engines

One-third of the world's commercial aircraft takes to the skies with MTU technology on board. MTU's cutting-edge technology can be found in all common aircraft types—in engines for business jets, engines with geared turbofan technology for narrowbody aircraft, and in the world's most powerful propulsion systems. MTU secures its position as a technology leader through its committed, dedicated research and development work. It is already helping to ensure the use of the highest efficiency engines in the form of the Pratt & Whitney GTF™ engine family. Emissions-free flight is the vision that drives MTU. Every day, over 11,000 employees worldwide work on innovative technologies and products that will support an emissions-free future for the aviation sector. To achieve this goal, MTU cooperates closely with its network of partners from industry, research and science.

Geared for more power: MTU is responsible for the final assembly of one-third of the production PW1100G-JM for the A320neo.



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



## Innovative and capable: power for the military

Innovative, capable and reliable—with its first-class technologies, products and services, MTU ensures that its military partners can count on the full availability of their fleets at all times. The company 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 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 maintenance. MTU is also a partner in the Next European Fighter Engine (NEFE). MTU and Safran have teamed up with principal partner ITP Aero to develop this powerful propulsion system for the next-generation fighter aircraft. Here, MTU is responsible 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 operation.

## Tailored service for maintenance

No two engines are alike, which is why MTU Maintenance offers tailored MRO services covering the entire engine lifecycle. In the commercial maintenance sector, MTU is the world's leading provider of customized services for aircraft engines and industrial gas turbines. Its impressive credentials include more than 40 years of experience and over 23,000 shop visits. MTU is a reliable partner to more than 1,400 customers and supports more than 30 different engine types. Other strengths include its global MRO network, which guarantees proximity to the customer.

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



# Engine overview

MTU sets global standards with its premium products, innovative technologies and high-tech processes.

MTU has established itself as a technology leader: its low-pressure turbines, high-pressure compressors and turbine center frames are among the finest to be found in the global marketplace—and the same applies to its manufacturing techniques and MRO processes. MTU expertise also extends to system tasks such as engine control and monitoring, which are playing an increasingly important role.

## COMMERCIAL ENGINES

| Development / Manufacture | Widebody jet             | Narrowbody / regional jet                      | Business jet                         |
|---------------------------|--------------------------|--|--------------------------------------|
|                           | CF6                      | JT8D-200                                       | PW300                                |
|                           | GE9x                     | GTF™ engine family                             | PW500                                |
|                           | GEhx                     | PW2000   | PW800                                |
|                           | GP7000                   | V2500  |                                      |
|                           | PW4000                   |  |                                      |
| Maintenance               | Widebody jet             | Narrowbody / regional jet                      | Business jet                         |
|                           | CF6-80C2 <sup>1</sup>    | CF34-8/-10E                                    | PW300                                |
|                           | GE90-110B/-115B          | CFM56-2/-5B/-7B <sup>1</sup>                   | PW500                                |
|                           | GE9x - TCF MRO (planned) | GTF™ engine family (PW1100G-JM, PW1500G/1900G) | PW800 - LPT MRO (Engine MRO planned) |
|                           | GEhx - TCF MRO           | LEAP-1A/-1B                                    |                                      |
|                           | GP7000 - LPT MRO         | PW2000   |                                      |
|                           |                          | V2500-A5 <sup>1</sup>                          |                                      |
|                           | Turboprop                | Helicopter                                     |                                      |
|                           | PT6A                     | PW200  |                                      |

## MILITARY ENGINES

| Development / Manufacture                              | Fighter aircraft | Helicopter | Transport aircraft |
|--|------------------|------------|--------------------|
|  | EJ200            | MTR390     | TP400-D6           |
|  | F110             | T408       |                    |
|  | F414             | T64        |                    |
|  | Larzac           |            |                    |
|  | RB199            |            |                    |
| Maintenance <sup>2</sup>                               | Fighter aircraft | Helicopter | Transport aircraft |
|  |                  | T64        | TP400-D6           |
| MRO under the cooperation with the German Armed Forces | Fighter aircraft | Helicopter | Transport aircraft |
|  | EJ200            | MTR390     |                    |
|  | RB199            |            |                    |

<sup>1</sup> incl. military applications: F108, F138 and V2500-E5


<sup>2</sup> Maintenance is carried out at MTU Aero Engines

<sup>3</sup> Cooperation with the German Armed Forces = Maintenance, repair and overhaul under the cooperation with the German Armed Forces.

