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.
SGT-600 Industrial Gas Turbine

Technical specifications

Overview
- Mechanical drive: 25.40 MW (34,100 bhp)
- Shaft efficiency: 35.1 %
- Heat rate: 10,258 kJ/kWh (7,250 Btu/h)
- 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)
- NOX 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 NOX-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 NOx
- 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
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

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 Mechanical drive performance**

**Conditions/assumptions:**

- Direct drive – no output gearbox.
- **Altitude:** Sea level
- **Inlet ducting loss:** 0 kPa
- **Exhaust ducting loss:** 0 kPa
- 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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**SGT600 Performance**

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**Engine inlet temperature (º C)**

<table>
<thead>
<tr>
<th>Engine inlet temperature (º C)</th>
<th>Nominal shaft power at nominal PT speed, MW</th>
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<tbody>
<tr>
<td>-30º C</td>
<td>12,859</td>
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<tr>
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**Specific heat input, kJ/kWh**

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Oil & Gas Division
Order No. E50001-W430-A110-X-4A00
Printed in Germany
Dispo 34806, c4bs 7447, P WS 03102.5

www.siemens.com/energy

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