



SGT-400 Industrial Gas Turbine

Mechanical Drive: (ISO) 13.40 MW (18,000 bhp)

The ideal choice for a wide variety of mechanical drive applications, the SGT-400 combines very high efficiency (nominal 36.2%) with excellent emissions performance in a rugged industrial design.

The Siemens twin-shaft industrial gas turbine SGT-400 features a compact gas generator and a two-stage power turbine, incorporating the latest aerodynamic and combustion technologies. The turbine has a simple-cycle shaft efficiency of 36.2 %.

The mechanical drive package is very compact, providing a small footprint and a high power-to-weight ratio. The twinshaft configuration provides excellent speed and load turndown characteristics to allow maximum flexibility of operation.

With its reliable, proven gas turbine technology, the SGT-400 offers cost-effective power for mechanical drive applications.

Compressor applications

- Gas injection, gas processing and refrigeration projects utilizing Siemens bespoke centrifugal compressors (or other proprietary manufacturer's compressors)
- Gas boost and gas transmission projects utilizing Siemens standard pre-engineered centrifugal pipeline compressors

Pump applications

Utilizing proprietary manufacturer's driven unit pumps of Siemens or client choice, ideally suited to water injection and fluid transmission projects



Industrial Gas Turbines

Answers for energy.

SIEMENS

SGT-400 Industrial Gas Turbine

strial

Technical specifications

Overview

- Twin-shaft, industrial
- Mechanical drive: 13.40 MW
- Shaft efficiency: 36.2%
- Heat rate: 9,943 kJ/kWh (7,028 Btu/bhph)
- Full load power turbine speed: 8,000-10,000 rpm
- Compressor pressure ratio: 16.8:1
- Exhaust gas flow: 39.4 kg/s (86.8 lb/s)
- Exhaust temperature: 555°C (1,031°F)
- Typical emissions: NO_x: < 15 ppmV and CO: < 10 ppmV (corrected to 15% O₂ dry)
- Medium-calorific value fuels capability (>25 MJ/Nm³ Wobbe index)

Axial compressor

- 11-stage with variable inlet guide vanes
- Air flow: (ISO) 38.9 kg/s
- Nominal speed: 14,100 rpm

Combustion

- 6 reverse-flow cannular combustion chambers
- Dry Low Emissions (DLE) system
- High-energy ignitor system

Turbine

- 2-stage overhung compressor turbine - Both stages are air-cooled
- 2-stage high-efficiency power turbine
- Rotor blades have interlocking shrouds for mechanical integrity

Bearings

- Tilt-pad radial and thrust
- Vibration- and temperaturemonitoring as standard

Mechanical drive

- Direct drive of compressors
- Gearbox options are available for other mechanical drive applications

Package

- Fabricated steel underbase
 Integral oil tank
 - Multi-point mounting
 - Optional 3-point mounting
- Modular fluid systems incorporating:
 - Lubricating oil system
 - Auxiliary gearbox-driven main pump
 - AC motor-driven auxiliary pumpDC 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
 - BN1701: Standard
 - BN3500: Optional
- Fire and gas detection equipment
- Fire suppression equipment
- On- and off-line compressor cleaning options available
- Combustion air inlet filtration options: - Simple static
 - Pulse cleaning
 - HEPA
- Enclosure
 - Painted carbon steel or stainless steel
 - Noise level options (85dB(A) standard)



SGT-400 core engine test facility.

Gas turbine

Key features

- High simple-cycle and cogeneration efficiencies, cutting fuel costs
- Dual-fuel Dry Low Emissions (DLE) combustion system as standard, meeting stringent legislation
- Twin-shaft arrangement for both power generation and mechanical drive, allowing commonality of parts in mixed duty installations

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
 - Gas generator and power turbine removal on either side of package
- Multiple boroscope-inspection ports



SGT-400 compressor package assembly.

Two SGT-400 pipeline compressor sets for Sasol Technology (Pty) Ltd, installed at the Komatipoort compressor station in South Africa.

Package

Key features

- Short installation time
- Compact package size, high power-to-weight ratio

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- Factory testing:
 - Core engine

Height to top of package: 10.20 m

Width: 2.85m

- Functional testing of modules as standard
- Pre-commissioning of package
- Optional core customer-witness test
- Optional complete package test
- Minimized customer interfaces

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-400 – Compressor set

1 Combustion exhaust 2 Combustion air inlet 3 Enclosure air outlet

Gas turbine package length: 7.35 m

1

4 Enclosure air inlet5 Fire extinguishant6 On-package controls

7 Core engine accoustic enclosure8 Driven compressor

SGT-400 Performance



Nominal performance Power and specific heat input and speed



Power output at turbine coupling and engine inlet temperature

SGT-400 Mechanical drive performance

Conditions/assumptions:

Direct drive – no output gearbox.		Natural gas fuel.	
Altitude:	Sea level	Ambient pressure:	101.3 kPa
Inlet ducting loss:	1.0k Pa*	Relative humidity:	60%
Exhaust ducting loss:	0.75 kPa*		

Specific heat input is drawn for an engine inlet temperature of 15°C but is approximately correct for other temperatures. No CO turndown in operation.

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

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