LPT = low-pressure turbine, LPC = low-pressure compressor, HPC = high-pressure compressor, HPT = high-pressure turbine,

TCF = turbine center frame, IPC = intermediate-pressure compressor, IPT = intermediate-pressure turbine

# Commercial engines




**CF6**

**Widebody jet**

This success story is one of the best-selling engines in its class and is used in medium-haul and widebody aircraft. MTU manufactures parts of the CF6 turbine and compressor—and has now produced over a million of these components.

|                         |   |
|-------------------------|---|
| <b>APPLICATION:</b>     | e.g. Airbus A300, Boeing 747, C-5M Super Galaxy |
| <b>THRUST CATEGORY:</b> | 41,500–69,800 lbf                               |
| <b>EIS:</b>             | 1971  |
| <b>DEVELOPMENT:</b>     | —   |
| <b>MANUFACTURE:</b>     | Components of LPC/HPC and HPT                   |
| <b>MAINTENANCE:</b>     | Engine MRO                                      |



**CFM56-2/  
-5B/-7**

**Narrowbody / regional jet**

The CFM56 engine family comprises five different models, three of which are looked after by MTU Maintenance. CFM, a 50/50 cooperation between GE and Safran Aircraft Engines, has delivered more than 30,000 engines to date.

|                         |  |
|-------------------------|--|
| <b>APPLICATION:</b>     | e.g. Boeing 737, Airbus A320 family, Boeing KC-135 |
| <b>THRUST CATEGORY:</b> | 18,500–34,000 lbf                                  |
| <b>EIS:</b>             | 1982   |
| <b>DEVELOPMENT:</b>     | —  |
| <b>MANUFACTURE:</b>     | —  |
| <b>MAINTENANCE:</b>     | Engine MRO   |



**CF34-8/  
-10E**

**Narrowbody / regional jet**

The CF34-family is the world's most common and best-selling engine family in its class. It has logged more than 140 million flight hours since its entry into service. MTU Maintenance Berlin-Brandenburg looks after the CF34-8 and CF34-10E models.

|                         |  |
|-------------------------|--|
| <b>APPLICATION:</b>     | e.g. Embraer 170/190, Bombardier CRJ700/900/1000 |
| <b>THRUST CATEGORY:</b> | 13,800–20,400 lbf                                |
| <b>EIS:</b>             | 2001   |
| <b>DEVELOPMENT:</b>     | —  |
| <b>MANUFACTURE:</b>     | —  |
| <b>MAINTENANCE:</b>     | Engine MRO                                       |




**GENx**

**Widebody jet**

The GENx is designed for medium-capacity long-haul aircraft. It is based on the proven architecture of the GE90 and is set to replace the highly successful CF6. MTU is responsible for the development, manufacture and repair of the turbine center frame.

|                         |                                   |
|-------------------------|-----------------------------------|
| <b>APPLICATION:</b>     | Boeing 787 Dreamliner, Boeing 747 |
| <b>THRUST CATEGORY:</b> | 66,500–76,100 lbf                 |
| <b>EIS:</b>             | 2012                              |
| <b>DEVELOPMENT:</b>     | TCF                               |
| <b>MANUFACTURE:</b>     | TCF                               |
| <b>MAINTENANCE:</b>     | TCF MRO                           |



**GE9X**

**Widebody jet**

The GE9X will be the engine for the new Boeing 777X long-haul aircraft. MTU is responsible for the development, manufacture, assembly and repair of the turbine center frame.

|                         |                   |
|-------------------------|-------------------|
| <b>APPLICATION:</b>     | Boeing 777X       |
| <b>THRUST CATEGORY:</b> | 100,000 lbf       |
| <b>EIS:</b>             | planned           |
| <b>DEVELOPMENT:</b>     | TCF               |
| <b>MANUFACTURE:</b>     | TCF               |
| <b>MAINTENANCE:</b>     | TCF MRO (planned) |



**GE90-  
110B/-115B**

**Widebody jet**

The GE90 Growth is one of the largest and most powerful engines in the world. MTU Maintenance Hannover is one of the first maintenance providers worldwide licensed to repair and undertake major overhaul of the GE90 Growth. And provides comprehensive MRO, on-wing, on-site and AOG services.

