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*  

<table>
<thead>
<tr>
<th></th>
<th>MGT6000 Single Shaft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power output</td>
<td>kWel</td>
</tr>
<tr>
<td></td>
<td>6,630 – 7,800</td>
</tr>
<tr>
<td>Heat rate</td>
<td>kJ/kWhel</td>
</tr>
<tr>
<td></td>
<td>11,190 – 10,840</td>
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<tr>
<td>Efficiency</td>
<td>%el</td>
</tr>
<tr>
<td></td>
<td>32.2 – 33.2</td>
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<tr>
<td>Exhaust gas flow</td>
<td>kg/s</td>
</tr>
<tr>
<td></td>
<td>26.1 – 29.4</td>
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<tr>
<td>Exhaust gas temperature</td>
<td>°C</td>
</tr>
<tr>
<td></td>
<td>490 – 505</td>
</tr>
<tr>
<td>Generator speed (50 Hz/60 Hz)</td>
<td>rpm</td>
</tr>
<tr>
<td></td>
<td>1,500/1,800</td>
</tr>
<tr>
<td>NOₓ emissions (ref. to 15 % O₂, dry)</td>
<td>mg/Nm³</td>
</tr>
<tr>
<td></td>
<td>30</td>
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<tr>
<td></td>
<td>ppm</td>
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<tr>
<td></td>
<td>15</td>
</tr>
<tr>
<td>CO emissions (ref. to 15 % O₂, dry)</td>
<td>mg/Nm³</td>
</tr>
<tr>
<td></td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>ppm</td>
</tr>
<tr>
<td></td>
<td>24</td>
</tr>
</tbody>
</table>

*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, ACC combustors
- 3 stage turbine

Load gear
- Planetary gear type
- Speed reduction to 1,500 rpm (for 50Hz) or 1,800 rpm (for 60Hz)
- 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 \( L_{PA} = 85 \text{ dB(A)} \) measured in 1 m distance and 1.5 m height
  - \( L_{PA} = 80^{(3)}, 75^{(3)}, 70^{(3)} \text{ dB(A)} \)
- 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 cooler\(^{(3)}\) (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 system\(^{(3)}\)
- Air inlet system
  - Static depth loading cartridges
  - Filtration class:
    - Pre-filter: G4,
    - Fine-filter: F9 (E11)\(^{(3)}\)
  - Static filter\(^{(3)}\) with anti-icing\(^{(3)}\)
  - Free standing filter house\(^{(3)}\)
- 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 CO\(_2\) fire-fighting system
  - Water-mist fire-fighting system\(^{(3)}\)
  - Gas leakage detection
  - Maintenance cranes
- Turbine compressor cleaning system
  - Offline and online washing
  - Mobile wash trolley\(^{(3)}\)

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 test\(^{(3)}\)
- Full-speed, full-load
- Full-speed, no-load

ChP = Combined Heat and Power
ACC = Advanced Can Combustor (Dry Low Emission (DLE) Technology)
\(^{(3)}\) can be offered as option
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