

SGT-600 Industrial Gas Turbine

Mechanical Drive: (ISO) 25.40 MW (34,100 bhp)

The Siemens SGT-600 industrial gas turbine is designed and built to satisfy the need for heavy-duty equipment able to meet the requirements for low life-cycle cost, i.e. low first cost, low fuel costs and low costs for operation and maintenance.

The SGT-600 was initially designed as a mechanical drive in compressor and pumping applications, and was later adapted for power generation because of its robust design and its operating economy.

The turbine is delivered with a Dry Low Emission (DLE) combustion system as standard. A gas turbine with this system offers an additional advantage in maintaining low specific fuel consumption in all applications. The uncomplicated DLE-system does not add to the already low service costs for the SGT-600.

The combination of using less fuel and generating fewer emissions makes the SGT-600 arguably the most environmentally friendly gas turbine in its power range.

Industrial gas turbines from Siemens offer long lifetime on oil platforms, in hot deserts, in arctic cold and in aggressive industrial environments – in other words, wherever the operating conditions are particularly tough.

The SGT-600 has had a long history of successful operation in such environments and has already achieved some six million operating hours, with field experience constantly being fed back into the design for continuous improvement.

Siemens offers flexible maintenance solutions, enabling significant contribution to the plant operational profit arising from the optimization of preventive maintenance planning.



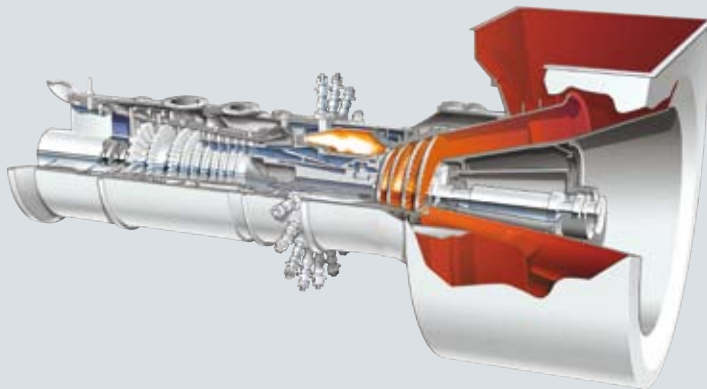
Industrial Gas Turbines

Answers for energy.

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SGT-600 Industrial Gas Turbine



SGT-600 power-turbine rotor-assembly.

Technical specifications

Overview

- Mechanical drive: 25.40 MW (34,100 bhp)
- Shaft efficiency: 35.1 %
- Heat rate: 10,258 kJ/kWh (7,250 Btu/hph)
- Turbine speed: 7,700 rpm (50–105 %)
- Compressor pressure ratio: 14:1
- Exhaust gas flow: 80.4 kg/s (177.3 lb/s)
- Exhaust temperature: 543°C (1,009°F)
- NO_x emissions (with DLE corrected to 15% O₂ dry)
 - Gas fuel: ≤25 ppmV
 - Liquid fuel: ≤42 ppmV (wet)

Axial Compressor

- 10-stage axial flow compressor
 - 2 stages variable guide vanes
- Electron-beam welded rotor

Combustion

- 18 dual-fuel 2nd generation Dry Low Emissions (DLE) burners
- Welded annular sheet metal design

Compressor Turbine

- 2-stage axial flow compressor turbine
 - Both stages are air-cooled

Power Turbine

- 2-stage free power turbine, uncooled
- Interlocking shrouds

Fuel System

- Natural gas – Liquid fuel – Dual fuel
- Fuel-changeover capability at full and part load
- Gas-supply pressure requirement: 24.5 bar(a) ±0.5 bar (355±7 psi(a))

Emissions control

- DLE combustion system
- Water injection for NO_x-reduction during liquid fuel operation in DLE combustor

Bearings

- Tilting pad radial and thrust
- Vibration- and temperature-monitoring

Lubrication

- Lubricating oil tank located in package base frame
- Two main lube oil circuits, low pressure and high pressure
- 3x50 % HP and 3x50 % LP AC-driven lube oil pumps with DC backup

Starting

- Electric VSD start-motor

Control System

- Siemens Simatic S7
- Distributed inputs/outputs

Gas turbine

Key features

- Robust industrial design
- Excellent operational availability and reliability
- Excellent DLE experience
- Low emissions – DLE ≤25 ppm NO_x
- Dual-fuel capability
- Wide range of fuel capability
- Long-term efficiency – low deterioration
- Low life cycle cost
- Workshop tested

Maintenance

- No need for special workshop maintenance
- 24-hour gas generator exchange or on site maintenance
- Modular build-up for easy maintenance on site
- Standardized concepts for maintenance planning
- Condition-based maintenance
- Extended time between overhaul when running on part load
- Low deterioration and service cost
- Gas turbine can be removed on rollers through the maintenance doors
- Horizontal split compressor casing



Compressor drive installation in Edjeleh, Algeria.