|                         |                                    |
|-------------------------|------------------------------------|
| <b>APPLICATION:</b>     | Boeing 777-200LR/-300ER/ Freighter |
| <b>THRUST CATEGORY:</b> | 115,000 lbf                        |
| <b>EIS:</b>             | 2004                               |
| <b>DEVELOPMENT:</b>     | —                                  |
| <b>MANUFACTURE:</b>     | —                                  |
| <b>MAINTENANCE:</b>     | Engine MRO                         |



**GP7000**

**Widebody jet**

The GP7000 is used in the long-haul sector and powers what is currently the world's largest aircraft, the Airbus A380. It is lead developed, produced and distributed by the Engine Alliance. MTU is involved in the development and manufacture of various components.

|                         |                          |
|-------------------------|--------------------------|
| <b>APPLICATION:</b>     | Airbus A380              |
| <b>THRUST CATEGORY:</b> | 70,000–81,500 lbf        |
| <b>EIS:</b>             | 2008                     |
| <b>DEVELOPMENT:</b>     | LPT, TCF                 |
| <b>MANUFACTURE:</b>     | LPT, TCF, HPT components |
| <b>MAINTENANCE:</b>     | LPT MRO                  |



**GTF™  
engine family**

**Narrowbody / regional jet**

The Pratt & Whitney GTF™ engine family is among the most eco-efficient engines on the market today. It has so far saved more than 10 million tons of CO<sub>2</sub>. MTU's contributions include the high-speed low-pressure turbine and the forward four stages of the high-pressure compressor.

|                                      |   |
|--------------------------------------|---|
| <b>APPLICATION:</b>                  | e.g. Airbus A320neo, Airbus A220, Embraer E-Jets E2 |
| <b>THRUST CATEGORY:</b>              | 14,000–33,000 lbf                                   |
| <b>EIS:</b>                          | 2016  |
| <b>DEVELOPMENT/<br/>MANUFACTURE:</b> | Various stages HPC, LPT, brush seals                |
| <b>MAINTENANCE:</b>                  | Engine MRO (PW1100G-JM, PW1500G/1900G)              |



**JT8D-200**

**Narrowbody / regional jet**


The JT8D family is one of the world's best-selling jet engine families and has already logged more than 673 million flight hours since entering service. MTU is involved in the -200 series and is responsible for manufacturing individual parts of various assemblies.


|                         |   |
|-------------------------|---|
| <b>APPLICATION:</b>     | Boeing MD-80                            |
| <b>THRUST CATEGORY:</b> | 18,500–21,700 lbf                       |
| <b>EIS:</b>             | 1980                                    |
| <b>DEVELOPMENT:</b>     | Modifications on LPT                    |
| <b>MANUFACTURE:</b>     | Range of LPT parts, HPT parts, housings |
| <b>MAINTENANCE:</b>     | —                                       |


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|---|----------------------------------|
|    | <b>LEAP-1A/-1B</b>               |
|   | <b>Narrowbody / regional jet</b> |
| <p>CFM International's LEAP engine family is used in the Airbus A320neo (LEAP-1A) and the Boeing 737 MAX (LEAP-1B), among others. MTU Maintenance Zhuhai is responsible for servicing these two models.</p> |                                  |
| <b>APPLICATION:</b>   | Airbus A320neo, Boeing 737 MAX   |
| <b>THRUST CATEGORY:</b>   | 28,000–35,000 lbf                |
| <b>EIS:</b>   | 2016                             |
| <b>DEVELOPMENT:</b>   | —                                |
| <b>MANUFACTURE:</b>   | —                                |
| <b>MAINTENANCE:</b>   | Engine MRO                       |

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|    | <b>PW200</b>                           |
|   | <b>Helicopter</b>                      |
| <p>Pratt &amp; Whitney Canada's PW200 is an engine for light and medium helicopters. Its features include a simple and robust design and digital control.</p> |  |
| <b>APPLICATION:</b>   | e.g. Airbus Helicopters H135; Bell 427 |
| <b>MAXIMUM POWER:</b>   | 700 shp                                |
| <b>EIS:</b>   | 1998                                   |
| <b>DEVELOPMENT:</b>   | —                                      |
| <b>MANUFACTURE:</b>   | —                                      |
| <b>MAINTENANCE:</b>   | Engine MRO                             |

