MAN Energy Solutions
Future in the making

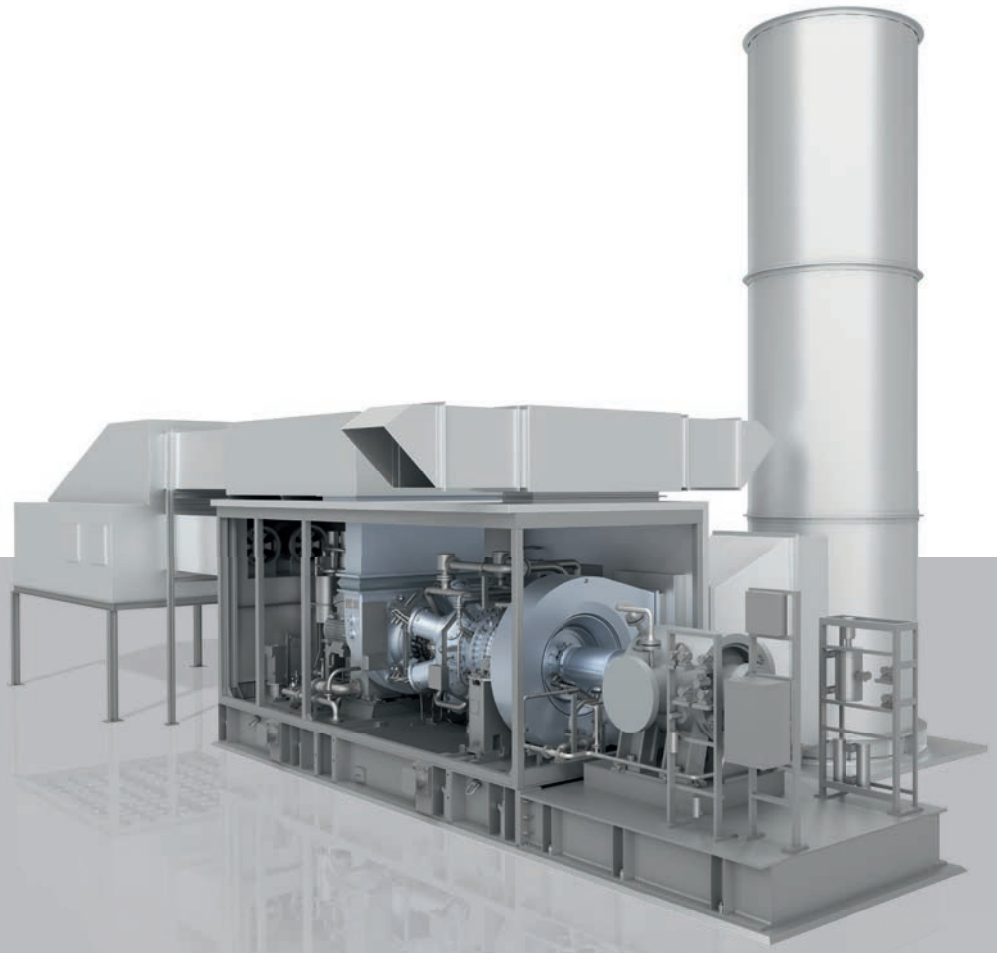
MGT6000

Twin 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 twin shaft gas turbine MGT6000 is developed for mechanical drive applications – suited for all customer requirements within a modular package design.

