SGT-300 Industrial Gas Turbine

Power Generation: (ISO) 7.90MW(e)

The SGT-300 has a rugged industrial design which enables high efficiency (nominal 31 %) and excellent emissions performance. These characteristics provide the flexibility to meet the needs of a broad spectrum of power generation applications.

The Siemens SGT-300 single-shaft industrial gas turbine is a proven unit for all electrical power generation and cogeneration applications. It offers high efficiency and reliability on a wide range of gaseous and liquid fuels.

For industrial cogeneration, the high steam-raising capability of more than 18 tonnes per hour contributes towards achieving overall plant efficiencies of 80 % or higher. In addition, the compact arrangement, on-site maintainability and inherent reliability of the SGT-300 have made it an ideal gas turbine for the demanding oil and gas industry.

Incorporating proven gas turbine technology, the SGT-300 offers cost-effective power for a wide range of duties including:

Industrial Power Generation

- Simple-cycle and combined-cycle power plants for base load, standby power and peak lopping
- Cogeneration for industrial plants with high heat load and district heating schemes

Power Generation in the Oil and Gas Industry

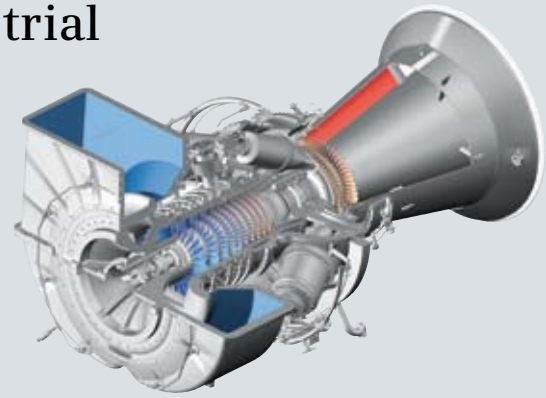
- Offshore: on oil platforms and FPSO (Floating Production, Storage and Offloading) vessels
- Onshore: for oil field service, refinery application, emergency and standby power generation
- Highly efficient cogeneration solutions for oil and gas applications

Industrial Gas Turbines

Answers for energy.

SIEMENS

SGT-300 Industrial Gas Turbine



SGT-300 core engine test facility.

Technical specifications

Overview

- Single-shaft, industrial gas turbine
- Power generation: 7.90 MW(e) (ISO zero loss)
- Frequency: 50 or 60 Hz
- Electrical efficiency: 31 %
- Heat rate: 11,773 kJ/kWh (11,158 Btu/kWh)
- Compressor pressure ratio: 14:1
- Exhaust gas flow: 30.2 kg/s (66.6 lb/s)
- Exhaust temperature: 542° C (1008° F)
- Typical emissions: NO_x <15 ppmV and CO: <10 ppmV (corrected to 15 % O_2 dry)
- Medium-calorific value fuels capability (>32 MJ/Nm^3 Wobbe index)

Axial compressor

- 10-stage
- Variable inlet guide vanes
- Air flow: (ISO) 29.9 kg/s
- Nominal speed: 14,010 rpm

Combustion

- 6 reverse-flow cannular combustion chambers
- Lean-burn Dry Low Emissions (DLE) or conventional diffusion flame system
- High-energy ignitor system

Turbine

- 2-stage overhung turbine
  - First stage air-cooled

Bearings

- Tilt-pad radial and thrust
- Vibration- and temperature-monitoring as standard

Main reduction gearbox

- Speeds of 1500 rpm and 1800 rpm

Generator

- Voltages: 6 to 13.8 kV
- Frequency: 50 or 60 Hz

Package

- Fabricated steel underbase
  - Integral oil tank
  - Multi-point mounting
  - Optional 3-point mounting
- Modular fluid systems
- Lubricating oil system
  - Gearbox-driven main pump
  - AC motor-driven auxiliary pump
  - DC motor-driven emergency pump
- Oil cooler and oil heater
- Electrically-driven hydraulic start system
- Hydrocarbon drains tank on package
- Control system
  - Siemens SIMATIC PLC-based with distributed control and processing capability installed on package
  - Optional Allen-Bradley system
  - Optional off-package systems
- Vibration monitoring system
  - BN 1701: Standard
  - BN 3500: Optional
- Fire and gas detection equipment
- Fire suppression equipment
- On- and off-line compressor cleaning options availble
- Combustion-air inlet-filtration options:
  - Simple static
  - Pulse cleaning
  - HEPA
- Enclosure
  - Painted carbon steel or stainless steel
  - Noise level options (85 dB(A) standard)

Gas turbine

Key features

- High simple-cycle and cogeneration efficiencies, cutting fuel costs
- Dual-fuel Dry Low Emissions (DLE) combustion system, meeting stringent legislation

Maintenance

- Site maintainability or optional rapid core exchange as required by customer
- Designed for maintenance:
  - Horizontally split compressor casing
  - Horizontally and vertically split inlet casing
  - Combustion chambers, flame tubes and ignitors easily accessible for inspection
  - Large side-doors on enclosure for equipment change-out
  - Package designed for gas turbine removal on either side
- Multiple boroscope-inspection ports

Customer Support

- 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-300 package.