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|   | <b>PW300</b>               |
|  | <b>Business jet</b>        |
| <p>The PW300 family offers a wide range of applications for business and regional jets. MTU has been collaborating with Pratt &amp; Whitney Canada on this engine family since 1985. MTU's involvement covers the PW305, PW306 and PW307 models.</p> |                            |
| <b>APPLICATION:</b>  | e.g. Dassault Falcon 7X/8X |
| <b>THRUST CATEGORY:</b>  | 4,700–7,000 lbf            |
| <b>EIS:</b>  | 1992                       |
| <b>DEVELOPMENT:</b>  | LPT, housing               |
| <b>MANUFACTURE:</b>  | LPT, housing               |
| <b>MAINTENANCE:</b>  | Engine MRO                 |

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|    | <b>PW500</b>                         |
|  | <b>Business Jet</b>                  |
| <p>The PW500 engines are two-shaft turboprops. MTU is contributing the development and production of the entire low-pressure turbine, including the exit case and mixer, for the PW530 and PW545 models.</p> |                                      |
| <b>APPLICATION:</b>  | e.g. Cessna Citation Bravo/Excel/XLS |
| <b>THRUST CATEGORY:</b>  | 3,000–4,500 lbf                      |
| <b>EIS:</b>  | 1997                                 |
| <b>DEVELOPMENT:</b>  | LPT, exit case, mixer                |
| <b>MANUFACTURE:</b>  | LPT, exit case, mixer                |
| <b>MAINTENANCE:</b>  | Engine MRO                           |

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|   | <b>PW800</b>                                  |
|   | <b>Business jet</b>                           |
| <p>The PW800 engine features the same proven core technology as the efficient Pratt &amp; Whitney GTF™ engine family. MTU's workshare in this engine encompasses the high-pressure compressor and the low-pressure turbine—its flagship products.</p> |   |
| <b>APPLICATION:</b>   | Gulfstream G400/G500/G600, Dassault Falcon 6X |
| <b>THRUST CATEGORY:</b>   | 10,000–20,000 lbf                             |
| <b>EIS:</b>   | 2018  |
| <b>DEVELOPMENT:</b>   | LPT, various stages HPC                       |
| <b>MANUFACTURE:</b>   | LPT, various stages HPC                       |
| <b>MAINTENANCE:</b>   | LPT MRO (Engine MRO planned)                  |


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|    | <b>PW2000</b>   |
|  | <b>Narrowbody / regional jet</b>                      |
| <p>The PW2000 engines are used in commercial and military applications for medium- and long-haul operations. MTU's low-pressure turbine for the PW2000 was the first the company had developed independently for a commercial application.</p> |   |
| <b>APPLICATION:</b>  | e.g. Boeing 757, Boeing C-17 military transport       |
| <b>THRUST CATEGORY:</b>  | 37,500–43,000 lbf                                     |
| <b>EIS:</b>  | 1984  |
| <b>DEVELOPMENT:</b>  | LPT, turbine exit case                                |
| <b>MANUFACTURE:</b>  | e.g. range of LPT parts, turbine exit case, HPC parts |
| <b>MAINTENANCE:</b>  | Engine MRO  |


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|   | <b>PW4000</b>              |
|  | <b>Widebody jet</b>        |
| <p>The PW4000 is one of the largest and most powerful engines in the world. MTU is responsible for its seven-stage low-pressure turbine—the largest ever developed by MTU.</p> |                            |
| <b>APPLICATION:</b>  | Boeing 777-200/-200ER/-300 |
| <b>THRUST CATEGORY:</b>  | 74,000–98,000 lbf          |
| <b>EIS:</b>  | 1995                       |
| <b>DEVELOPMENT:</b>  | LPT, turbine exit case     |
| <b>MANUFACTURE:</b>  | Range of LPT parts         |
| <b>MAINTENANCE:</b>  | —                          |


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|   | <b>PT6A</b>                              |
|  | <b>Turboprop</b>                         |
| <p>The PT6 is a particularly lightweight turboprop engine. Special versions of the engine also power transport and military aircraft. It is the most versatile turboprop engine family on the planet. Maintenance for the PT6A is carried out by MTU Maintenance Berlin-Brandenburg.</p> |  |
| <b>APPLICATION:</b>  | e.g. Cessna Caravan; Beechcraft King Air |
| <b>MAXIMUM POWER:</b>  | 1,900 shp                                |
| <b>EIS:</b>  | 1973                                     |
| <b>DEVELOPMENT:</b>  | —  |
| <b>MANUFACTURE:</b>  | —  |
| <b>MAINTENANCE:</b>  | Engine MRO                               |


