SIEMENS

We power the world with innovative gas turbines

Siemens gas turbine portfolio

siemens.com/gasturbines

Gas turbines from 4 to 567 MW

The Siemens gas turbine range has been designed and tailored to help meet our customers' challenges in a dynamic market environment.
Our models range from 4 to 567 MW, fulfilling the requirements of a wide spectrum of applications in terms of efficiency, reliability, flexibility, and environmental compatibility. The products offer low lifecycle costs and an excellent return on investment.

Heavy-duty gas turbines	50 Hz	SGT5-9000HL	567 MW
		SGT5-8000HL	481 MW
		SGT5-8000H	450 MW
		SGT5-4000F	329 MW
		SGT5-2000E	187 MW
	60 Hz	SGT6-9000HL	388 MW
		SGT6-8000H	310 MW
		SGT6-5000F	250 MW
		SGT6-2000E	117 MW
Industrial and aero-derivative gas turbines	50 Hz or 60 Hz	SGT-A65[1)]	60 to 71 / 58 to 62 MW
		SGT-800	48 to 57 MW
		SGT-A45	41 to 44 MW
		SGT-750	40 / 34 to 41 MW
		SGT-700	33 / 34 MW
		SGT-A35[2)]	27 to 37 / 28 to 38 MW
		SGT-600	24 / 25 MW
		SGT-400	13 to 14 / 13 to 15 MW
		SGT-300	8 / 8 to 9 MW
		SGT-100	5 / 6 MW
		SGT-A05[3)]	4 to 6 MW

Power generation / Mechanical drive, performance at ISO conditions
1) Industrial Trent 60 2) Industrial RB211 3) Industrial 501-K

The Dresser-Rand business, part of Siemens Power and Gas, is committed to serving the oil and gas industry:
http://www.dresser-rand.com/products-solutions/gas-turbines/

Siemens gas turbines overview

Heavy-duty gas turbines

Industrial gas turbines

Aeroderivative gas turbines

SGT-A05 (Industrial 501-K)	[4 to 6 MW]
SGT-100	[5 / 6 MW]
SGT-300	[8 / 8 to 9 MW]
SGT-400	[13 to 15 MW]
SGT-600	[24 / 25 MW]

SGT-A35 (Industrial RB211)
SGT-700
SGT-750
SGT-A45
SGT-800
SGT-A65 (Industrial Trent 60)

50 Hz and 60 Hz

Gas turbines in the range of

0–25 MW

Gas turbines in the range of

25–100 MW

SGT6-2000E	[117 MW]	
SGT6-5000F	[250 MW]	
SGT6-8000H	[310 MW]	60 Hz
SGT6-9000HL	[388 MW]	
SGT5-2000E	[187 MW]	
SGT5-4000F	[329 MW]	50 Hz
SGT5-8000H	[450 MW]	
SGT5-8000HL	[481 MW]	
SGT5-9000HL	[567 MW]	

[27 to 37 / 28 to 38 MW]	
[33 / 34 MW]	
[40 / 34 to 41 MW]	
[41 to 44 MW]	
[48 to 57 MW]	
[60 to 71 / 58 to 62 MW]	

Gas turbines in the range of

100–570 MW

Power generation / Mechanical drive, performance at ISO conditions

All simple cycle and mechanical drive performance data in this document are gross values at ISO ambient conditions. All combined cycle performance data in this document are net values at ISO ambient conditions

Table of contents

Siemens gas turbines are suitable for a wide range of applications:

Power generation application for utilities, independent power producers, oil and gas, and industrial users, such as chemicals, pulp and paper, food and beverage, sugar, automotive, metalworking, mining, cement, wood processing, and textiles.

Mechanical drive applications for oil and gas, and chemical industry.

Heavy-duty gas turbines

Siemens heavy-duty gas turbines are robust and flexible engines, designed for large simple or combined cycle power plants. They are suitable for peak, intermediate, or base load duty, as well as for cogeneration applications.

Customers benefit from our extensive validation and testing capabilites.

Our engines are proven in commercial operation and provide outstanding efficiency.

SGT5-8000HL, SGT5-9000HL, SGT6-9000HL

Heavy-duty gas turbines

Siemens HL-class gas turbines are paving the way to the next level of efficiency and performance.

The evolutionary development step, derived from proven Siemens H-class technology, combines a series of new but already tested technologies like super-efficient internal cooling features for blades and vanes and an advanced combustion system to increase firing temperature.

The result: A technology carrier to the next level with a combined cycle efficiency beyond 63% and a clear midterm goal of 65%.

New Siemens HL-class consists of three engines: SGT5-8000HL, SGT5-9000HL and SGT6-9000HL.

References

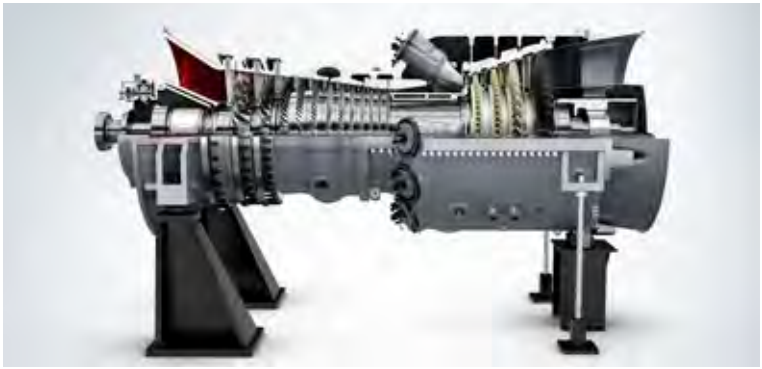
Lincoln County CT Addition, North Carolina, USA

Groundbreaking 2018

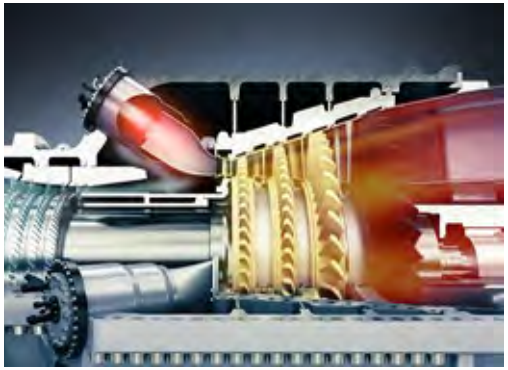
Turnkey plant, subject to innovative agreement between Siemens and Duke Energy to test and validate advanced gas turbine technologies over several years

Start of testing SGT6-9000HL: 2020

Tested technologies will lead to combined cycle efficiency >63% and a combined cycle power output of 577 MW



Today, the HL-class engines reach combined cycle efficiency of >63% with a clear roadmap to 65%



Best operational flexibility due to GT ramp-up rates of 85 MW/min and GT turn-down rates to 30%

Power output: 388 – 567 MW

- Derived from proven Siemens H-class technology
- Pushing efficiency and performance to the next level
- Competitive service model with 33,000 Equivalent Base Hours (EBH) / 1,250 Equivalent Starts (ES)

	Simple cycle power generation		
	SGT5-8000HL	**SGT5-9000HL**	**SGT6-9000HL**
Power output	481 MW	567 MW	388 MW
Fuel	Natural gas, LNG, distillate oil, other fuels on request		
Frequency	50 Hz	50 Hz	60 Hz
GT ramp-up	85 MW/min	85 MW/min	85 MW/min
Gross efficiency	42.6%	42.6%	42.3%
Heat rate	8,447 kJ/kWh (8,006 Btu/kWh)	8,461 kJ/kWh (8,019 Btu/kWh)	8,519 kJ/kWh (8,074 Btu/kWh)
Turbine speed	3,000 rpm	3,000 rpm	3,600 rpm
Pressure ratio	24 : 1	24 : 1	24 : 1
Exhaust mass flow	850 kg/s (1,874 lb/s)	1,000 kg/s (2,205 lb/s)	700 kg/s (1,543 lb/s)
Exhaust temperature	680 °C (1,256 °F)	680 °C (1,256 °F)	680 °C (1,256 °F)
Emissions	NO_x emissions: down to 2ppmvd with SCR; CO emissions: 10 ppm		

	Physical dimensions	
	SGT5-8000HL and SGT5-9000HL	
Approx. weight	497,000 kg (1,095,700 lb)	
Length	13.0 m (42.6 ft)	
Width	5.3 m (17.4 ft)	
Height	5.5 m (18.1 ft)	

	SGT6-9000HL
Approx. weight	305,000 kg (672,400 lb)
Length	10.8 m (35.4 ft)
Width	5.0 m (16.4 ft)
Height	4.3 m (14.1 ft)

	Combined cycle power generation					
	SCC5-8000HL CC 1x1/1S	**SCC5-8000HL CC 2x1**	**SCC5-9000HL CC 1x1/1S**	**SCC5-9000HL CC 2x1**	**SCC6-9000HL CC 1x1/1S**	**SCC6-9000HL CC 2x1**
Net plant output	708 MW	1,416 MW	841 MW	1,682 MW	577 MW	1,154 MW
Net plant efficiency	>63%	>63%	>63%	>63%	>63%	>63%
Plant turn down	40%	40%	40%	40%	40%	40%
Net heat rate	<5,714 kJ/kWh (<5,416 Btu/kWh)				<5,714 kJ/kWh (<5,416 Btu/kWh)	
No. of gas turbines	1	2	1	2	1	2
Pressure/reheat	Triple/yes	Triple/yes	Triple/yes	Triple/yes	Triple/yes	Triple/yes
Steam temperature	>600 °C (>1,112 °F)				>600 °C (>1,112 °F)	

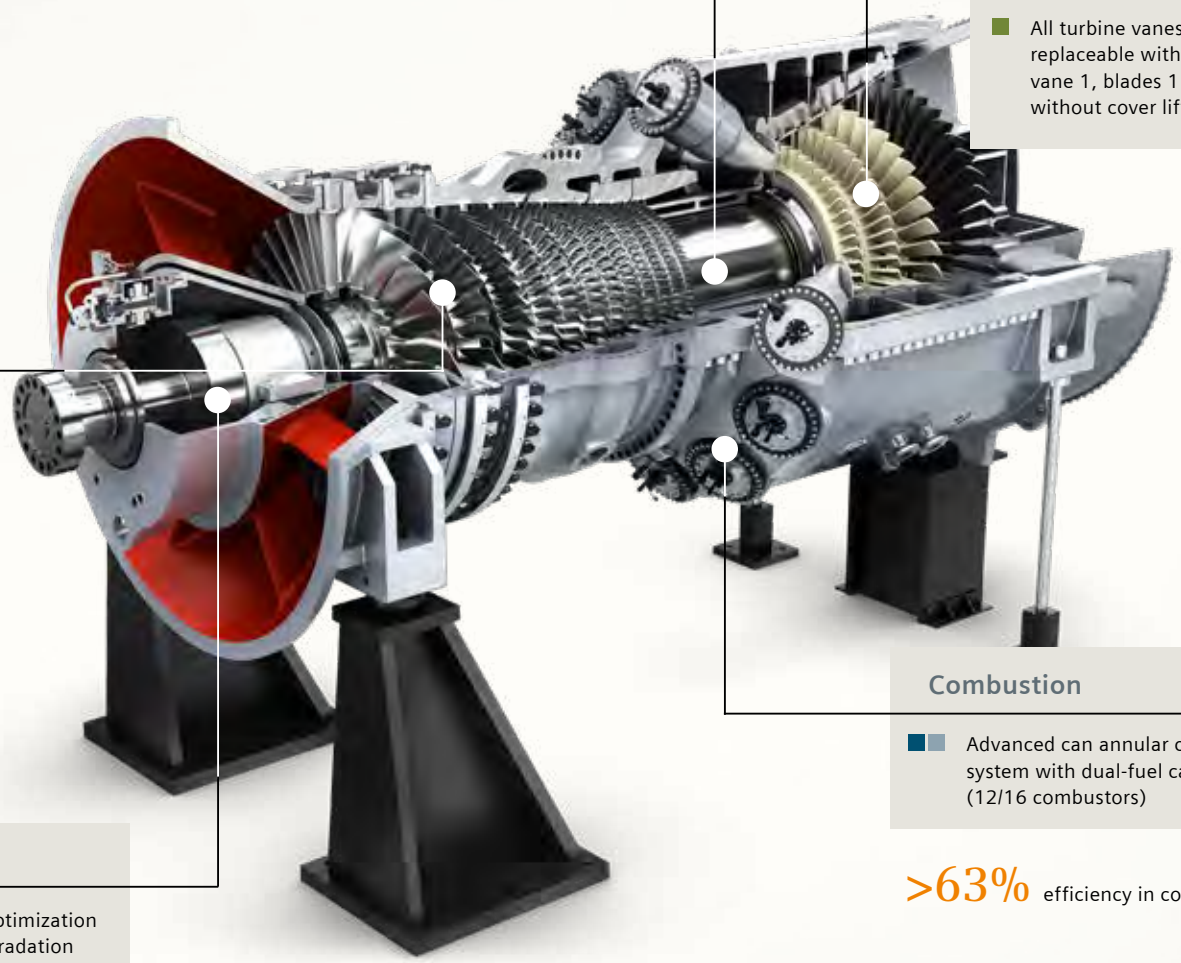
SGT5-8000HL, SGT5-9000HL, SGT6-9000HL: Key features

Single tie bolt rotor

- Proven rotor design with internal cooling air passages for fast (cold) start and hot restart capability
- Rotor air cooler allows use of proven steel disc design
- Easy rotor de-stacking on site due to disc assembly with Hirth serration and central tie rod

4-stage turbine

- High cycling capability due to fully internal air-cooled turbine section
- Super-efficient internal cooling features for blades and vanes
- 3D four-stage turbine with advanced materials and thermal barrier coating
- All turbine vanes and blades replaceable without rotor lift; vane 1, blades 1 & 4 replaceable without cover lift



12-stage compressor

- Variable inlet guide vanes and two stages of fast-acting variable-pitch guide vanes (VGV) for improved part load efficiency and high load transients
- Third generation harmonized compressor
- High efficiency due to evolutionary 3D blading
- All rotating compressor blades replaceable without rotor lift or rotor de-stacking

Combustion

- Advanced can annular combustion system with dual-fuel capabilities (12/16 combustors)

Bearings

- Hydraulic Clearance Optimization (HCO) for reduced degradation and clearance losses

>63% efficiency in combined cycle

Flexibility Performance Serviceability

SGT5-8000H

Heavy-duty gas turbine

The SGT5-8000H offers outstanding performance and high flexibility. With a gross power output of 450 MW, and a quick ramp-up from start to full load, the turbine offers low lifecycle costs and helps to meet fluctuating power demands.