Benefits at a glance

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



gas turbines
turbomachinery

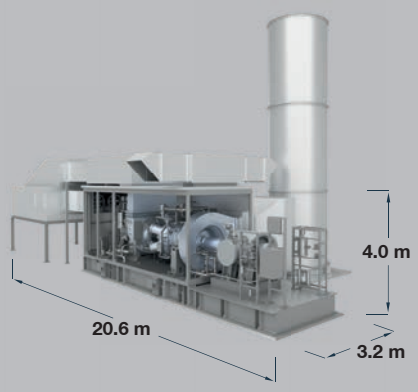
MGT6000 Twin Shaft

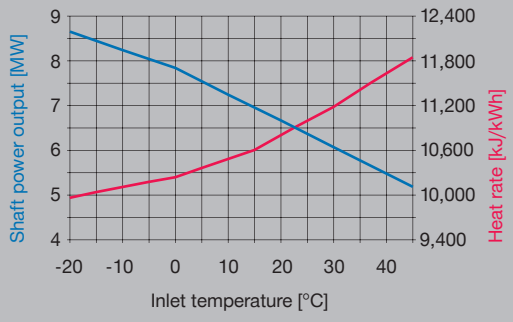
Technical data

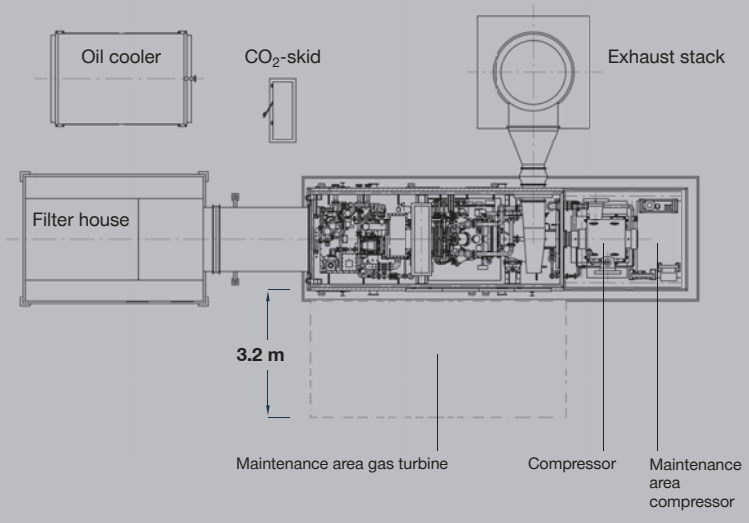
Performance at ISO conditions*

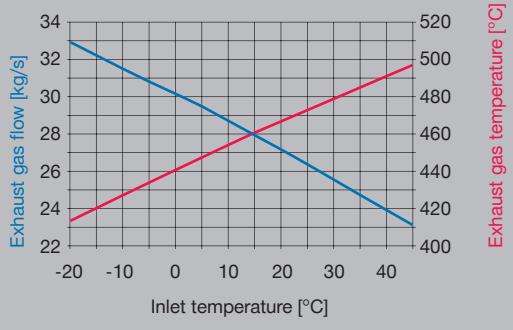
		MGT6000 Twin Shaft
Power output	kW_{mech}	6,900 – 8,300
Heat rate **Efficiency**	kJ/kW_{mech} $\%_{mech}$	10,590 – 10,290 34.0 – 35.0
Exhaust gas flow	kg/s	28.1 – 30.0
Exhaust gas temperature	°C	460 – 480
Nominal power turbine speed	rpm	12,000
Power turbine speed range	%	45 – 105
NO_X emissions **(ref. to 15% O_2, dry)**	mg/Nm^3 ppm	30 15
CO emissions **(ref. to 15% O_2, dry)**	mg/Nm^3 ppm	30 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

Twin shaft gas turbines have a variable speed drive shaft which is the best and most efficient way not only to control flow or discharge pressure, but also to start a mechanical drive train. Driven units are compressors and pumps for pressure increase and transport of gaseous and liquid media.

Typical application fields are midstream and upstream oil & gas production sites operating mainly in simple cycle mode.

Gas turbines of twin shaft design are also used for power generation at fixed speed. Selection criteria in such cases are e.g. the package design or driver communality in combination with mechanical drive units.

Gas turbine

- Heavy duty, twin shaft
- 11 stage air compressor
- 6 combustion chambers multi-can, ACC[1] combustors
- 2 stage high pressure turbine
- 2 stage power turbine

Integrated auxiliary gear

- Parallel shaft gear type
- Drive for main lube oil pump
- Torque transmission of electric starter motor for gas turbine start-up

Driven unit

- Compressors for midstream applications (gas transportation & storage)
- Compressors for upstream applications (gas gathering, gas reinjection, etc.)
- Pumps
- Electric generators for power generation

Gas turbine package

- Package 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[2], 75[2], 70[2] dB(A)
- 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 auxiliary gear
  - Stand-by lube oil pump (AC-motor driven)
  - Emergency lube oil pump (DC motor driven)
  - Air to oil cooler (free standing)
  - Water cooler[2]
  - 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[2]
- Air inlet system
  - Table type filter house with depth loading cartridges
  - Filtration class: Pre-filter: G4, Fine-filter: F9 (E11[2])
  - Static filter[2] with anti-icing[2]
  - Pulse type filter in table or down flow arrangement[2]
- Exhaust system
  - Transition duct
  - Expansion joint
  - Free standing stack
- Enclosure
  - Gas turbine enclosure for outdoor installation
  - Fire detection and CO_2 fire-fighting system
  - Water-mist fire-fighting system[2]
  - Gas leakage detection
  - Maintenance cranes
- Turbine compressor cleaning system
  - Offline and online washing
  - Mobile wash trolley[2]

Controls

- For installation in air conditioned control room (to be provided by others)
- Gas turbine control system
  - Gas turbine control & protection
  - Unit sequencing
  - Human machine interface (HMI)
  - Alarm management
- Compressor control (if applicable)
  - Anti-surge controler
  - Performance controler
  - Load sharing[2]
- Low voltage distribution system
  - AC power supply for all electrical consumers
- Turbine starting system
  - Variable frequency drive (VFD)
- Uninterrupted power supply system
  - Buffered with batteries
  - DC supply for emergency lube oil pump
  - AC supply for all 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 ASME PTC-22

Other tests[2]

- According to API requirements

[1] ACC = Advanced Can Combustor (Dry Low Emission (DLE) Technology)
[2] can be offered as option

MAN Energy Solutions
86224 Augsburg, Germany
P + 49 821 322-0
F + 49 821 322-3382
info@man-es.com
www.man-es.com

MAN Energy Solutions
Steinbrinkstr. 1
46145 Oberhausen, Germany
P + 49 208 692-01
F + 49 208 692-021
turbomachinery@man-es.com
www.man-es.com

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