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|   | <b>V2500</b>                              |
|  | <b>Narrowbody / regional jet</b>          |
| <p>MTU develops and manufactures the IAE V2500 in cooperation with Pratt &amp; Whitney and Japanese Aero Engines Corporation. The engine has already logged more than 250 million flight hours and is maintained at various MTU locations.</p> |   |
| <b>APPLICATION:</b>  | Airbus A319/320/321, Boeing MD-90, KC-390 |
| <b>THRUST CATEGORY:</b>  | 22,000–33,000 lbf                         |
| <b>EIS:</b>  | 1989                                      |
| <b>DEVELOPMENT:</b>  | LPT, housing, accessories, externals      |
| <b>MANUFACTURE:</b>  | Range of LPT parts, housing               |
| <b>MAINTENANCE:</b>  | Engine MRO                                |

# Military engines


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|   | <b>EJ200</b>  |
|  | <b>Fighter aircraft</b>                               |
| <p>The EJ200, which powers the Eurofighter, is built by EUROJET Turbo GmbH, a consortium with MTU, Rolls-Royce, Avio Aero and ITP as stakeholders. It was for the EJ200 that MTU first engineered compressor stages in blisk design; these are now also used in MTU components for commercial engines.</p> |   |
| <b>APPLICATION:</b>  | Eurofighter Typhoon                                   |
| <b>THRUST CATEGORY:</b>  | 20,000 lbf  |
| <b>EIS:</b>  | 2003  |
| <b>DEVELOPMENT/ MANUFACTURE:</b>   | LPC, HPC, digital engine control and monitoring unit  |
| <b>MAINTENANCE:</b>  | Cooperation with the German Armed Forces <sup>3</sup> |


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|--|-----------------------------------|
|   | <b>F110</b>                       |
|  | <b>Fighter aircraft</b>           |
| <p>The F110-GE-129 powers the Boeing F-15 and Lockheed Martin F-16 fighter aircraft and has established itself as one of the most successful engines for combat aircraft in the history of the U.S. Air Force. MTU manufactures turbine disks for the low-pressure compressor for the F110-GE-129.</p> |                                   |
| <b>APPLICATION:</b>  | Lockheed Martin F-16; Boeing F-15 |
| <b>THRUST CATEGORY:</b>  | 29,000 lbf                        |
| <b>EIS:</b>  | 1986                              |
| <b>DEVELOPMENT:</b>  | LPC disks stage 2+3               |
| <b>MANUFACTURE:</b>  | LPC disks stage 2+3               |
| <b>MAINTENANCE:</b>  | —                                 |

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|--|--|
|   | <b>F414</b>  |
|  | <b>Fighter aircraft</b>                                |
| <p>The F414 powers Boeing's F/A-18 Super Hornet twin-engine fighter and the E/A-18G Growler electronic warfare version, among others. MTU produces various parts of the F414's high- and low-pressure turbine.</p> |  |
| <b>APPLICATION:</b>  | e.g. Boeing F/A-18 Super Hornet, Boeing EA-18G Growler |
| <b>THRUST CATEGORY:</b>  | 22,000 lbf   |
| <b>EIS:</b>  | 1995   |
| <b>DEVELOPMENT:</b>  | —  |
| <b>MANUFACTURE:</b>  | HPT+LPT parts  |
| <b>MAINTENANCE:</b>  | —  |


|   |                            |
|---|----------------------------|
|   | <b>Larzac 04</b>           |
|   | <b>Fighter aircraft</b>    |
| <p>The Larzac 04 powers the Alpha Jet trainer and light ground-attack aircraft. MTU took over the production of about 25 percent of the parts and the development engineering support. MTU's manufacturing and support share primarily covers the hot section of the engine—from the combustor inlet to the turbine exit.</p> |                            |
| <b>APPLICATION:</b>   | Dornier-Dassault Alpha Jet |
| <b>THRUST CATEGORY:</b>   | 3,000 lbf                  |
| <b>EIS:</b>   | 1979                       |
| <b>DEVELOPMENT:</b>   | Combustor, HPT, housing    |
| <b>MANUFACTURE:</b>   | Combustor, HPT, housing    |
| <b>MAINTENANCE:</b>   | —                          |