The turbine is the core component of highly efficient gas-fired power plants, designed for 665 MW at 61% efficiency in combined cycle operation.

With more than 650,000 fired hours, the SGT-8000H series provides mature technology with verified reliability and availability.

References

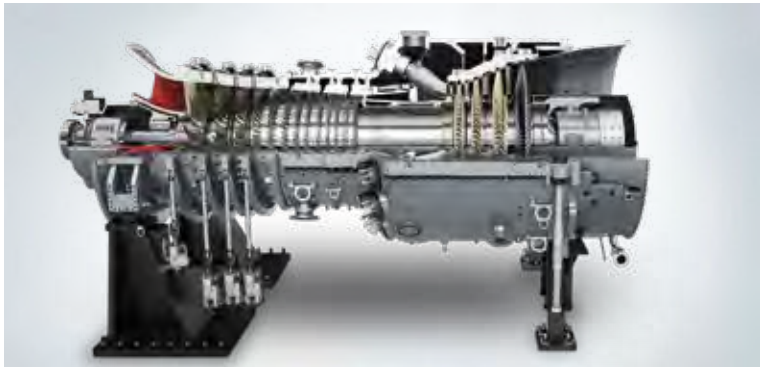
- **Lausward Fortuna, Düsseldorf, Germany**

  Turnkey combined cycle power plant
  Power output: 603.8 MW(e) and up to 300 MW(th)
  Efficiency: ~61.5%
  Customer: Stadtwerke Düsseldorf AG
  Scope: SCC5-8000H 1S with 1 × SGT5-8000H gas turbine

- **Cengiz Enerji Samsun, Turkey**

  Combined cycle power plant
  Power output: 583 MW
  Customer: Cengiz Enerji
  Scope: SCC5-8000H 1S power island with 1 x SGT5-8000H gas turbine

Lausward Fortuna, Düsseldorf, Germany



The SGT5-8000H achieves an efficiency of 61% in combined cycle operations

High operational flexibility due to world-class fast cold start and hot restart capability

Power output: 450 MW

- Outstanding performance
- High flexibility, short start-up times
- Proven in commercial operations

Simple cycle power generation	
Power output	450 MW
Fuel (examples)	Natural gas, LNG, sour gases, distillate oil, biodiesel, Arabian Super Light crude oil (ASL), kerosene, jet fuel, condensate; other fuels on request
Frequency	50 Hz
Gross efficiency	>41%
Heat rate	<8,780 kJ/kWh (<8,322 Btu/kWh)
Turbine speed	3,000 rpm
Pressure ratio	21.0 : 1
Exhaust mass flow	935 kg/s (2,061 lb/s)
Exhaust temperature	630 °C (1,166 °F)
NO_x emissions	≤ 25 ppmvd at 15% O_2 on fuel gas (without water injection for NO_x control), ≤ 42 ppmvd at 15% O_2 on fuel oil (with water injection for NO_x control)

Combined cycle power generation		
Siemens combined cycle power plant	**SCC5-8000H 1S / 1 × 1**	**SCC5-8000H 2 × 1**
Net plant power output	665 MW	1,335 MW
Net plant efficiency	61%	61%
Net heat rate	5,890 kJ/kWh (5,583 Btu/kWh)	5,880 kJ/kWh (5,573 Btu/kWh)
Number of gas turbines	1	2
Pressure/reheat	Triple/Yes	Triple/Yes

Physical dimensions	
Approx. weight	445,000 kg (981,000 lb)
Length	12.6 m (41 ft)
Width	5.5 m (18 ft)
Height	5.5 m (18 ft)

SGT6-8000H

Heavy-duty gas turbine

The SGT6-8000H offers outstanding performance and high flexibility. The air-cooled turbine with a gross power output of 310 MW is designed for simple and fast combined cycle integration and short start-up times.

The turbine is the core component of highly efficient gas-fired power plants, designed for 460 MW at 61% efficiency in combined cycle operation.

With more than 650,000 fired hours, the SGT-8000H series provides mature technology with verified reliability and availability.

References

Riviera Beach, Florida, USA

Supply of gas turbine packages
Power output: 3 × 274 MW
Customer: Florida Power & Light
Scope: 3 × SGT6-8000H gas turbine packages

Andong, South Korea

Power block for combined cycle power plant
Power output: 416 MW
Customer: Korea Southern Power Co. Ltd.
Scope: SCC6-8000H 1S with 1 × SGT6-8000H gas turbine

Dangjin 3, South Korea

The blade design provides high efficiency and is designed to ensure high reliability with low outage risk

Valves allow for controlled cooling air supply, to cover the needs of different operating conditions

The SGT6-8000H can be easily integrated in single-shaft or multi-shaft combined cycle plants

Power output: 310 MW

- Outstanding performance
- High flexibility, short start-up times
- Proven in commercial operations

Simple cycle power generation	
Power output	310 MW
Fuel (examples)	Natural gas, LNG, sour gases, distillate oil, biodiesel, Arabian Super Light crude oil (ASL), kerosene, jet fuel, condensate; other fuels on request
Frequency	60 Hz
Gross efficiency	>40%
Heat rate	<9,000 kJ/kWh (<8,530 Btu/kWh)
Turbine speed	3,600 rpm
Pressure ratio	21.0 : 1
Exhaust mass flow	650 kg/s (1,433 lb/s)
Exhaust temperature	645 °C (1,193 °F)
NO_x emissions	≤ 25 ppmvd at 15% O_2 on fuel gas (without water injection for NO_x control), ≤ 42 ppmvd at 15% O_2 on fuel oil (with water injection for NO_x control)

Physical dimensions	
Approx. weight	289,000 kg (637,000 lb)
Length	10.5 m (34 ft)
Width	4.3 m (14 ft)
Height	4.3 m (14 ft)

Combined cycle power generation			
Siemens combined cycle power plant	**SCC6-8000H 1S / 1 × 1**	**SCC6-8000H 2 × 1**	**SCC6-8000H 3 × 1**
Net plant power output	460 MW	930 MW	1,390 MW
Net plant efficiency	61%	61%	61%
Net heat rate	5,920 kJ/kWh (5,611 Btu/kWh)	5,910 kJ/kWh (5,602 Btu/kWh)	5,910 kJ/kWh (5,602 Btu/kWh)
Number of gas turbines	1	2	3
Pressure/ reheat	Triple/Yes	Triple/Yes	Triple/Yes

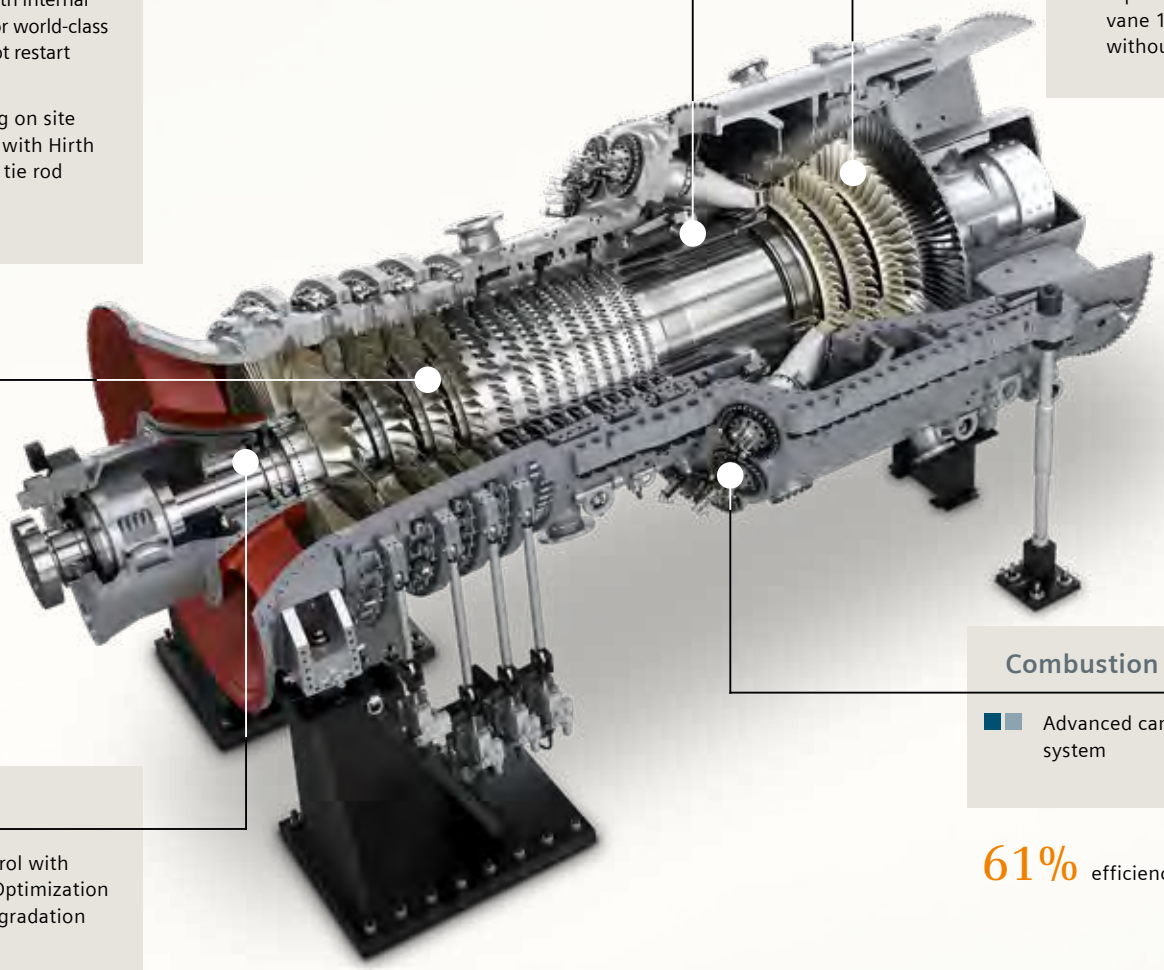
SGT-8000H series: Key features

Turbine

- High cycling capability due to fully internally air-cooled turbine section
- 3D four-stage turbine with advanced materials and thermal barrier coating
- Shorter outages:
  All turbine vanes and blades replaceable without rotor lift; vane 1, blade 1 & 4 replaceable without cover lift

Rotor

- Proven rotor design with internal cooling air passages for world-class fast (cold) start and hot restart capability
- Easy rotor de-stacking on site due to disc assembly with Hirth serration and central tie rod



Compressor

- Variable inlet guide vanes and three stages of fast acting variable-pitch guide vanes (VGV) for improved part load efficiency and high load transients
- High efficiency due to evolutionary 3D blading
- All rotating compressor blades replaceable without rotor lift or rotor de-stacking

