

MGT6000

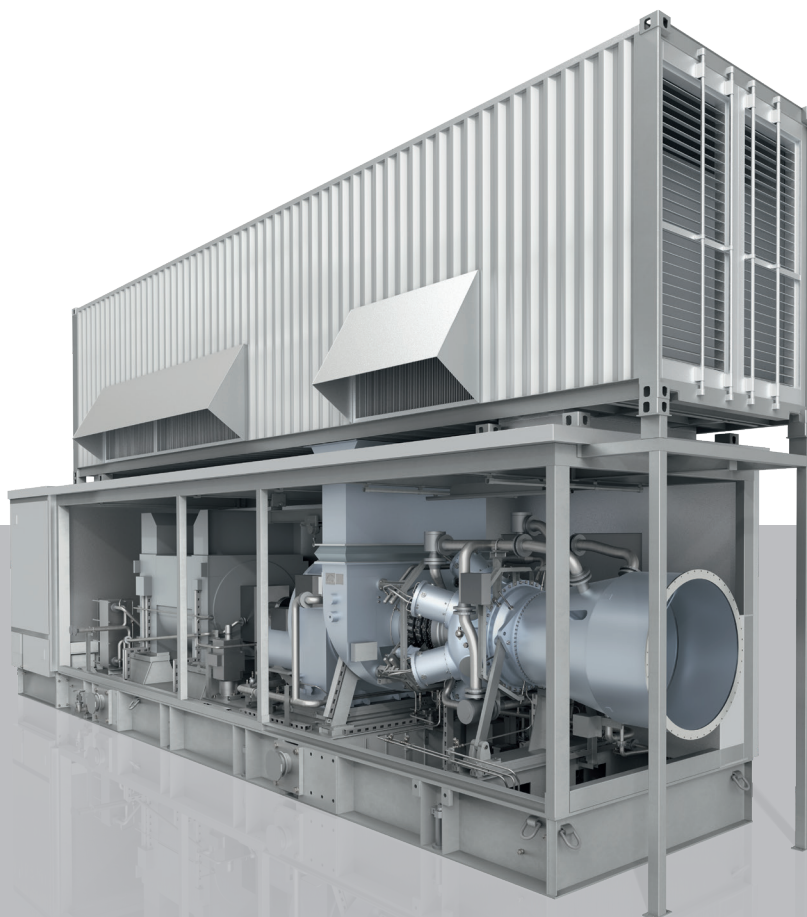
Single Shaft

Decades of industrial gas turbine experience and profound application knowledge have led to an evolution in small industrial gas turbines – the MGT family.

The single shaft turbine MGT6000 is developed purely for power generation applications – high efficiency combined with a compact package design.

Benefits at a glance

- Modular design for easy and fast installation
- High efficiency
- Low emissions
- Low operating costs
- Low life cycle costs

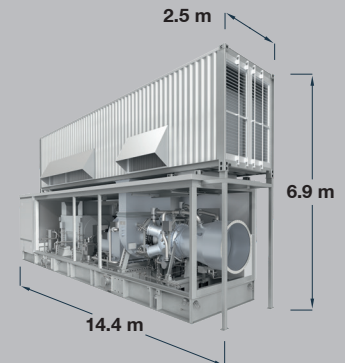


MGT6000 Single Shaft

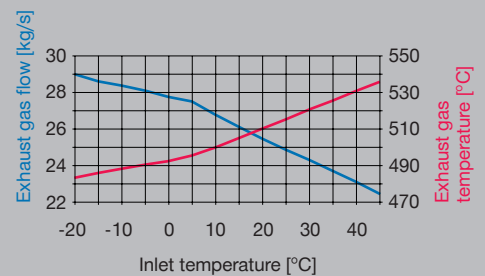
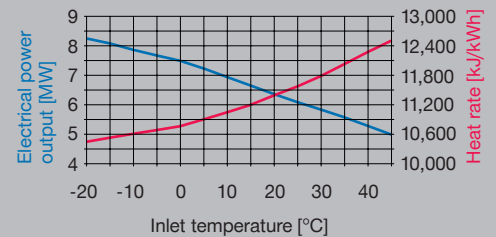
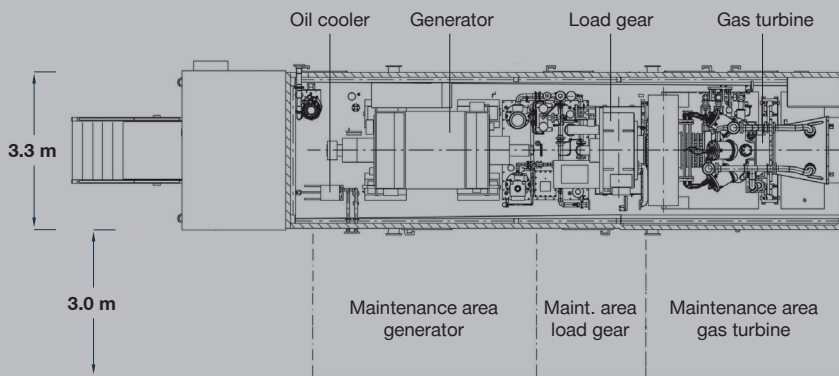
Technical data