Two SGT-300 gas turbines provide Norbord with electricity and heat at their board manufacturing plant in Scotland, UK.

Package

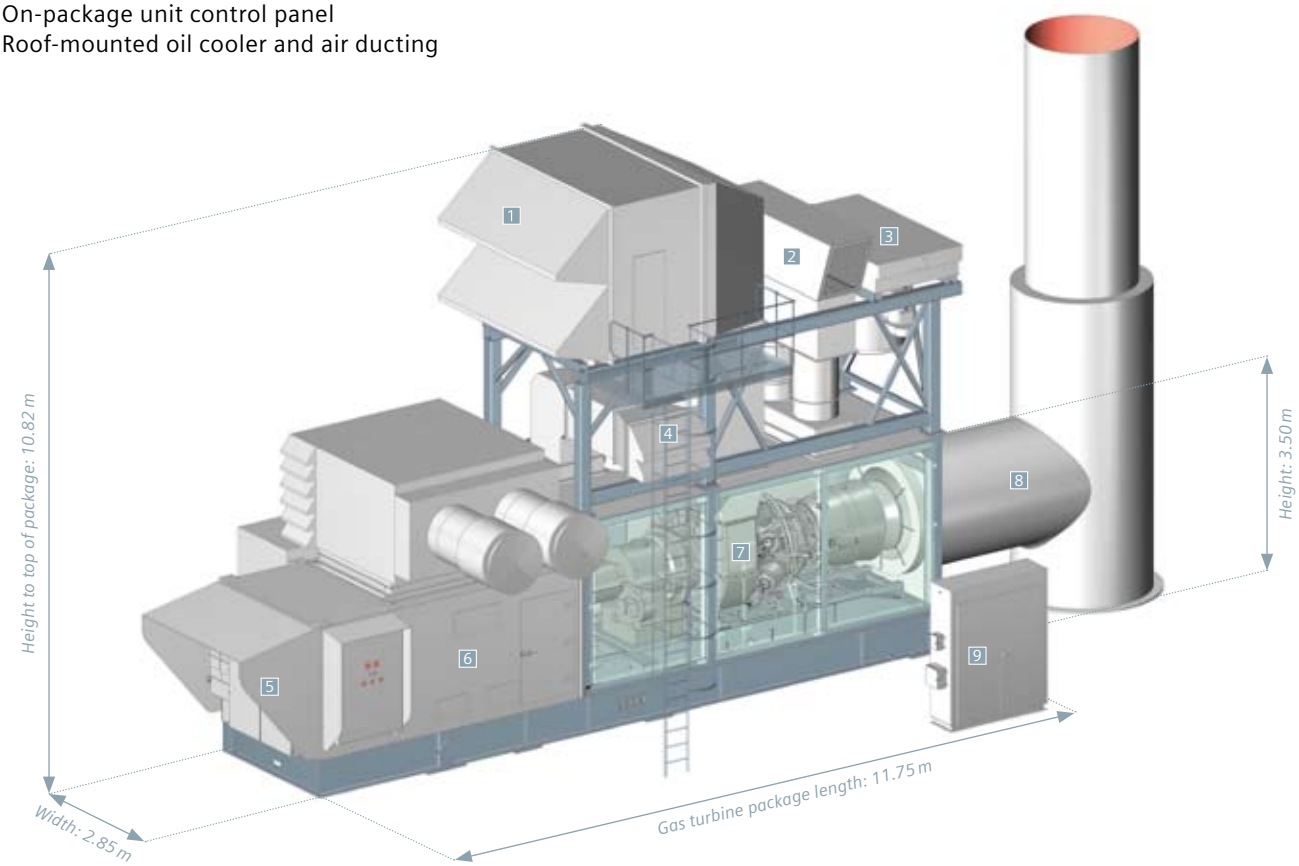
Key features

- Short installation time
- Compact package size, high power-to-weight ratio
- Factory testing:
  - Core engine
  - Functional testing of modules as standard
  - Pre-commissioning of package
  - Optional core customer-witness test
  - Optional complete package test
- Minimized customer interfaces
  - On-package drains tank
  - On-package unit control panel
  - Roof-mounted oil cooler and air ducting