Combustion

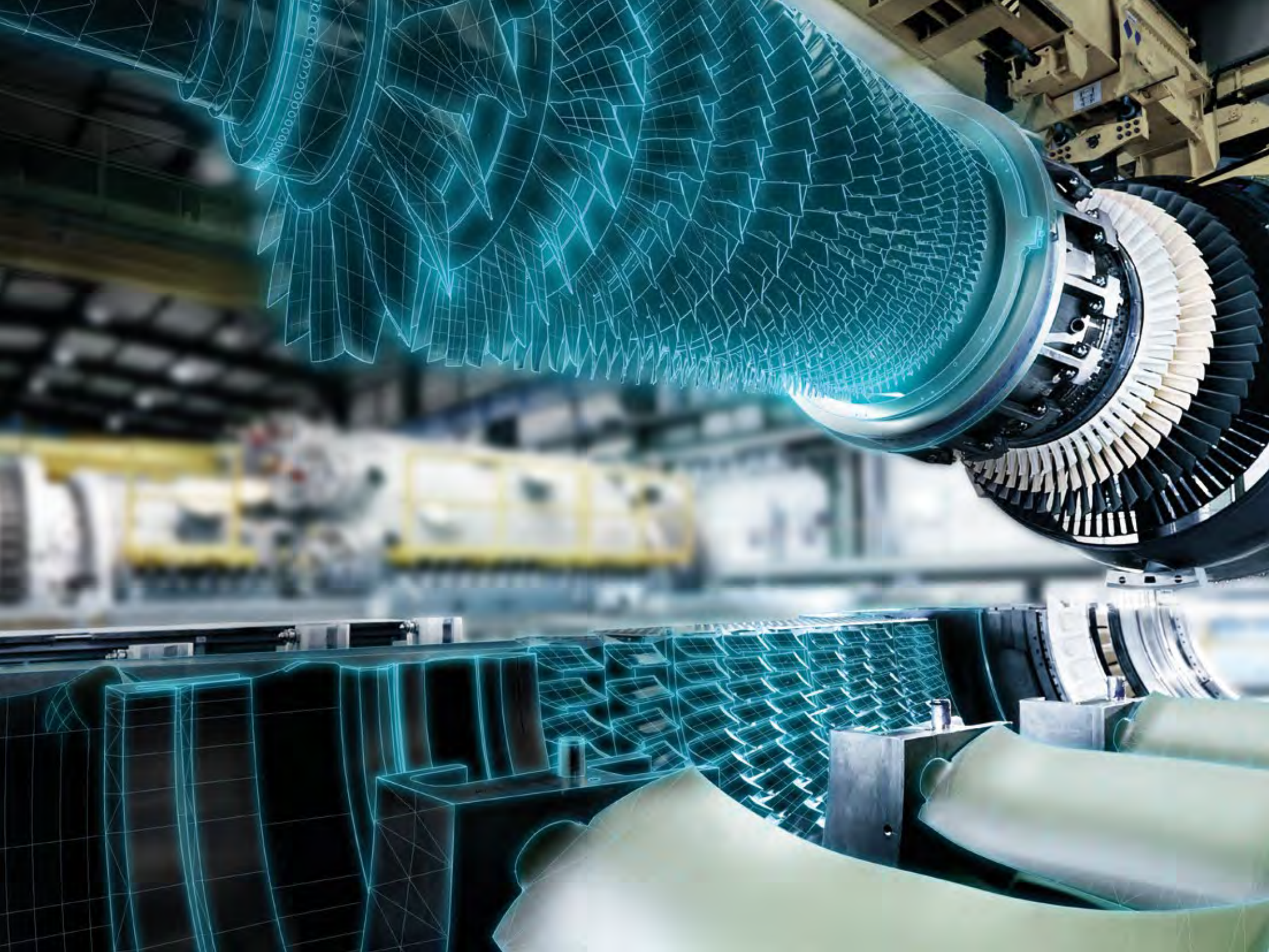
- Advanced can annular combustion system

Bearings

- Active clearance control with Hydraulic Clearance Optimization (HCO) for reduced degradation and clearance losses

61% efficiency in combined cycle

Flexibility Performance Serviceability



SGT5-4000F

Heavy-duty gas turbine

The proven SGT5-4000F gas turbine has a robust design with internal cooling air passages for trusted long-term operation and fast start-up capability. The advanced annular combustion chamber with individually replaceable heat shields allows for easy and fast walk-in maintenance. Hydraulic Clearance Optimization (HCO) reduces clearance losses to increase the gas turbine efficiency and minimize degradation at start-up and shut down.

Today, around 350 turbines have been sold. The installed fleet has accumulated an impressive fleet experience of over 15 million equivalent operating hours, and a fleet reliability of more than 99%.

References

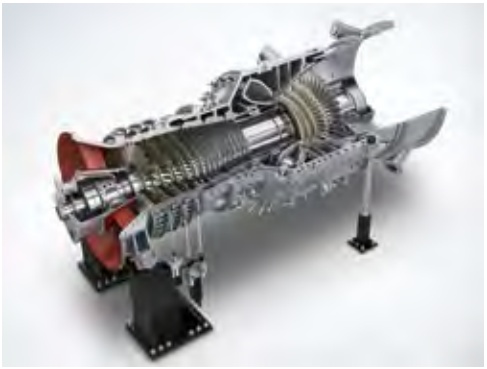
Kirishi, Russia

Supply of gas turbine packages
Power output: 800 MW
Customer: OGK-2 JSC, a subsidiary of Gazprom Energo Holding OOO/LLC
Scope: Repowering project with 2 × SGT5-4000F gas turbine packages

Shuweihat S2, Abu Dhabi

Turnkey combined cycle power plant
Power output: 1,500 MW
Customer: Suez Energy Middle East
Scope: 2 × SCC5-4000F 2 × 1 with 4 × SGT5-4000F gas turbine packages

Al Taweelah, United Arab Emirates



The SGT5-4000F is a well-proven 50 Hz gas turbine with an outstanding reliability and availability

Easy plant integration: Proven package concepts for early power generation in simple cycle operation; fast project execution

For combined cycle applications, the SGT5-4000F is offered in single-shaft or multi-shaft (2×1) arrangements

Power output: 329 MW

- Proven design, large fleet experience
- Easy maintenance, high availability
- High operational flexibility

Simple cycle power generation	
Power output	329 MW
Fuel (examples)	Natural gas, LNG, sour gases, distillate oil, bio-diesel, kerosene, jet fuel, condensate, naphta. Other fuels on request
Frequency	50 Hz
Gross efficiency	41.0%
Heat rate	8,780 kJ/kWh (8,322 Btu/kWh)
Turbine speed	3,000 rpm
Pressure ratio	20.1 : 1
Exhaust mass flow	724 kg/s (1,596 lb/s)
Exhaust temperature	599 °C (1,110 °F)
NO_x emissions	≤ 15 ppmvd at 15% O_2 on fuel gas (without water injection for NO_x control), ≤ 25 ppmvd at 15% O_2 on fuel oil (with water injection for NO_x control), ≤ 58 ppmvd at 15% O_2 on fuel oil (without water injection for NO_x control)

Combined cycle power generation		
Siemens combined cycle power plant	**SCC5-4000F 1S**	**SCC5-4000F 2×1**
Net plant power output	475 MW	950 MW
Net plant efficiency	59.7%	59.7%
Net heat rate	6,030 kJ/kWh (5,716 Btu/kWh)	6,030 kJ/kWh (5,716 Btu/kWh)
Number of gas turbines	1	2
Pressure/reheat	Triple/Yes	Triple/Yes

Physical dimensions	
Approx. weight	318,000 kg (701,000 lb)
Length	10.8 m (35 ft)
Width	5.2 m (17 ft)
Height	4.8 m (16 ft)

SGT5-4000F: Key features

Rotor

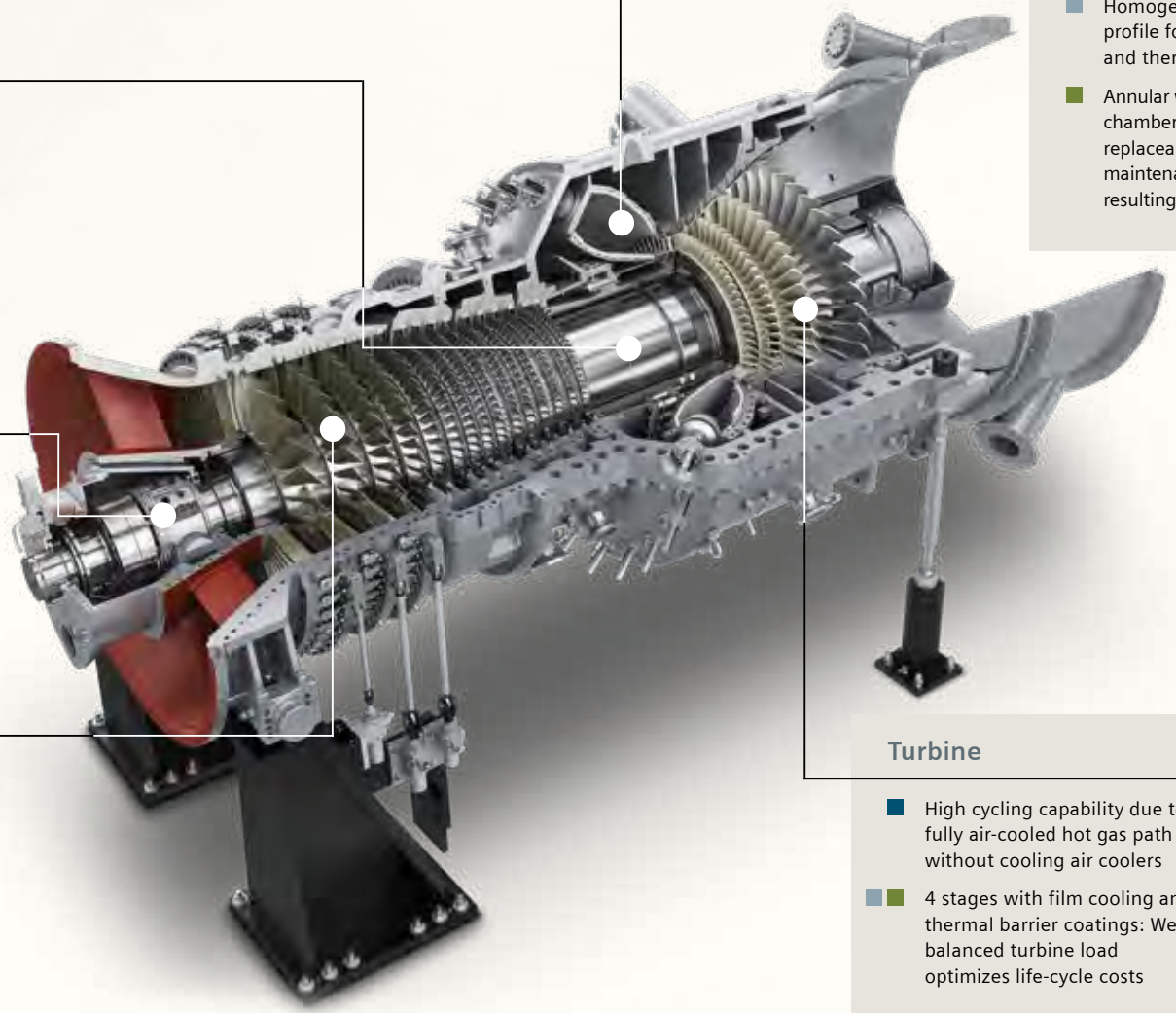
- Robust design with internal cooling air passages for trusted long term operation and fast start-up capability
- Easy rotor de-stacking on site due to disc assembly with Hirth serration and central tie rod

Bearings

- Hydraulic Clearance Optimization (HCO) improves performance and minimizes degradation by active control of clearances at start-up and shut down

Compressor

- Proven 15-stage compressor: Fast cycling capability through fast acting inlet guide vane
- Two additional stages of fast-acting variable-pitch guide vanes (VGV) for improved part load efficiency and high load transients
- All rotating compressor blades replaceable without rotor lift or rotor de-stacking



Combustion

- Dry-Low-NO_x hybrid burners, for low emission operation with gaseous and liquid fuels
- Homogeneous combustor outlet profile for minimized mechanical and thermal turbine stress
- Annular walk-in combustion chamber with individually replaceable heat shields for easy maintenance and short outages, resulting in highest availability

Turbine

- High cycling capability due to fully air-cooled hot gas path without cooling air coolers
- 4 stages with film cooling and thermal barrier coatings: Well-balanced turbine load optimizes life-cycle costs

Flexibility Performance Serviceability


15t

SGT6-5000F

Heavy-duty gas turbine

The SGT6-5000F gas turbine offers economical power generation with fast start-up for peak, intermediate, or base load duty. It achieves peak values for reliability and continuous operation with highest performance values in its class.

Today, more than 380 turbines have been sold. The installed fleet has accumulated more than 14 million equivalent operating hours, with a fleet reliability of over 99%.