Performance at ISO conditions*

| MGT6000 Single Shaft | | | |
|---|----------------------|-----------------|--|
| Power output | kW _{el} | 6,630 – 7,800 | |
| Heat rate | kJ/kWh _{el} | 11,190 – 10,840 | |
| Efficiency | % _{el} | 32.2 – 33.2 | |
| Exhaust gas flow | kg/s | 26.1 – 29.4 | |
| Exhaust gas temperature | °C | 490 – 505 | |
| Generator speed (50 Hz/60 Hz) | rpm | 1,500/1,800 | |
| NO _x emissions (ref. to 15 % O ₂ , dry) | mg/Nm ³ | 30 | |
| | ppm | 15 | |
| CO emissions (ref. to 15 % O ₂ , dry) | mg/Nm ³ | 30 | |
| | ppm | 24 | |



*all data valid for sea level, 15 °C, no inlet and exhaust pressure losses, 60 % rel. humidity, natural gas. Power output will decrease with increase of site altitude (1.1 % per 100 m), inlet pressure loss (1.9 % per 1 kPa) and exhaust pressure loss (0.9 % per 1 kPa)



Typical applications

Gas turbine generator units are operated for e.g. emergency and black start applications, on off-shore platforms (with adapted package design) mainly in simple cycle mode.

For CHP¹) applications (most common) gas turbine generator units are operated in combination with a heat recovery unit for different heat processes, resulting in e.g.

- Power, Steam Generation
- Power, Hot Water Generation
- Power, Steam & Chilled Water
- Power, Steam & Hot Water

CHP applications are beneficial for various industries such as food processing, pulp & paper, breweries, automotive, etc. having demand for Heat and Power. CHP processes provide increased efficiencies and reduced CO₂ emissions compared to conventional power & heat generation. Overall CHP efficiencies reach 90% and higher depending on the heat process.

Gas turbine

- Heavy duty, single shaft
- 11 stage air compressor
- 6 combustion chambers multi-can, ACC²⁾ combustors
- 3 stage turbine

Load gear

- Planetary gear type
- Speed reduction to 1,500 rpm (for 50Hz) or 1,800 rpms (for 60Hz)³⁾
- Drive for main lube oil pump
- Torque transmission of electric starter motor for gas turbine start-up

Generator

- 4 pole, 3 phase, synchronous generator with built-in exciter, rotating rectifier and permanent magnet pilot generator (PMG)
- Direct air cooled
- Insulation class F / temperature rise class B

Package

- Fully-integrated for outdoor installation
- Noise emission
 - All equipment is designed for $L_{pA} = 85$ dB(A) measured in 1 m distance and 1.5 m height
 - $L_{pA} = 80^{3)}$, $75^{3)}$, $70^{3)}$ dB(A)
- Single-lift base frame
 - With integrated lube oil and fuel system
- Starting system
 - Variable frequency drive for gas turbine starter motor
- Integrated lube oil system
 - Main lube oil pump driven via load gear
 - Standby lube oil pump (AC motor driven)
 - Emergency lube oil pump (DC motor driven)
 - Water to oil cooler
 - Air to oil cooler³⁾ (free standing)
 - Integrated lube oil tank
 - Lube oil tank heater
 - Lube oil filter
 - Control valves
 - Oil mist separator
- Fuel system
 - Fuel gas system
 - Double block and bleed valves
 - Control valves
 - Dual fuel system³⁾
- Air inlet system
 - Static depth loading cartridges
 - Filtration class:
 - Pre-filter: G4,
 - Fine-filter: F9 (E11³⁾)
 - Static filter³⁾ with anti-icing³⁾
 - Free standing filter house³⁾
- Exhaust system
 - Transition duct up to interface at enclosure for connection to optional downstream exhaust system
- Enclosure
 - Complete package for outdoor installation
 - Fire detection and CO₂ fire-fighting system
 - Water-mist fire-fighting system³⁾
 - Gas leakage detection
 - Maintenance cranes
- Turbine compressor cleaning system
 - Offline and online washing
 - Mobile wash trolley³⁾

Controls

- All electrical cabinets installed on skid in air-conditioned control compartment
- Gas turbine control system
 - Gas turbine control & protection
 - Unit sequencing
 - Human machine interface (HMI)
 - Alarm management
- Generator control & protection system
 - Automatic synchronization
 - Automatic voltage regulator (AVR)
 - Generator protection relay
- Low voltage distribution system
 - AC power supply for all electrical consumers
- Turbine starting system
 - Variable frequency drive (VFD)
- Uninterruptable power supply system
 - Buffered with batteries
 - DC supply for emergency lube oil pump
 - AC supply for electrical panels
- Data storage system
 - Long term data archive
 - Event logger
- Plant control system interface
 - Modbus TCP interface
 - Others optional

Documentation

- Engineering documents
- Installation manual
- Operating instructions
- Quality documentation

Factory acceptance test of turbine

- Core engine full-speed, full-load

Complete unit test³⁾

- Full-speed, full-load
- Full-speed, no-load

¹⁾ CHP = Combined Heat and Power

²⁾ ACC = Advanced Can Combustor (Dry Low Emission (DLE) Technology)

³⁾ can be offered as option

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