Four units were installed at a pipeline compressor station in Kondratki, Poland.

Package

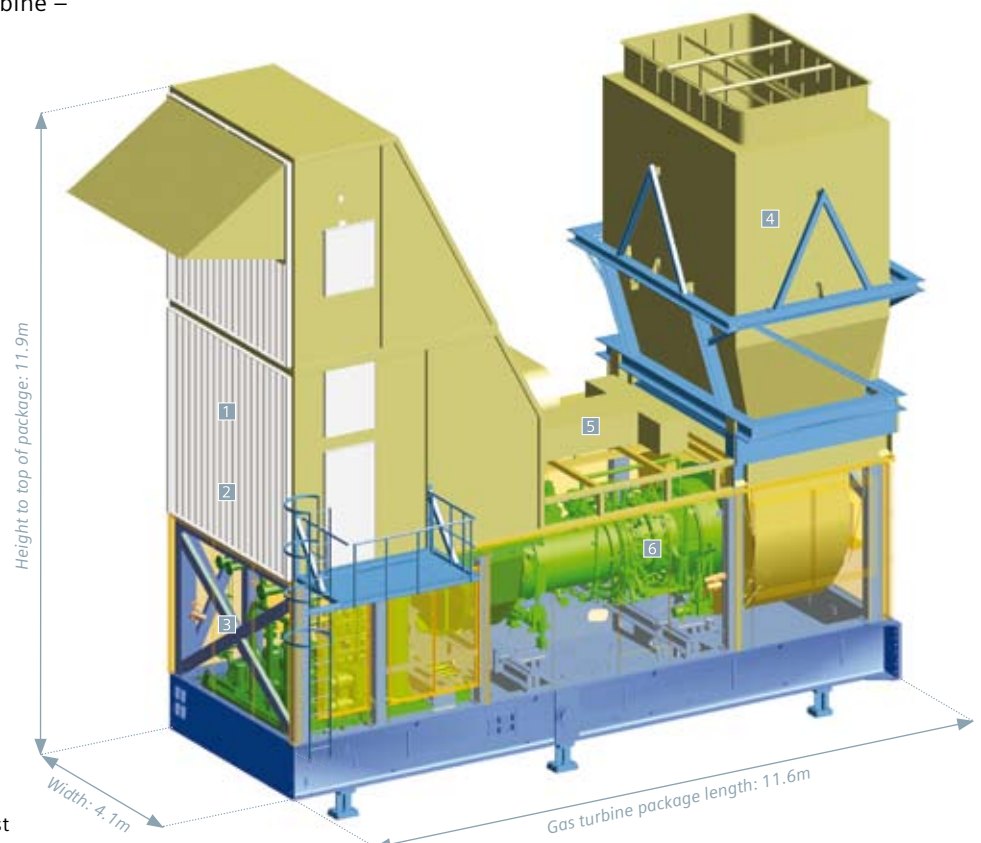
Key features

- Compact layout
- Flexible installations based on standardized package solutions
- Gas turbine and main auxiliary systems are mounted on a common base frame
- Skid-mounted with single-lift capacity
- Pre-commissioned at the Siemens workshop to reduce time at site
- Simple on-site works due to flexible package design
- State-of-the-art control system fulfills all requirements for control and safety
- Same footprint as the SGT-700 gas turbine – interchangeable in same package