References

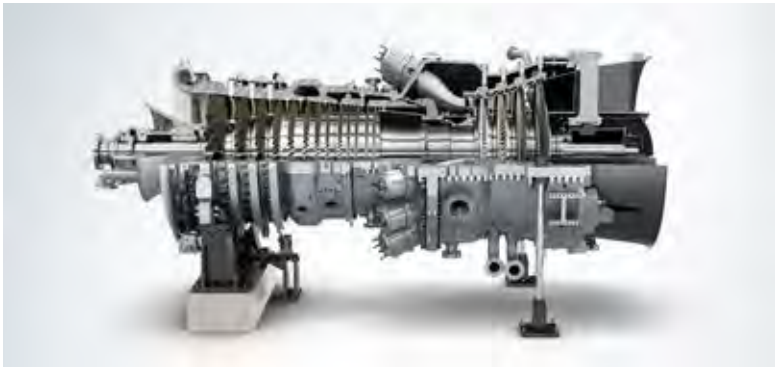
Ras Al-Khair, Saudi Arabia

Supply of gas turbine packages
Power output: 2,400 MW
Customer: Consortium comprising Al Arrab Contracting Company, Saudi Arabia and the Chinese Sepcoll Electric Power Construction Corporation
Scope: 12 × SGT6-5000F gas turbine packages

Marsh Landing, USA

Power block for open cycle power plant
Power output: 720 MW
Customer: NRG Energy
Scope: 4 × SGT6-5000F gas turbine packages, SPPA-T3000 control system

La Caridad, Sonora, Mexico



The SGT6-5000F offers world-class reliability and best-in-class emission values

The SGT6-5000F is the first choice for reliable simple or combined cycle operation in the 60 Hz market

Power output: 250 MW

- Highest power output for 60 Hz F-class
- Fast start-up and load changing capabilities
- Low emissions with NOx emissions of ≤9 ppmvd on gas and ≤ 25 ppmvd on oil

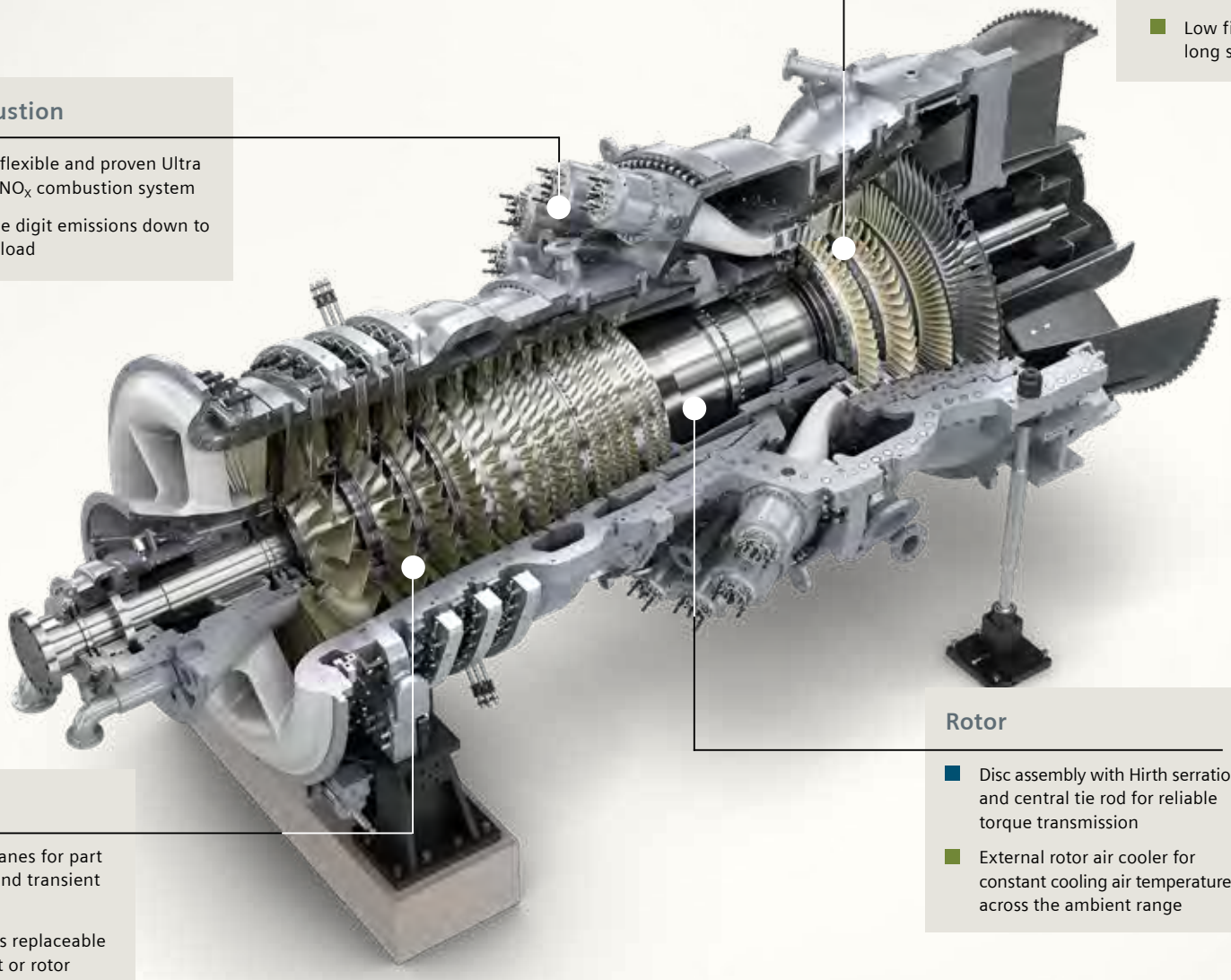
Simple cycle power generation	
Power output	250 MW
Fuel (examples)	Natural gas, LNG, sour gases, LPG, distillate oil, biodiesel, Arabian Super Light crude oil (ASL), Arabian Extra Light crude oil (AXL), kerosene, jet fuel, condensate; other fuels on request
Frequency	60 Hz
Gross efficiency	39.3%
Heat rate	9,160 kJ/kWh (8,682 Btu/kWh)
Turbine speed	3,600 rpm
Pressure ratio	18.9 : 1
Exhaust mass flow	588 kg/s (1,296 lb/s)
Exhaust temperature	598°C (1,108°F)
NO_X emissions	≤ 9 ppmvd at 15% O_2 on fuel gas (without water injection for NO_X control), ≤ 25 ppmvd at 15% O_2 on fuel oil (with water injection for NO_X control) Gas turbine turn down in emissions compliance to 30% load. Fast start-up capable of generating 200 MW in 10 minutes from turning gear speed. Gas turbine ramp rate up to 40 MW/min.

Combined cycle power generation		
Siemens combined cycle power plant	**SCC6-5000F 1 × 1**	**SCC6-5000F 2 × 1**
Net plant power output	375 MW	750 MW
Net plant efficiency	59.3%	59.3%
Net heat rate	6,071 kJ/kWh (5,754 Btu/kWh)	6,071 kJ/kWh (5,754 Btu/kWh)
Number of gas turbines	1	2
Pressure/reheat	Triple/Yes	Triple/Yes

Physical dimensions	
Approx. weight	219,000 kg (483,000 lb)
Length	10.1 m (33 ft)
Width	4.0 m (13 ft)
Height	4.6 m (15 ft)

Combined cycle plant turn down in emissions compliance to 20% load.

SGT6-5000F: Key features



Turbine

- 4-stage turbine with proven conventionally cast turbine alloys
- Low firing temperature for long service intervals

Combustion

- Fuel flexible and proven Ultra Low NO_x combustion system
- Single digit emissions down to 30% load

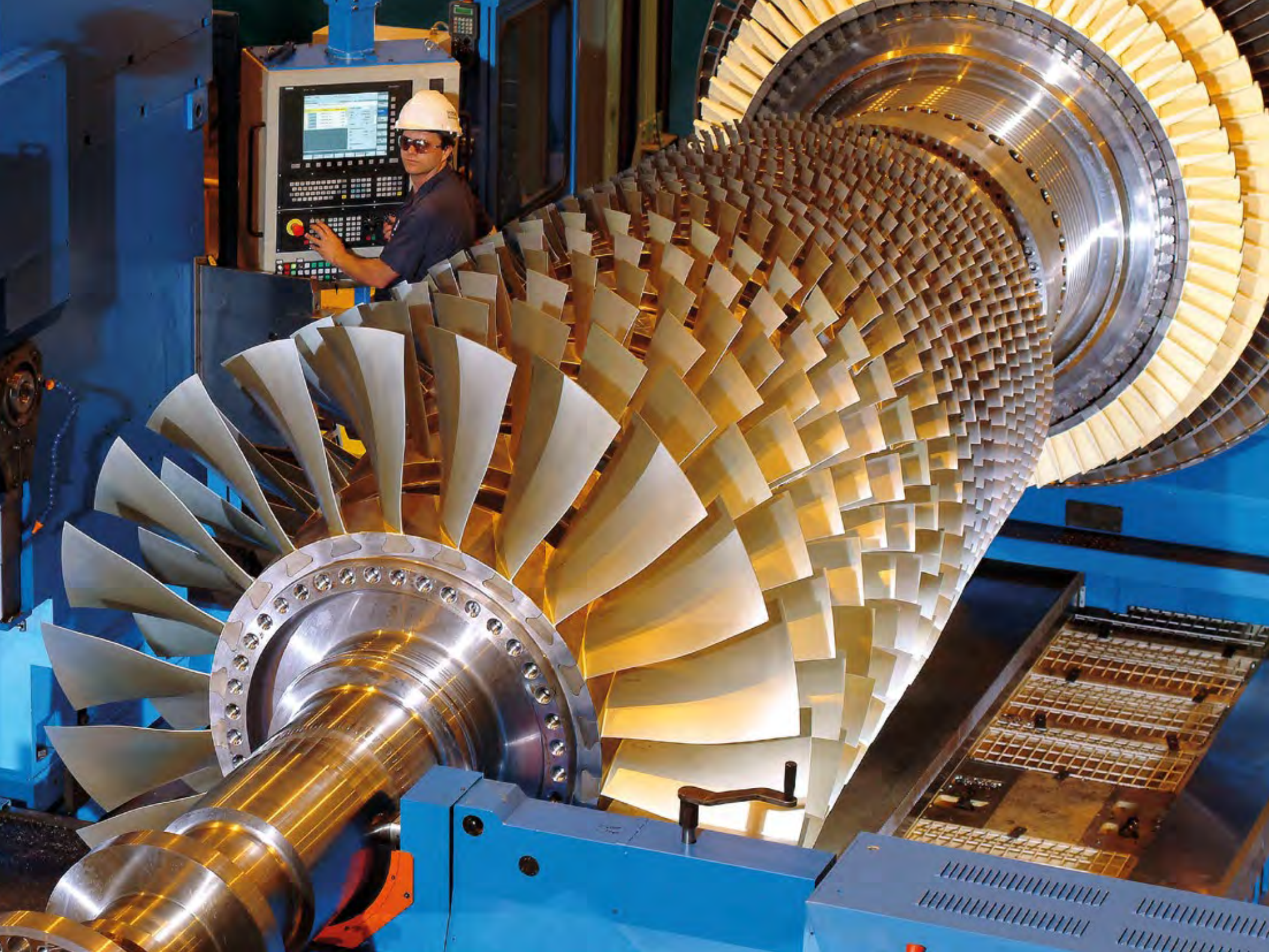
Compressor

- Variable guide vanes for part load efficiency and transient operation
- Blades and vanes replaceable without rotor lift or rotor de-stacking

Rotor

- Disc assembly with Hirth serration and central tie rod for reliable torque transmission
- External rotor air cooler for constant cooling air temperature across the ambient range

Flexibility Performance Serviceability



SGT5-2000E

Heavy-duty gas turbine

The SGT5-2000E gas turbine is a proven, robust engine for the 50 Hz market which is used in simple cycle or combined cycle processes with or without combined heat and power. It is suitable for all load ranges, including peak load.

The SGT5-2000E offers outstanding fuel flexibility. It can be fired with low calorific gases or gases containing CO_2, H_2S and N_2, as well as with crude oil and other liquid fuels with high viscosity. It provides low NO_X emissions, even in the part load range.

Today, around 300 turbines have been sold, and additionally more than 270 turbines under license. Our installed fleet has accumulated over 21 million equivalent operating hours. The SGT-2000E series fleet´s overall best-in-class reliability exceeds 99.5%.

References

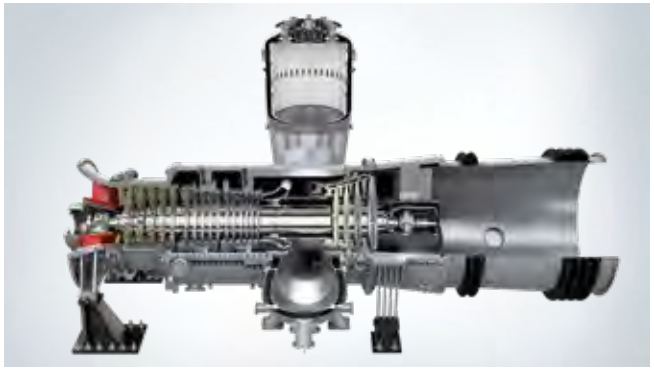
Braemar 2, Australia

Power block for open cycle power plant
Power output: 450 MW
Customer: ERM Power
Scope: 3 × SGT5-2000E gas turbine packages

Geregu 2, Nigeria

Turnkey open cycle power plant
Power output: 434 MW
Customer: Niger Delta Power Holding Company
Scope: 3 × SGT5-2000E gas turbine packages

Az-Zour, Kuwait



Best-in-class reliable technology; robust and flexible performance

Service-friendly design and customer-focused maintenance intervals help to keep life-cycle costs down

Power output: 187 MW

- Best-in-class reliability
- High operational and fuel flexibility
- Easy maintenance

Simple cycle power generation	
Power output	187 MW
Fuel (examples)	Natural gas, LNG, sour gases, distillate oil, biodiesel, crude oil, heavy fuel oil (HFO), kerosene, jet fuel, condensate; other fuels on request
Frequency	50 Hz
Gross efficiency	36.5%
Heat rate	9,863 kJ/kWh (9,349 Btu/kWh)
Turbine speed	3,000 rpm
Pressure ratio	12.8 : 1
Exhaust mass flow	558 kg/s (1,230 lb/s)
Exhaust temperature	536 °C (997 °F)
NO_x emissions	≤ 25 ppmvd at 15% O_2 on fuel gas (without water injection for NO_x control), ≤ 42 ppmvd at 15% O_2 on fuel oil (with water injection for NO_x control)

Combined cycle power generation		
Siemens combined cycle power plant	**SCC5-2000E 1 × 1**	**SCC5-2000E 2 × 1**
Net plant power output	275 MW	551 MW
Net plant efficiency	53.3%	53.3%
Net heat rate	6,755 kJ/kWh (6,403 Btu/kWh)	6,755 kJ/kWh (6,403 Btu/kWh)
Number of gas turbines	1	2
Pressure/reheat	Dual/No	Dual/No

Physical dimensions	
Approx. weight	189,000 kg (417,000 lb)
Length	10.3 m (34 ft)
Width	4.0 m (13 ft)
Height	4.0 m (13 ft)

Note: Dimensions exclude combustion chambers.