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|   | <b>MTR390</b>  |
|   | <b>Helicopter</b>  |
| <p>This turboshaft engine powers the Tiger support helicopter co-developed by France and Germany. In 2011, an upgraded version of the engine (the MTR390-E) was developed that delivers 14 percent more power. MTU develops and manufactures the high-pressure turbine and combustor, among other things.</p> |  |
| <b>APPLICATION:</b>   | Airbus Helicopters Tiger                                     |
| <b>MAXIMUM POWER:</b>   | 1,467 shp (MTR390-E)   |
| <b>EIS:</b>   | 2013 (MTR390-E)  |
| <b>DEVELOPMENT:</b>   | Combustor, HPT, TCF, engine control and monitoring unit (-E) |
| <b>MANUFACTURE:</b>   | Combustor, HPT, TCF, engine control and monitoring unit (-E) |
| <b>MAINTENANCE:</b>   | Cooperation with the German Armed Forces <sup>3</sup>        |

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|--|------------------------------|
|    | <b>T64</b>                   |
|  | <b>Helicopter</b>            |
| <p>The T64 powers medium-weight transport helicopters. A total of 247 T64 engines were delivered. MTU manufactured its high-pressure turbine and high-pressure compressor, among other components. Today, MTU's T64 activities focus on maintenance.</p> |                              |
| <b>APPLICATION:</b>  | Sikorsky CH-53G, GS, GA      |
| <b>MAXIMUM POWER:</b>  | 4,330 shp                    |
| <b>EIS:</b>  | 1972                         |
| <b>DEVELOPMENT:</b>  | HPC, combustor, HPT, gearbox |
| <b>MANUFACTURE:</b>  | HPC, combustor, HPT, gearbox |
| <b>MAINTENANCE:</b>  | Engine MRO <sup>2</sup>      |

|   |                   |
|---|-------------------|
|    | <b>T408</b>       |
|   | <b>Helicopter</b> |
| <p>The T408 is a turboshaft engine that has so far been installed in the U.S. Marine Corps' Sikorsky CH-53K heavy-lift helicopter. MTU contributes the power turbine.</p> |                   |
| <b>APPLICATION:</b>   | Sikorsky CH-53K   |
| <b>MAXIMUM POWER:</b>   | 7,510 shp         |
| <b>EIS:</b>   | 2019              |
| <b>DEVELOPMENT:</b>   | Power turbine     |
| <b>MANUFACTURE:</b>   | Power turbine     |
| <b>MAINTENANCE:</b>   | —                 |

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|---|---|
|    | <b>TP400-D6</b>                                     |
|   | <b>Transport aircraft</b>                           |
| <p>The TP400-D6 is the most powerful turboprop in the West. It offers impressive robustness, efficiency and low lifecycle costs in tactical and strategic operations. MTU developed the TP400-D6 with ITP, Rolls-Royce and Safran Aircraft Engines as part of the Europrop International (EPI) joint venture.</p> |   |
| <b>APPLICATION:</b>   | Airbus A400M  |
| <b>POWER (AT SEA LEVEL):</b>  | 11,000 shp  |
| <b>EIS:</b>   | 2013  |
| <b>DEVELOPMENT:</b>   | Intermediate-pressure compressor, turbine and shaft |
| <b>MANUFACTURE:</b>   | Intermediate-pressure compressor, turbine and shaft |
| <b>MAINTENANCE:</b>   | Engine MRO <sup>2</sup>                             |

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|    | <b>RB199</b>   |
|   | <b>Fighter aircraft</b>  |
| <p>The RB199 was developed and produced to power the Panavia Tornado multirole fighter jet. This extraordinarily successful engine marked the first time that MTU had contributed independently developed and built components, such as the intermediate-pressure and high-pressure compressor and the intermediate-pressure turbine.</p> |  |
| <b>APPLICATION:</b>   | Panavia Tornado  |
| <b>THRUST CATEGORY:</b>   | 16,000–17,000 lbf  |
| <b>EIS:</b>   | 1979   |
| <b>DEVELOPMENT/ MANUFACTURE:</b>  | e.g. IPC, IPT, HPC, digital engine control and monitoring unit |
| <b>MAINTENANCE:</b>   | Cooperation with the German Armed Forces <sup>3</sup>          |



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