Customer Support

Key features

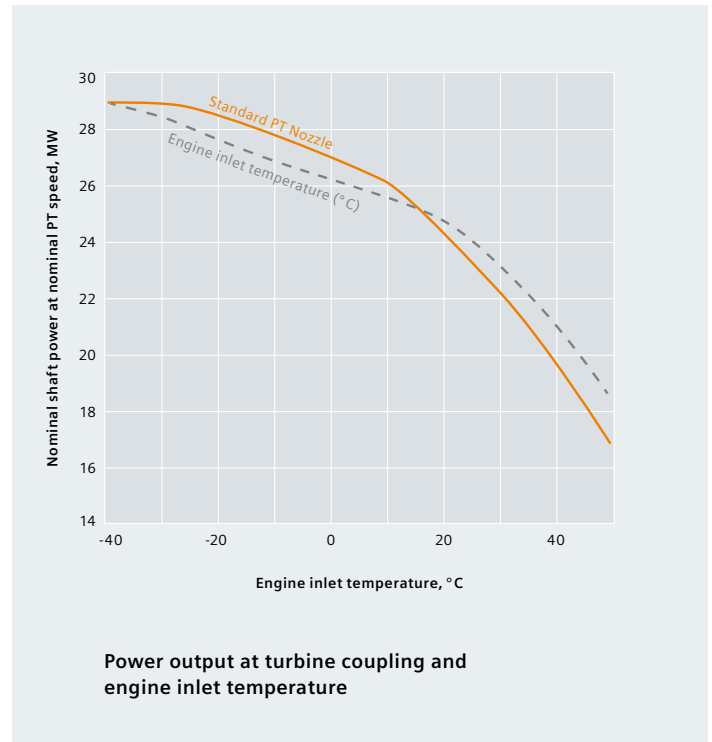
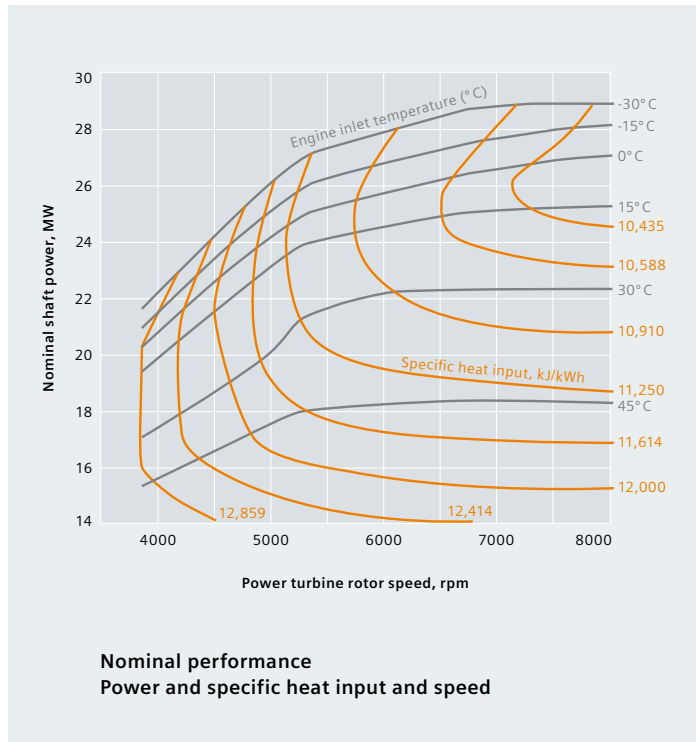
- Global support network of Authorized Service Centers
- Emergency service – 24/7 specialist helpdesk
- Full field service
- Full diagnostic support, remote monitoring
- OEM modernizations and upgrades
- In-house or on-site training programs
- Range of maintenance and service contracts available



SGT-600 standard driver package

- | | |
|------------------------|------------------------|
| 1 Combustion air inlet | 4 Combustion exhaust |
| 2 Enclosure air inlet | 5 Enclosure air outlet |
| 3 Lube oil system | 6 Core engine |

SGT600 Performance



SGT-600 Mechanical drive performance

Conditions/assumptions:

Direct drive – no output gearbox.

Altitude:

Sea level

Natural gas fuel.

Ambient pressure:

101.3 kPa

Inlet ducting loss:

0 kPa

Relative humidity:

60%

Exhaust ducting loss:

0 kPa

Power turbine design speed:

7,700 rpm

Natural gas fuel.

Specific heat input is drawn for base load but is approximately correct for part load at corresponding speed/temperature.

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Siemens AG
Energy Sector
Freyeslebenstrasse 1
91058 Erlangen, Germany

Siemens AG
Energy Sector
Oil & Gas Division
Wolfgang-Reuter-Platz
47053 Duisburg, Germany

Siemens Energy, Inc.
10730 Telge Road
Houston, Texas 77095, USA

Siemens Industrial Turbomachinery AB
Slottsvaegen
SE-61283 Finspong, Sweden

For more information, please contact
our Customer Support Center.
Tel: +49 180 524 70 00
Fax: +49 180 524 24 71
(Charges depending on provider)
E-mail: support.energy@siemens.com

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