SGT6-2000E

Heavy-duty gas turbine

The SGT6-2000E gas turbine is a proven, robust engine for the 60 Hz market which is used in simple cycle or combined cycle processes with or without combined heat and power supply. It is suitable for all load ranges, including peak load. The SGT6-2000E offers outstanding fuel flexibility.

It can be fired with low calorific gases or gases containing CO_2, H_2S and N_2, as well as with crude oil and other liquid fuels with high viscosity. It provides low NO_X emissions, even in the part load range.

Today, more than 100 turbines have been sold, resulting in a fleet experience of over 8.8 million equivalent operating hours. The SGT-2000E series fleet´s overall best-in-class reliability constantly exceeds 99.5%.

References

Hsinta, Taiwan

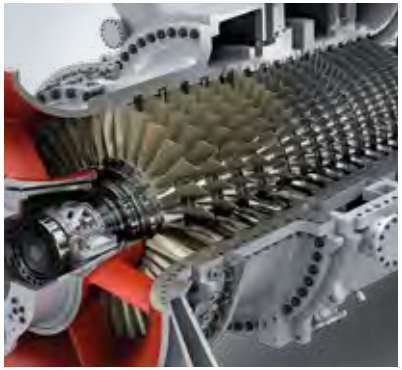
Combined cycle power plant
Power output: 2,200 MW
Customer: Taiwan Power Company
Scope: 5 × SCC6-2000E 3 × 1 with 15 × SGT6-2000E gas turbine packages

Shoaiba, Saudi Arabia

Most powerful and efficient crude oil plant in the world
Power output: 1,200 MW
Customer: Saudi Electricity Company
Scope: 2 × SCC6-2000E 5 × 1 with 10 × SGT6-2000E gas turbine packages

Charles D. Lamb Energy Center, Oklahoma, USA

Two accessible silo combustion chambers for easy maintenance; ceramic tiles can be replaced individually



Variable inlet guide vanes (IGV); all compressor blades and vanes replaceable without rotor de-stack or lift

Excellent start-up and part load behavior, at up to 27 MW/min ramp rate

Power output: 117 MW

- Best-in-class reliability
- High operational and fuel flexibility
- Easy maintenance

Simple cycle power generation	
Power output	117 MW
Fuel (examples)	Natural gas, LNG, sour gases, distillate oil, biodiesel, crude oil, heavy fuel oil (HFO), kerosene, jet fuel, condensate; other fuels on request
Frequency	60 Hz
Gross efficiency	35.4%
Heat rate	10,169 kJ/kWh (9,639 Btu/kWh)
Turbine speed	3,600 rpm
Pressure ratio	12.0 : 1
Exhaust mass flow	368 kg/s (811 lb/s)
Exhaust temperature	532 °C (990 °F)
NO_x emissions	≤ 25 ppmvd at 15% O_2 on fuel gas (without water injection for NO_x control), ≤ 42 ppmvd at 15% O_2 on fuel oil (with water injection for NO_x control)

Combined cycle power generation		
Siemens combined cycle power plant	**SCC6-2000E 1 × 1**	**SCC6-2000E 2 × 1**
Net plant power output	174 MW	347 MW
Net plant efficiency	52.2%	52.2%
Net heat rate	6,893 kJ/kWh (6,533 Btu/kWh)	6,901 kJ/kWh (6,541 Btu/kWh)
Number of gas turbines	1	2
Pressure/reheat	Dual/No	Dual/No

Physical dimensions	
Approx. weight	108,000 kg (238,000 lb)
Length	9.1 m (30 ft)
Width	3.3 m (11 ft)
Height	3.3 m (11 ft)

Note: Dimensions exclude combustion chambers.

SGT-2000E series: Key features

Compressor

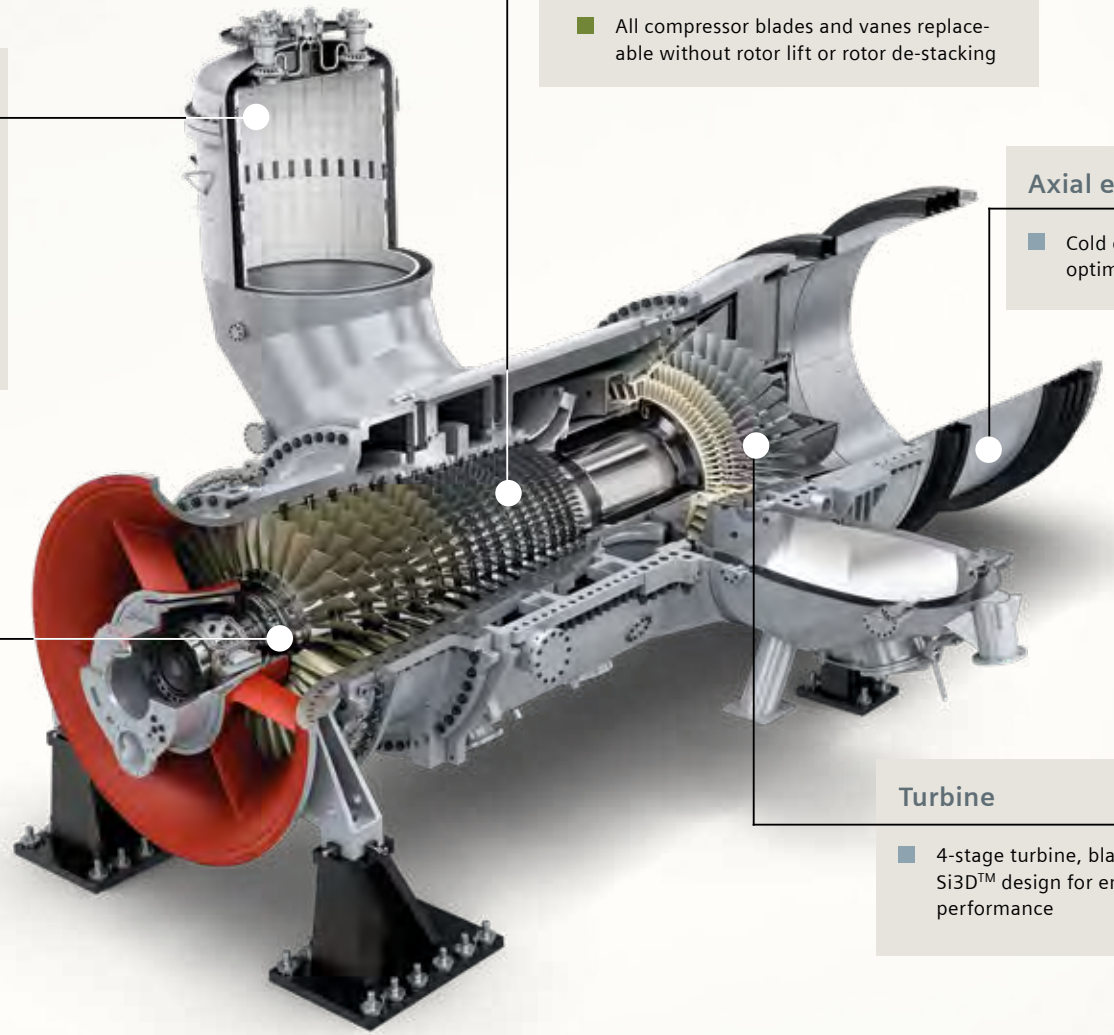
- Emission-compliant operation down to 45% at constant exhaust temperature
- Fast-acting variable inlet guide vanes for grid frequency stabilization
- All compressor blades and vanes replaceable without rotor lift or rotor de-stacking

Combustion

- Outstanding fuel flexibility, ranging from heavy fuel oil to low calorific gases
- Two easily accessible silo combustion chambers for fast maintenance
- Lined with ceramic tiles which can be replaced individually

Axial exhaust

- Cold end generator drive for optimal flow pattern



Rotor and bearings

- Hydraulic Clearance Optimization (HCO): Transient protection of clearances for fast starts with reduced degradation and clearance losses (only available for 50 Hz version)
- Built disc-type rotor with radial Hirth serrations and central tie rod: Light-weight, highly rigid design with excellent start-up performance and high cycling capability
- Rotor de-stacking capability on site for easy maintenance

Turbine

- 4-stage turbine, blades and vanes with Si3D™ design for enhanced performance

Flexibility Performance Serviceability


SIEMENS
SGT-800
GAS TURBINE

Industrial gas turbines

The industrial gas turbine models with their compact and rugged design make them an ideal choice for both industrial power generation and mechanical drive applications.

Their high steam-raising capabilities help achieve overall plant efficiency of 80 percent or higher.

They are proven with more than 2,360 units sold at small utilities, independent power producers, and in the oil and gas industry.

SGT-800

Industrial gas turbine

The SGT-800 industrial gas turbine offers broad flexibility in fuels, operating conditions, maintenance concepts, package solutions, and ratings.

The excellent efficiency and steam-raising capability make it outstanding in cogeneration and combined cycle installations. The SGT-800-based power plant, designed for flexible operation, is perfectly suited as grid support.

The SGT-800 combines a simple, robust design, for high reliability and easy maintenance, with high efficiency and low emissions. With a proven, long-term record of successful installations around the world, the SGT-800 is an excellent choice for industrial or oil and gas applications.

More than 340 units have been sold with over 6 million equivalent operating hours.

References

Amata, Thailand

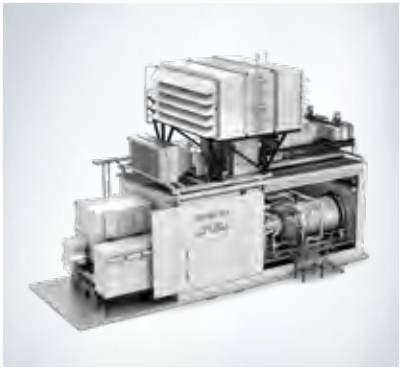
Combined cycle cogeneration power plants
Customer: Amata B.Grimm Power Limited (ABP)
Scope: 18 × SGT-800 gas turbines and 9 × SST-400 steam turbines

Hassi R'Mel, Algeria

Combined cycle power plant
Customer: Abengoa
Scope: 2 × SGT-800 gas turbines and 1 × SST-900 steam turbine

SGT-800 packages at the Amata B.Grimm Power Plant, Amata Nakorn, Chonburi, Thailand

SGT-800 core engine is available with different ratings and standard options for hot and cold climates



Classic package – easily transported and installed at site, easy on-site maintenance

Single lift package – short installation and commissioning time; U.S. adapted option available

Power generation: 47.5 – 57.0 MW(e)

- Proven reliability
- Flexible solutions
- Excellent performance

	Simple cycle power generation			
	47.5 MW version	**50.5 MW version**	**54.0 MW version**	**57.0 MW version**
Power output	47.5 MW(e)	50.5 MW(e)	54.0 MW(e)	57.0 MW(e)
Fuel	Natural gas, other gases within specification, liquid fuel (Diesel No.2) and dual fuel (gas and liquid).			
Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Gross efficiency	37.7%	38.3%	39.1%	40.1%
Heat rate	9,547 kJ/kWh	9,389 kJ/kWh	9,206 kJ/kWh	8,970 kJ/kWh
Turbine speed	6,608 rpm	6,608 rpm	6,608 rpm	6,608 rpm
Pressure ratio	20.1 : 1	21.0 : 1	21.4 : 1	21.8 : 1
Exhaust mass flow	132.8 kg/s	134.2 kg/s	135.5 kg/s	136.6 kg/s
Exhaust temperature	541 °C (1,007 °F)	553 °C (1,027 °F)	563 °C (1,045 °F)	565 °C (1,049 °F)
NO_X emissions*	≤ 15 ppmvd	≤ 15 ppmvd	≤ 15 – 17 ppmvd	≤ 20 ppmvd
	SCC-800 1 × 1 combined cycle power plant			
Net plant output	66.6 MW(e)	71.4 MW(e)	75.9 MW(e)	80.7 MW(e)
Net plant efficiency	53.8%	55.1%	56.0%	58.0%
Net plant heat rate	6,693 kJ/kWh	6,530 kJ/kWh	6,427 kJ/kWh	6,207 kJ/kWh
Bottoming cycle type	2PNRH	2PNRH	2PNRH	3PNRH
	SCC-800 2 × 1 combined cycle power plant			
Net plant output	135.4 MW(e)	143.6 MW(e)	153.7 MW(e)	163.1 MW(e)
Net plant efficiency	54.7%	55.4%	56.7%	58.6%
Net plant heat rate	6,583 kJ/kWh	6,494 kJ/kWh	6,349 kJ/kWh	6,143 kJ/kWh
Bottoming cycle type	2PNRH	2PNRH	2PNRH	3PNRH

	Physical dimensions	
	Classic package	**Single lift package**
Approx. weight	285,000 kg (628,300 lb)	305,000 kg (672,400 lb)
Length	20.8 m (68 ft)	22.0 m (72 ft)
Width	7.3 m (24 ft)	4.7 m (16 ft)
Height	6.6 m (22 ft)	5.3 m (17 ft)

The combined cycle plant SCC-800 is available based on one or multiple SGT-800 gas turbines. Combined cycle performance is based on two pressure, non-reheat (2PNRH) or three pressure, non-reheat (3PNRH) bottoming cycle.