Cogeneration with the SGT-300

In cogeneration configuration, with its excellent efficiency and steam-raising capability, the SGT-300 provides the core of a reliable, efficient and powerful SSC-300 plant. When compared with conventional energy supplies, an SSC-300 cogeneration plant will provide electrical power, heating and/or cooling with benefits of:

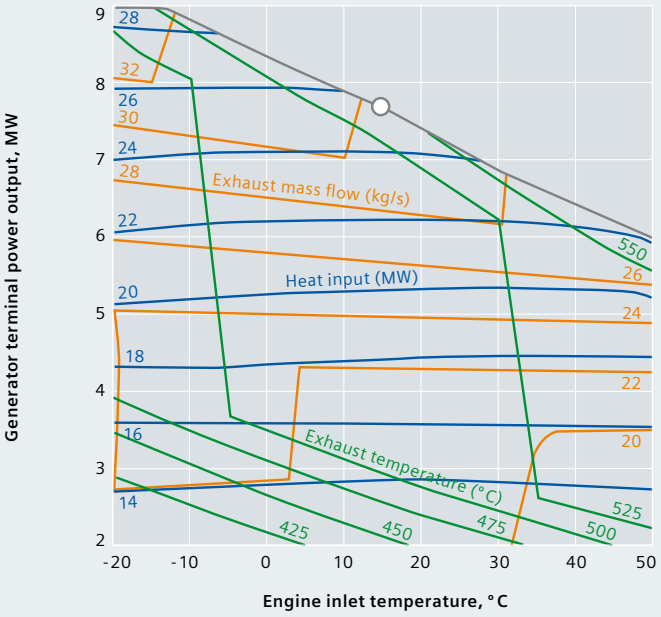
- Significant reductions in energy costs
- Security of energy supplies
- Reductions in total emissions of carbon dioxide, and improved flexibility



SGT-300 standard package

1 Combustion air inlet
2 Enclosure air outlet
3 Lube oil cooler
4 Enclosure air inlet
5 Unit control panel
6 AC generator
7 Core engine
8 Combustion exhaust
9 Fire extinguishant

SGT-300 Performance

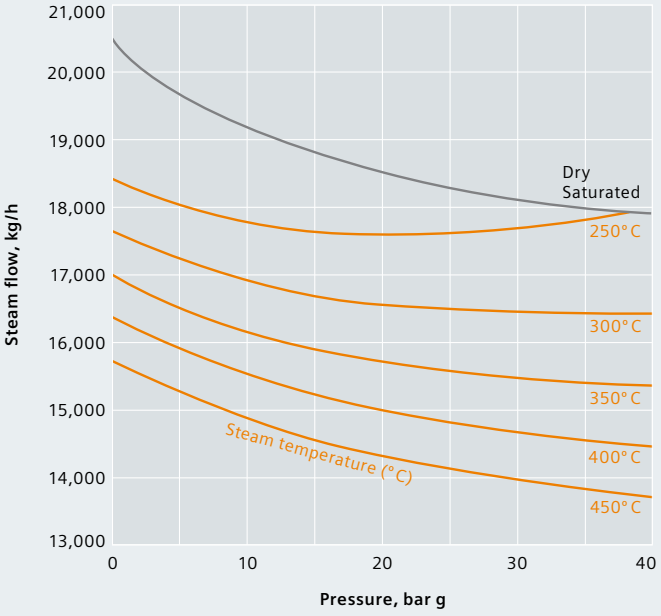


Nominal generator output and heat rate

Conditions/assumptions:

Altitude:	Sea level
Ambient pressure:	101.3 kPa
Inlet ducting loss:	1.0 kPa*
Exhaust ducting loss (assumes waste-heat recovery):	2.0 kPa*
Natural gas fuel.	
Gearbox efficiency:	99.0 %
Generator efficiency:	97.0 %
Relative humidity:	60 %

** Duct losses are site-specific according to application. Please contact your local Siemens representative or our Customer Support Center for performance quotations.*



Unfired heat-recovery steam generation

Conditions/assumptions:

Exhaust gas mass flow:	29.8 kg/s
Assumed feed water temperature:	100 °C
Exhaust gas temperature:	542 °C

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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 Ltd
P.O. Box 1, Waterside South
Lincoln LN5 7FD, United Kingdom

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

Oil & Gas Division
Order No. E50001-W430-A106-X-4A00
Printed in Germany
Dispo 34806, c4bs 7447, P WS 12092.5

Printed on elementary chlorine-free bleached paper.

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