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

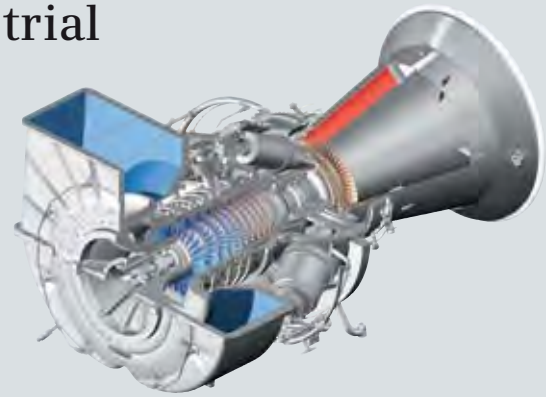
- Offshore: on oil platforms and FPSO (Floating Production, Storage and Offloading) vessels
- Onshore: for oil field service, refinery application, emergency and standby power generation
- Highly efficient cogeneration solutions for oil and gas applications

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/Nm³ 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

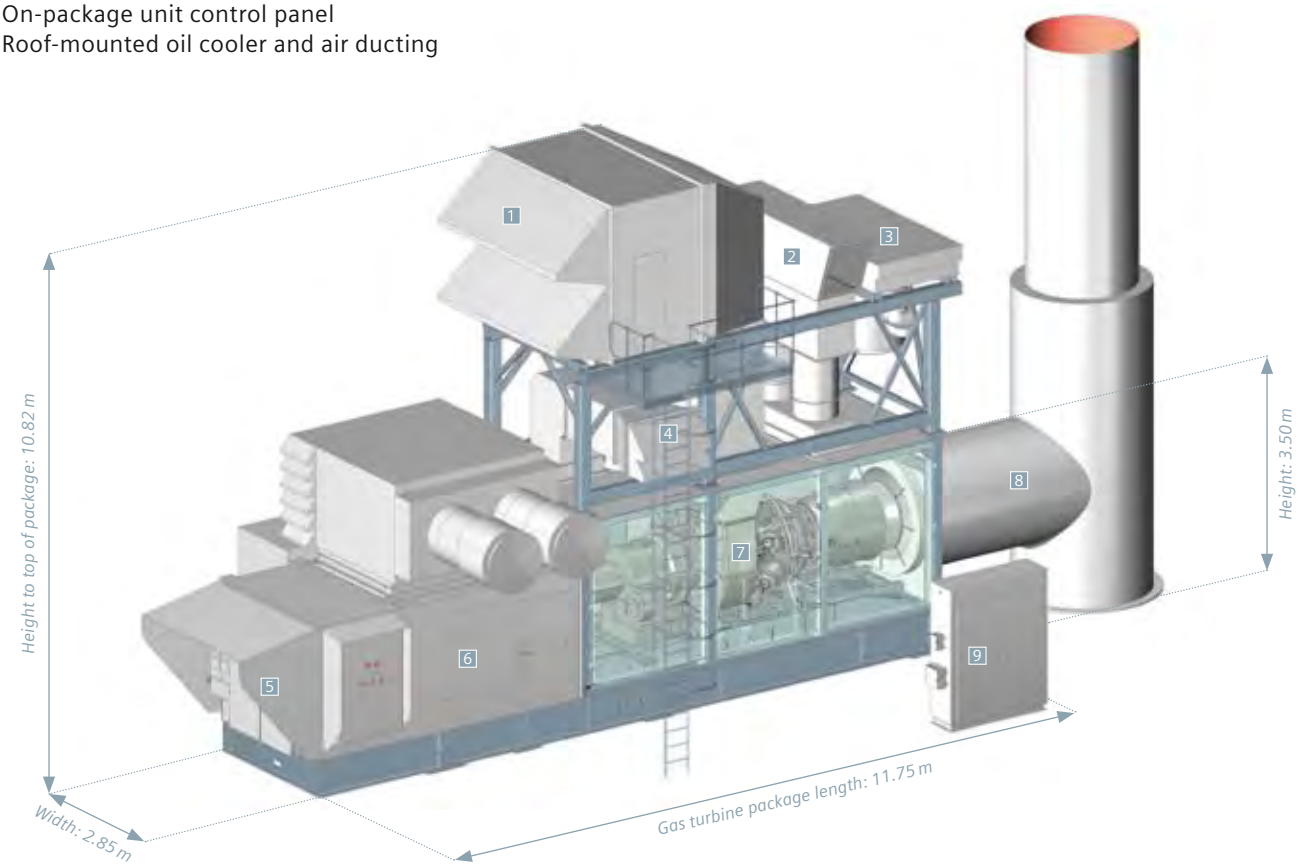
Key features

- 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:

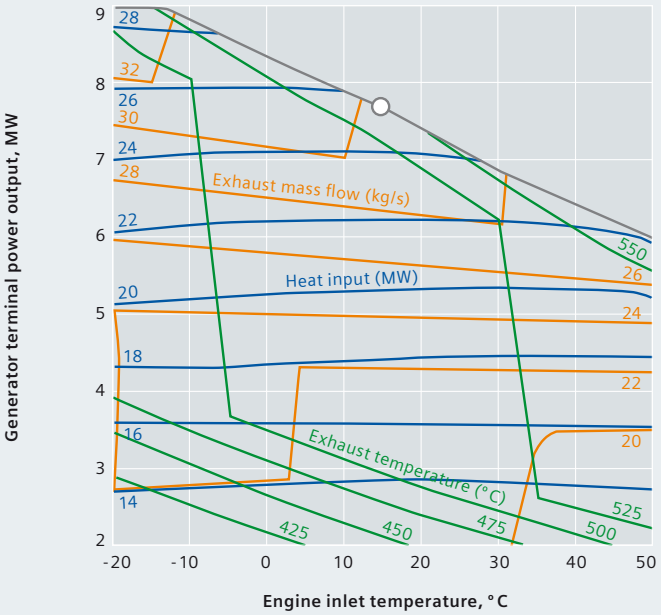
- Significant reductions in energy costs
- Security of energy supplies
- Reductions in total emissions of carbon dioxide, and improved flexibility



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

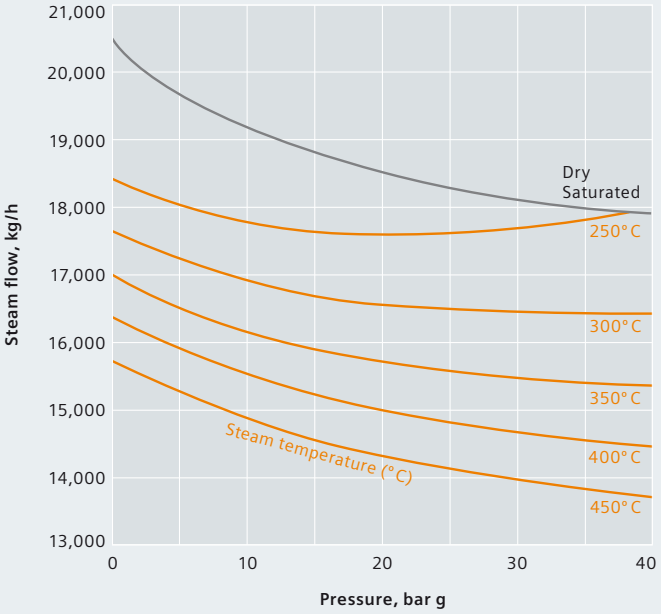


Nominal generator output and heat rate

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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