Dimensions depending on configuration. Dimensions exclude inlet filter housing and exhaust stack. For power generation, AC generator is included.

*NO_X emissions at 15% O_2 on fuel gas (with DLE)

SGT-750

Industrial gas turbine

With maximized uptime, top-class performance, and a low environmental footprint offering the customer high lifetime profitability, the SGT-750 industrial gas turbine is a perfect choice for the oil and gas industry as well as industrial power generation.

The modular and flexible engine enables onshore or offshore applications, mechanical drive or heat and power.
It combines a robust, reliable design with high efficiency and low emissions. The SGT-750 offers broad flexibility with different rating options due to excellent part load capability. When running on lower load the maintenance intervals will be extended, low emissions can be guaranteed while the efficiency still is kept over 40%.

The SGT-750 has a track record of successful performance after years in operation and verified results in various applications. Units are sold for use in both power generation and compressor applications such as pipelines and liquefied natural gas (LNG).

References

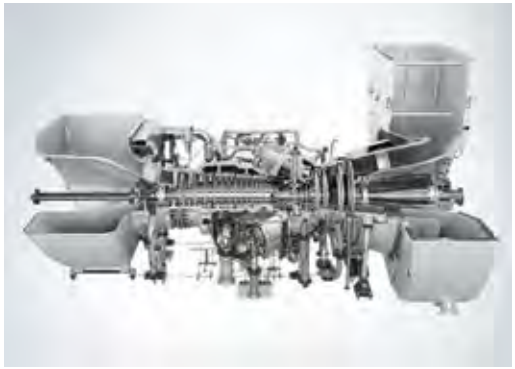
Kaltex Altamira, Mexico

Combined heat and power plant
Customer: Energia MK KF, S.A. de C.V.
Scope: 1 × SGT-750 gas turbine

Greifswald Wingas, Germany

Combined heat and power plant
Customer: Industriekraftwerk Greifswald GmbH, Lubmin
Scope: 1 × SGT-750 gas turbine, automation & control for landfall station

SGT-750 combined heat and power plant in Altamira, Mexico



SGT-750 core engine with a free high-speed power turbine

Power generation package – also available as single lift

O&G mechanical drive package for on- or offshore applications – also as single lift

Power generation: 39.8 MW(e)
Mechanical drive: 34.0 / 41.0 MW(e)

- Maximized uptime
- High efficiency
- Low emissions

	Simple cycle power generation	Mechanical drive applications	
		41 MW version	**34 MW version**
Power output	39.8 MW(e)	41.0 MW	34.0 MW
Fuel	Natural gas, dual fuel, liquid fuel; options available for other gases within specification		
Frequency	50/60 Hz		
Gross efficiency	40.3%	41.6%	40.4%
Heat rate	8,922 kJ/kWh	8,661 kJ/kWh	8,912 kJ/kWh
Turbine speed	6,100 rpm	3,050 – 6,100 – 6,405 rpm[1)]	
Pressure ratio	24.3 : 1	24.3 : 1	21.9 : 1
Exhaust mass flow	115.4 kg/s	115.4 kg/s	107.5 kg/s
Exhaust temperature	468 °C (875 °F)	452 °C (845°F)	439 °C (821°F)
NO_X emissions[2)]	<9 ppmvd	<15 ppmvd	<9 ppmvd
Maintenance interval (TBO)		34 kOH / 68 kOH	45 kOH / 90 kOH

	Combined cycle power generation	
Siemens combined cycle power plant	**SCC-750 1 × 1**	**SCC-750 2 × 1**
Net power output	51.55 MW(e)	103.74 MW(e)
Net plant efficiency	53.25%	53.58%
Net heat rate	6,760 kJ/kWh	6,718 kJ/kWh
Number of gas turbines	1	2

	Physical dimensions	
	Power generation package	**Mechanical drive package**
Approx. weight	175,000 kg (385,809 lb)	76,000 kg (167,551 lb)
Length	20.3 m (66.6 ft)	12.8 m (40.4 ft)
Width	4.8 m (15.8 ft)	4.3 m (14.1 ft)
Height	4.1 m (13.5 ft)	4.1 m (13.5 ft)

Note: All combined cycle is based on 2 pressure, no reheat. Dimensions exclude inlet filter housing and exhaust stack. For power generation, AC generator is included. For mechanical drive, driven equipment is excluded.

1) Value shown indicates 100%-design speed of drive shaft

2) NO_X emissions at 15% O_2 on fuel gas (with DLE)

SGT-700

Industrial gas turbine

Thanks to its wide fuel range capability and design features, the SGT-700 is a perfect choice for several onshore applications: Industrial power generation, oil and gas power generation, and mechanical drive applications. It performs well in combined cycle plants and combined heat and power plants.

The SGT-700 gas turbine is an evolution of the proven SGT-600 and is specifically designed for higher power output. It offers easy on-site or off-site maintenance and operates with a wide range of gaseous and liquid fuels on Dry Low Emission (DLE).

More than 85 units have been sold with over 2 million operating hours. The fleet-leading gas turbine has 100,000 operating hours.

References

Tianjin Bohai, China

Onshore simple cycle propane dehydrogenation (PDH) plant
Customer: Tianjin Bohai Chemical Industry Group
Scope: 2 × SGT-700 gas turbines and 2 × axial flow compressors

Pinghu/Satellite Energy 450 KTA, China

Onshore simple cycle propane dehydrogenation (PDH) plant
Customer: Zhejiang Satellite Energy Co., Ltd
Scope: 1 × SGT-700 gas turbine coupled with 1 × 25 MW compressor

Three SGT-700 packages for mechanical drive

Maintainable, reliable, and robust twin-shaft design for mechanical drive and power generation

For both power generation and mechanical drive package, the driver is the same

Power generation: 32.8 MW(e)
Mechanical drive: 33.7 MW

- Robust, reliable design
- High fuel flexibility
- Low emissions

	Simple cycle power generation	Mechanical drive applications
Power output	32.8 MW(e)	33.7 MW
Fuel	Natural gas, liquid fuel, dual fuel	Natural gas, liquid fuel, dual fuel
Frequency	50/60 Hz	
Gross efficiency	37.2%	38.2%
Heat rate	9,675 kJ/kWh	9,424 kJ/kWh
Turbine speed	6,500 rpm	3,250 – 6,500 – 6,825 rpm*
Pressure ratio	18.7 : 1	18.7 : 1
Exhaust mass flow	95.0 kg/s	95.0 kg/s
Exhaust temperature	533 °C (991 °F)	533 °C (991 °F)
NO_X emissions	≤ 15 ppmvd at 15% O_2 on fuel gas (with DLE)	≤ 15 ppmvd at 15% O_2 on fuel gas (with DLE)

	Combined cycle power generation	
Siemens combined cycle power plant	**SCC-700 1 × 1**	**SCC-700 2 × 1**
Net power output	45.2 MW	91.6 MW
Net plant efficiency	52.3%	53.1%
Net heat rate	6,876 kJ/kWh	6,778 kJ/kWh
Number of gas turbines	1	2

	Physical dimensions	
	Power generation package	**Mechanical drive package**
Approx. weight	169,193 kg (373,000 lb)	63,050 kg (139,000 lb)
Length	18.8 m (61.68 ft)	11.7 m (38.38 ft)
Width	4.6 m (15.09 ft)	4.0 m (13.12 ft)
Height	4.0 m (13.12 ft)	4.0 m (13.12 ft)

Note: All combined cycle is based on 2 pressure, no reheat. Dimensions exclude inlet filter housing and exhaust stack. For power generation, AC generator is included. For mechanical drive, driven equipment is excluded.

* Value shown indicates 100%-design speed of drive shaft

SGT-600

Industrial gas turbine

High reliability and availability in combination with good fuel flexibility and third-generation DLE makes the SGT-600 a perfect choice for several onshore applications: Industrial power generation, oil and gas power generation, and mechanical drive applications. Within the IPG applications, the turbine performs well in combined heat and power plants and combined cycle plants.

The industrial gas turbine combines a robust, reliable design with high fuel flexibility and low emissions.

More than 340 units have been sold with over 10 million operating hours. The fleet-leading gas turbine has 190,000 operating hours.

References

Bahia Blanca, Argentina

Combined heat and power
Customer: Profertil S.A.
Scope: 1 × SGT-600 gas turbine, STC-GV (80-6) compressor, generator, NEM heat recovery steam generator

Tiszaújváros, Hungary

Combined cycle power plant
Customer: TVK Ltd
Scope: 1 × SGT-600 gas turbine and 1 × SST-700 steam turbine

SGT-600 installation for both mechanical drive and power generation

Maintainable, reliable, and robust twin-shaft design for mechanical drive and power generation

For both power generation and mechanical drive package, the driver is the same

Power generation: 24.5 MW(e)
Mechanical drive: 25.2 MW

- Robust, reliable design
- High fuel flexibility
- Low emissions

	Simple cycle power generation	Mechanical drive applications
Power output	24.5 MW(e)	25.2 MW
Fuel	Natural gas, liquid fuel, dual fuel	Natural gas, liquid fuel, dual fuel
Frequency	50/60 Hz	
Gross efficiency	33.6%	34.6%
Heat rate	10,720 kJ/kWh	10,390 kJ/kWh
Turbine speed	7,700 rpm	3,850 – 7,700 – 8,085 rpm*
Pressure ratio	14.0 : 1	14.0 : 1
Exhaust mass flow	81.3 kg/s	81.3 kg/s
Exhaust temperature	543 °C (1,009 °F)	543 °C (1,009 °F)
NO_X emissions	≤ 15 ppmvd at 15% O_2 on fuel gas (with DLE)	≤ 15 ppmvd at 15% O_2 on fuel gas (with DLE)

	Combined cycle power generation	
Siemens combined cycle power plant	**SCC-600 1 × 1**	**SCC-600 2 × 1**
Net power output	35.9 MW(e)	73.3 MW(e)
Net plant efficiency	49.9%	50.9%
Net heat rate	7,220 kJ/kWh	7,071 kJ/kWh
Number of gas turbines	1	2

	Physical dimensions	
	Power generation package	**Mechanical drive package**
Approx. weight	149,688 kg (330,000 lb)	58,968 kg (130,000 lb)
Length	18.8 m (61.68 ft)	11.7 m (38.38 ft)
Width	4.6 m (15.09 ft)	4.0 m (13.12 ft)
Height	4.0 m (13.12 ft)	4.0 m (13.12 ft)

Note: All combined cycle is based on 2 pressure, no reheat. Dimensions exclude inlet filter housing and exhaust stack. For power generation, AC generator is included. For mechanical drive, driven equipment is excluded.

* Value shown indicates 100%-design speed of drive shaft

SGT-400

Industrial gas turbine

The SGT-400 is a twin-shaft gas turbine available in different configurations and power ratings to support power generation and mechanical drive applications from 10 – 15 MW. The twin-shaft arrangement allows for commonality of parts in mixed-duty installations.

The gas turbine offers the highest efficiency in its power class, incorporating the latest aerodynamic and combustion technologies.

With about 20 years of operating experience, the SGT-400 is proven in both offshore and onshore applications. Over 380 units have been sold with more than 4 million hours operating experience. The fleet leader has accumulated about 120,000 operating hours.

References

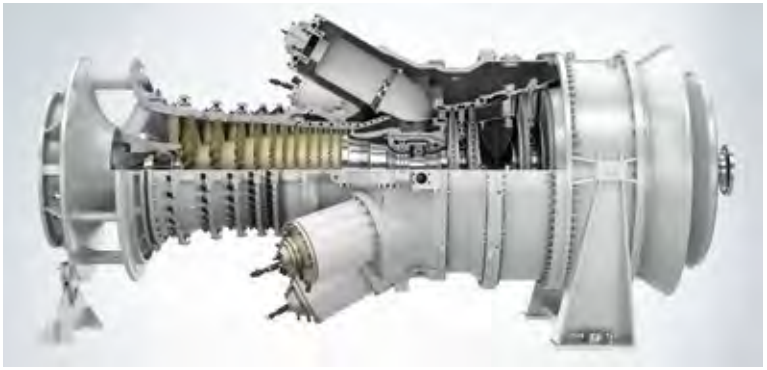
- **Municipal utilities, Erlangen, Germany**

  Combined cycle cogeneration
  Customer: Erlanger Stadtwerke
  Scope: 1 × SGT-400 gas turbine and 1 × SST-300 steam turbine

- **Fenice Scarlino, Italy (2013)**

  Combined heat and power plant
  Customer: EDF Fenice / Huntsman Tioxide Plant
  Scope: 1 × SGT-400 gas turbine

The SGT-400 is available as a factory-assembled package



Twin-shaft design for both power generation and mechanical drive applications

Compact power generation package design

Power generation: 12.9 / 14.3 MW(e)
Mechanical drive: 13.4 / 14.9 MW

- Latest aerodynamic and combustion technology
- Suitable for all climates, onshore and offshore
- High power-to-weight ratio

	Simple cycle power generation		Mechanical drive applications	
	13 MW version	**15 MW version**	**13 MW version**	**15 MW version**
Power output	12.9 MW(e)	14.3 MW(e)	13.4 MW	14.9 MW
Fuel	Natural gas, liquid fuel, dual fuel; other fuels on request; automatic changeover from primary to secondary fuel at any load			
Frequency	50/60 Hz	50/60 Hz		
Gross efficiency	34.8%	35.4%	36.2%	36.8%
Heat rate	10,355 kJ/kWh	10,178 kJ/kWh	9,943 kJ/kWh	9,774 kJ/kWh
Turbine speed	9,500 rpm	9,500 rpm	4,750 – 9,500 – 9,975 rpm*	4,750 – 9,500 – 9,975 rpm*
Pressure ratio	16.8 : 1	18.9 : 1	16.8 : 1	18.9 : 1
Exhaust mass flow	39.4 kg/s	44.0 kg/s	39.4 kg/s	44.0 kg/s
Exhaust temperature	555 °C (1,031 °F)	540 °C (1,004 °F)	555 °C (1,031 °F)	540 °C (1,004 °F)
NO_X emissions	≤ 15 ppmvd at 15% O_2 on fuel gas (with DLE)		≤ 15 ppmvd at 15% O_2 on fuel gas (with DLE)	

	Physical dimensions	
	Power generation package	**Mechanical drive package**
Approx. weight	83,824 kg (184,800 lb)	40,142 kg (88,500 lb)
Length	14.0 m (46 ft)	7.3 m (24 ft)
Width	3.1 m (10 ft)	3.1 m (10 ft)
Height	4.3 m (14 ft)	4.3 m (14 ft)

Note: Dimensions exclude inlet filter housing and exhaust stack.
For power generation, AC generator is included. For mechanical drive, driven equipment is excluded.

*Value shown indicates 100%-design speed of drive shaft

SGT-300

Industrial gas turbine

The SGT-300 industrial gas turbine has a rugged industrial design that enables high efficiency, reliability, and excellent emissions performance in a broad spectrum of applications for both power generation and mechanical drive.

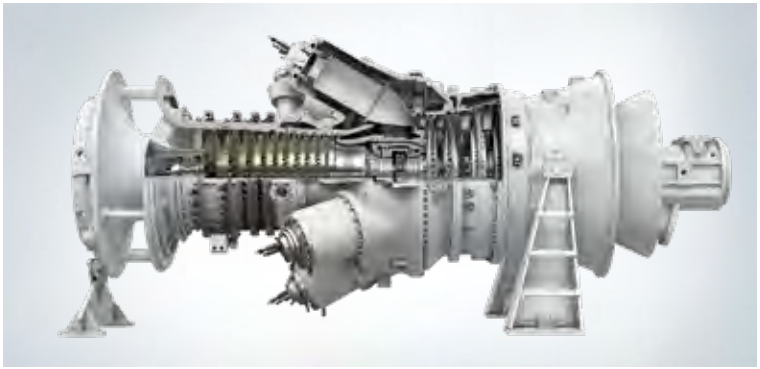
The gas turbine is a proven unit for all electrical power generation and cogeneration applications.

It operates on a wide range of gaseous and liquid fuels. The compact arrangement, on-site or off-site maintainability, and inherent reliability of the SGT-300 make it an ideal gas turbine for the demanding oil and gas industry.

References

Over 150 units have been sold, with more than 5.6 million equivalent operating hours.

The SGT-300 twin-shaft version is used for mechanical drive



Twin-shaft design – evolutionary design focused on reliability

SGT-300 gas turbine package design

Power generation: 7.9 MW(e)
Mechanical drive: 8.4 / 9.2 MW

- Low maintenance requirements
- Low emissions
- Single-shaft version for power generation, twin-shaft version for mechancial drive applications

	Simple cycle power generation	Mechanical drive applications	
		8 MW version	**9 MW version**
Power output	7.9 MW(e)	8.4 MW	9.2 MW
Fuel	Natural gas, liquid fuel, dual fuel; other fuels on request; automatic changeover from primary to secondary fuel at any load		
Frequency	50/60 Hz		
Gross efficiency	30.6%	35.1%	35.6%
Heat rate	11,773 kJ/kWh	10,265 kJ/kWh	10,104 kJ/kWh
Turbine speed	14,010 rpm	5,750 – 11,500 – 12,075 rpm*	5,750 – 11,500 – 12,075 rpm*
Pressure ratio	13.7 : 1	13.8 : 1	14.5 : 1
Exhaust mass flow	30.2 kg/s	29.7 kg/s	30.5 kg/s
Exhaust temperature	542 °C (1,008 °F)	491 °C (916 °F)	512 °C (954 °F)
NO_X emissions	≤ 15 ppmvd at 15% O_2 on fuel gas (with DLE)	≤ 15 ppmvd at 15% O_2 on fuel gas (with DLE)	

	Physical dimensions	
	Power generation package	**Mechanical drive package**
Approx. weight	58,349 kg (130,844 lb)	30,409 kg (67,042 lb)
Length	11.7 m (38.5 ft)	6.9 m (22.6 ft)
Width	2.9 m (9.4 ft)	2.9 m (9.4 ft)
Height	3.5 m (11.5 ft)	3.5 m (11.5 ft)

Note: Dimensions exclude inlet filter housing and exhaust stack.
For power generation, AC generator is included. For mechanical drive, driven equipment is excluded.

*Value shown indicates 100%-design speed of drive shaft

SGT-100

Industrial gas turbine

The SGT-100 industrial gas turbine is a proven unit for all electrical power generation and mechanical drive applications. The compact arrangement, on-site or off-site maintainability, and inherent reliability make it an ideal gas turbine for the demanding oil and gas industry.

The gas turbine has a rugged industrial design that enables high efficiency and excellent emissions performance on a wide range of gaseous and liquid fuels.

More than 420 units have been sold with over 25 million operating hours. The lead package has more than 180,000 equivalent hours of operation.

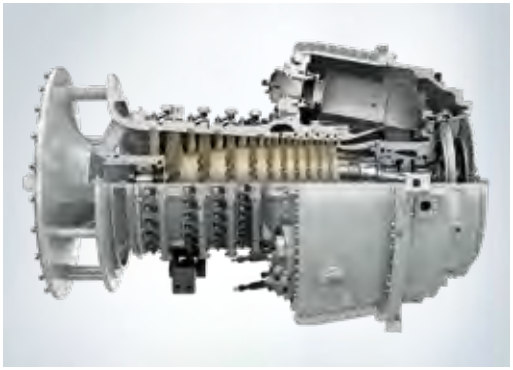
References

Girvan, Scotland, UK

Combined heat and power
Customer: William Grant & Sons distillery
Scope: 1 × SGT-100 gas turbine cogeneration package

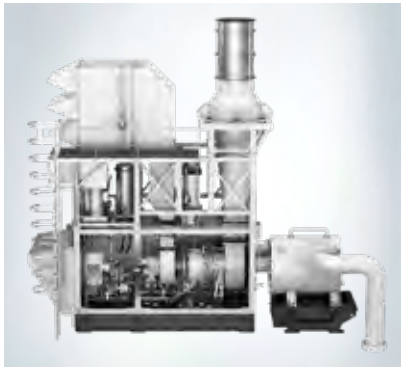
Able to provide its production process with steam and electricity, and also to supply electricity for the region

The SGT-100 combines advanced technology with robust construction



Robust, reliable, maintainable single-shaft version for power generation applications

Common modular package design for power generation



Common modular package design for mechanical drive applications

Power generation: 5.05 / 5.4 MW(e)
Mechanical drive: 5.7 MW

- Robust and reliable product
- Wide range of gaseous and liquid fuels
- Single-shaft version for power generation or twin-shaft version for mechanical drive applications

	Simple cycle power generation		Mechanical drive applications
	5.1 MW version	**5.4 MW version**	
Power output	5.05 MW(e)	5.4 MW(e)	5.7 MW
Fuel	Natural gas, liquid fuel, dual fuel; other fuels on request; automatic changeover from primary to secondary fuel at any load		
Frequency	50/60 Hz	50/60 Hz	
Gross efficiency	30.2%	31.0%	32.9%
Heat rate	11,914 kJ/kWh	11,613 kJ/kWh	10,948 kJ/kWh
Turbine speed	17,384 rpm	17,384 rpm	6,500 –13,000 – 13,650 rpm*
Pressure ratio	14.0 : 1	15.6 : 1	14.9 : 1
Exhaust mass flow	19.5 kg/s	20.6 kg/s	19.7 kg/s
Exhaust temperature	545 °C (1,013 °F)	531 °C (988 °F)	543 °C (1,009 °F)
NO_X emissions	≤ 15 ppmvd at 15% O_2 on fuel gas (with DLE)		≤ 25 ppmvd at 15% O_2 on fuel gas (with DLE)

	Physical dimensions	
	Power generation package	**Mechanical drive package**
Approx. weight	34,927 kg (77,000 lb)	26,944 kg (59,400 lb)
Length	11.0 m (36.0 ft)	6.1 m (20.0 ft)
Width	2.9 m (9.4 ft)	2.7 m (9.0 ft)
Height	4.0 m (13.0 ft)	4.9 m (16.0 ft)

Note: Dimensions exclude inlet filter housing and exhaust stack.
For power generation, AC generator is included. For mechanical drive, driven equipment is excluded.

*Value shown indicates 100%-design speed of drive shaft

Aeroderivative gas turbines

Originally developed for use in aviation, aeroderivative gas turbines are flexible, compact, and lightweight designs that are ideally suited for power generation and mechanical drives in the oil and gas industry.

Their high efficiency and fast start capabilities mean that aeroderivative gas turbines also perform well in decentralized power generation applications.

With a fleet of 2,860 installed units, millions of operation hours in different environments have been generated in numerous reference projects.

SGT-A65
(Industrial Trent 60)

Aeroderivative gas turbine

Designed for industrial use in power generation and mechanical drive applications, the SGT-A65 has established a new benchmark for power output, fuel economy, and cost savings.

The gas turbine is highly flexible, offering high power and efficiency with minimal drop-off at part-load and reduced speed conditions. It is available with Wet Low Emission (WLE) and DLE combustion systems.

The SGT-A65 is proven in many different environments including arctic, desert, tropical, and coastal in different applications ranging from peaking to base load, simple cycle, combined cycle, and mechanical drive.

Over 115 units have been sold with more than 1.8 million fleet hours experience. The fleet leader has accumulated more than 110,000 operating hours.

References

Bayonne, New Jersey, USA

Gas-fired power plant
Customer: Macquarie Infrastructure Corporation
Scope: 8 × SGT-A65 (Industrial Trent 60) WLE ISI units

Dolphin Gas Project, Qatar

Integrated gas process plant
Customer: Dolphin Energy Limited
Scope: 9 × SGT-A65 (Industrial Trent 60) gas turbines and 9 × Dresser-Rand DATUM centrifugal compressors

Three SGT-A65 units for power generation

The SGT-A65 can cold-start to full power in less than 7 minutes and additionally has high cyclic life

SGT-A65 package for power generation

Power generation: 59.6 – 70.8 MW(e)
Mechanical drive: 57.9 – 62.3 MW

- Most powerful, proven gas turbine in its class
- Flexible with high cyclic life, fast starts
- Modular package design for quick installation and maintenance
- Only 3 shaft intergrated machine on market

	Simple cycle power generation					
	50 Hz DLE	**50 Hz DLE with ISI**	**60 Hz DLE**	**60 Hz DLE with ISI**	**50 Hz WLE with ISI**	**60 Hz WLE with ISI**
Power output	61.9 MW(e)	65.9 MW(e)	59.6 MW(e)	64.9 MW(e)	67.4 MW(e)	70.8 MW(e)
Fuel	Natural gas only; other fuels on request				Natural gas, liquid fuel, dual fuel; other fuels on request	
Frequency	50 Hz	50 Hz	60 Hz	60 Hz	50 Hz	60 Hz
Gross efficiency	43.34%	43.8%	43.2%	43.3%	41.3%	41.4%
Heat rate	8,307 kJ/kWh	8,228 kJ/kWh	8,330 kJ/kWh	8,311 kJ/kWh	8,724 kJ/kWh	8,696 kJ/kWh
Turbine speed	3,000 rpm	3,000 rpm	3,600 rpm	3,600 rpm	3,000 rpm	3,600 rpm
Pressure ratio	38.1 : 1	39.6 : 1	36.6 : 1	38.0 : 1	39.9 : 1	39.3 : 1
Exhaust mass flow	171 kg/s	178 kg/s	165 kg/s	171 kg/s	178 kg/s	176 kg/s
Exhaust temperature	441 °C (826 °F)	431 °C (808 °F)	443 °C (829 °F)	437 °C (819 °F)	431 °C (808 °F)	447 °C (837 °F)
NO_X emissions	≤ 25 ppmvd at 15% O_2 on fuel gas (with WLE and DLE)					

	Mechanical drive	
	DLE	**DLE with ISI**
Power output	57.9 MW(e)	62.3 MW(e)
Fuel	Natural gas	Natural gas
Frequency	–	–
Gross efficiency	43.6%	43.4%
Heat rate	8,250 kJ/kWh	8,290 kJ/kWh
Turbine speed	3,400 rpm	3,400 rpm
Pressure ratio	34.3 : 1	34.3 : 1
Exhaust mass flow	157.7 kg/s	162.8 kg/s
Exhaust temperature	447 °C (837 °F)	441 °C (826 °F)
NO_X emissions	≤ 25 ppmvd at 15% O_2 on fuel gas	

	Combined cycle power generation			
	DLE 1x1	**DLE 2x1**	**DLE with ISI 1x1**	**DLE with ISI 2x1**
Net power output	73.0 MW(e)	147.0 MW(e)	83.0 MW(e)	166.8 MW(e)
Net plant efficiency	54.6%	55.0%	54.2%	54.4%
Net heat rate	6,593 kJ/kWh	6,546 kJ/kWh	6,648 kJ/kWh	6,617 kJ/kWh
Pressure/reheat	Dual/No	Dual/No	Dual/No	Dual/No

	Physical dimensions	
	Power generation package	**Mechanical drive package**
Approx. weight	190,512 kg (420,007 lb)	106,000 kg (233,690 lb)
Length	26.6 m (97.1 ft)	12.4 m (40.7 ft)
Width	4.6 m (15.1 ft)	4.7 m (15.4 ft)
Height	5.2 m (17.1 ft)	6.4 m (21.0 ft)

Note: SGT-A65 WLE – water injected. ISI – Inlet Spray Intercooling (wet compression water to the compressor).

WLE also available without ISI
WLE (with and without ISI) performance for Mechanical Drive and Combined Cycle available upon request

For power generation, AC generator is included, dimensions include inlet filter housing, exclude exhaust stack. For mechanical drive, driven equipment is excluded, dimensions exclude inlet filter housing and exhaust stack.

SGT-A45

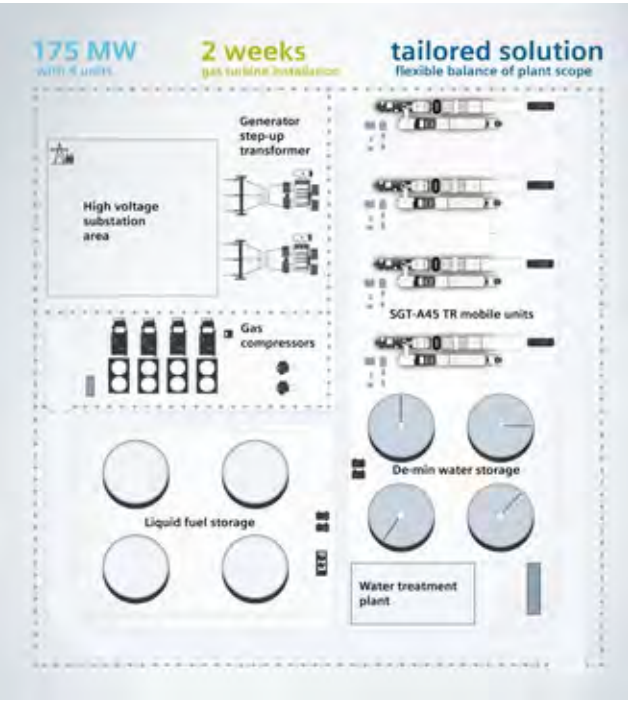
Aeroderivative gas turbine

A dependable supply of electricity is at the very base of good living standards and economic growth. Several areas of the world continue to require the fast deployment of power solutions to quickly restore and upgrade a damaged or inadequate infrastructure, supporting developing economies or emergency relief.

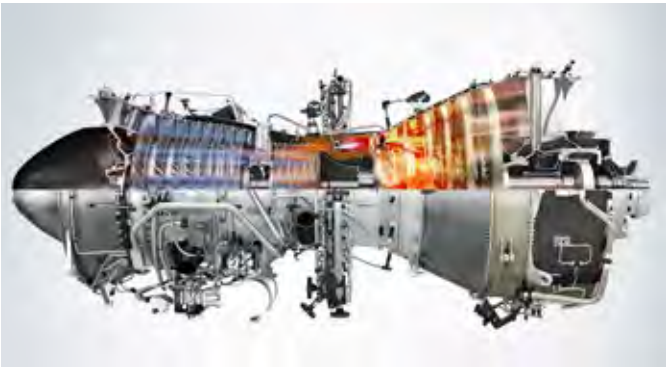
With site installation in less than 2 weeks and an outstanding output of up to 44 MW(e), the SGT-A45 mobile gas turbine unit offers a cost-effective, dependable solution to these needs.

Based on proven aeroderivative gas turbine technology, the SGT-A45 achieves the highest power density and fuel efficiency of all mobile power plants on the market. It can operate at either 50 Hz or 60 Hz and offers a highly flexible solution for a wide range of applications.

The SGT-A45 mobile unit is offered with complete fast-track power plant solutions.



On-site installation of 4 SGT-A45 mobile units



The SGT-A45 core engine is derived directly from the SGT-A65 (Industrial Trent 60) by removing the low-pressure compressor module

The SGT-A45 mobile unit consists of 3 trailer-mounted, self-contained modules to reduce installation time to under 2 weeks

Power generation: up to 44.0 MW(e)

- The world's most powerful and fuel-efficient mobile gas turbine
- Great flexibility in operation
- Highly mobile on land, air, sea
- Performance optimized for hot climates

	Simple cycle power generation / 50 Hz		Simple cycle power generation / 60 Hz	
	ISO conditions (15°C ambient)	**Hot climate (30°C ambient)**	**ISO conditions (15°C ambient)**	**Hot climate (30°C ambient)**
Power output	41.0 MW(e)	39.3 MW(e)	44.0 MW	39.6 MW
Fuel	Dual fuel (gas and liquid)			
Frequency	50 Hz	50 Hz	60 Hz	60 Hz
Electrical efficiency	39.0%	38.4%	40.4%	39.5%
Low emissions option	Water injection	Water injection	Water injection	Water injection
Turbine speed	3,000 rpm	3,000 rpm	3,600 rpm	3,600 rpm
Pressure ratio	27.7 : 1	26.7 : 1	27.9 : 1	25.8 : 1
Exhaust mass flow	127 kg/s	120 kg/s	126 kg/s	116 kg/s
Exhaust temperature	477 °C (891 °F)	501 °C (934 °F)	483 °C (901 °F)	498 °C (928 °F)
NO_X emissions	≤ 15 ppmvd (gas fuel) / 42 ppvm (liquid fuel) with optional water injection			

Physical dimensions and weight	
Mobile unit as installed	
Approx. weight	95,000 kg (210,000 lb)
Length	37.1 m (121.7 ft)
Width	7.7 m (25 ft)
Height	8.4 m (27.6 ft)

Note: Nominal performance shown.
Performance guarantees are only provided in individual project proposals based on specifications given.

SGT-A35
(Industrial RB211)

Aeroderivative gas turbine

With class-leading reliability and availability, the SGT-A35 (Industrial RB211) is your proven, dependable choice in power generation and mechanical drive applications. It is qualified to meet the stringent standards of the oil and gas industry and has earned a solid reputation in both onshore and offshore service.

The GT30 variant is the latest evolution in a portfolio continuously improved over 40 years of technology development. Utilizing components already proven in industrial, marine and aerospace service, it offers class-leading power density for power generation and mechanical drive applications with two variants rated at 34 MW and 38 MW.

The efficient SGT-A35 gas turbine, with Rolls-Royce aero engine technology, is integrated in a compact, lightweight and highly maintainable package designed for oil and gas applications by Dresser-Rand, now a Siemens business.

The SGT-A35 has accumulated over 38 million equivalent operating hours, with over 800 units sold.

References

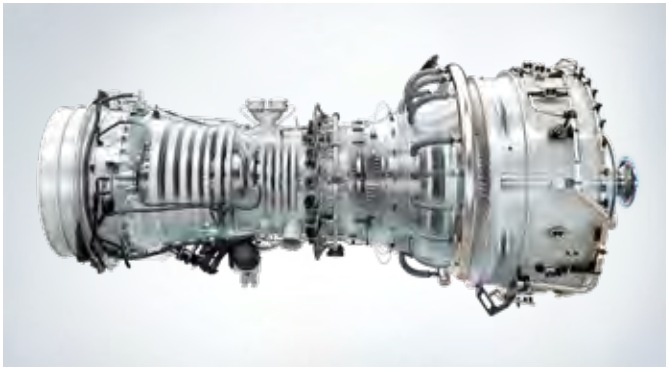
- **Lula (Tupi) and Guará oilfields, offshore Brazil**

  Power generation in eight offshore oil and gas FPSO vessels
  Customer: Petrobras
  Scope: 32 × SGT-A35 (Industrial RB211 GT62) generating sets

- **West-East Gas Pipeline, China**

  Gas pipeline compression station
  Customer: PetroChina
  Scope: Four phases for total of over 30 x SGT-A35 (Industrial RB211 G62) gas turbine packages driving centrifugal pipeline compressors

Two SGT-A35 (Industrial RB211-GT30) packages on an FPSO vessel



The SGT-A35 is a two-spool gas generator aerodynamically coupled to a free power turbine

Modular package design to meet specifications of a wide range of applications

Power generation: 27.2 – 37.4 MW(e)
Mechanical drive: 27.9 – 38.1 MW

- Proven track record in the O&G market
- Several variants to meet different power needs
- Lightweight, compact, modular package design to maximize power density

	Simple cycle power generation					
	SGT-A35 (G62) DLE	**SGT-A35 (GT62) DLE**	**SGT-A35 (GT61) DLE**	**SGT-A35 (GT30 34 MW) DLE 60 Hz [1]**	**SGT-A35 (GT30 34 MW) 60 Hz[1]**	**SGT-A35 (GT30 38 MW) 60 Hz[1]**
Power output	27.2 MW(e)	29.9 MW(e)	32.1 MW(e)	32.5 MW(e)	33.2 MW(e)	37.4 MW(e)
Fuel	Natural gas, liquid fuel, dual fuel[2]					
Gross efficiency	50/60 Hz	50/60 Hz	50/60 Hz	60 Hz	60 Hz	60 Hz
Frequency	36.4%	37.5%	39.3%	38.3%	38.5%	39.7%
Heat rate	9,904 kJ/kWh	9,589 kJ/kWh	9,159 kJ/kWh	9,397 kJ/kWh	9,362 kJ/kWh	9,074 kJ/kWh
Turbine speed	4,800 rpm	4,800 rpm	4,850 rpm	3,600 rpm	3,600 rpm	3,600 rpm
Pressure ratio	20.6 : 1	21.7 : 1	21.6 : 1	22.3 : 1	22.7 : 1	25.0 : 1
Exhaust mass flow	91.0 kg/s	95.0 kg/s	94.0 kg/s	97.9 kg/s	98.9 kg/s	109.1 kg/s
Exhaust temperature	501 °C (934 °F)	503 °C (937 °F)	509 °C (948 °F)	500° C (932 °F)	501 °C (933 °F)	487 °C (909 °F)

	Physical dimensions[3]	
	Power generation package	**Mechanical drive package**
Approx. weight	150,000 kg (330,693 lb)	99,000 kg (218,257 lb)
Length	16.0 m (52.49 ft)	9.2 m (30.2 ft)
Width	3.3 m (10.83 ft)	4 m (13.1 ft)
Height	5.4 m (17.72 ft)	5 m (16.4 ft)

1) Data for 50 Hz not shown, available at **www.siemens.com/gasturbines**

2) Other fuels on request; automatic changeover from primary to secondary fuel at any load

3) For power generation, AC generator is included. Weight is for the installed unit, dry. Dimensions are for the main package enclosure. For mechanical drive, driven equipment is excluded.

DLE NO_x emissions <25 ppmvd at 15% O_2 on fuel gas

	Mechanical drive applications								
	SGT-A35 (GT30 34 MW)	**SGT-A35 (GT30 34 MW) DLE**	**SGT-A35 (GT30 38 MW)**	**SGT-A35 (G62) DLE**	**SGT-A35 (G62)**	**SGT-A35 (GT62) DLE**	**SGT-A35 (GT62)**	**SGT-A35 (GT61) DLE**	**SGT-A35 (GT61)**
Power output	33.7 MW	33.1 MW	38.1 MW	27.9 MW	29.1 MW	30.6 MW	30.9 MW	33.0 MW	33.8 MW
Fuel	Natural gas, liquid fuel, dual fuel[2]			Natural gas, liquid fuel, dual fuel[1]					
Efficiency	39.1%	38.9%	40.3%	37.3%	37.7%	38.5%	38.6%	40.3%	40.4%
Heat rate	9,219 kJ/kWh	9,255 kJ/kWh	8,938 kJ/kWh	9,648 kJ/kWh	9,540 kJ/kWh	9,336kJ/kWh	9,338 kJ/kWh	8,922 kJ/kWh	8,912 kJ/kWh
Drive shaft speed	3,429 rpm	3,429 rpm	3,429 rpm	4,800 rpm	4,800 rpm	4,800 rpm	4,800 rpm	4,850 rpm	4,850 rpm
Pressure ratio	22.8 : 1	22.3 : 1	25.2 : 1	20.6 : 1	21.3 : 1	21.7 : 1	22.0 : 1	21.6 : 1	22.1 : 1
Exhaust mass flow	99.3 kg/s	98.2 kg/s	109.5 kg/s	91.0 kg/s	93.0 kg/s	95.0 kg/s	96.0 kg/s	94.0 kg/s	95.0 kg/s
Exhaust temperature	501° C (934° F)	500° C (932° F)	488° C (910° F)	501 °C (934 °F)	501 °C (934 °F)	503 °C (937 °F)	503 °C (937 °F)	510° C (950° F)	509° C (948° F)

SGT-A05
(Industrial 501-K)

Aeroderivative gas turbine

Based on proven aeroderivative design, the SGT-A05 delivers high efficiency and outstanding reliability for power generation applications like cogeneration and emergency power. The gas turbine offers rugged, easy-to-maintain performance due to features such as co-engine mounted auxiliary equipment.

The gas turbine engine is designed to operate on a wide variety of fuels. The fuel system operations include dual fuel, steam, and water injection. DLE technology is also available.

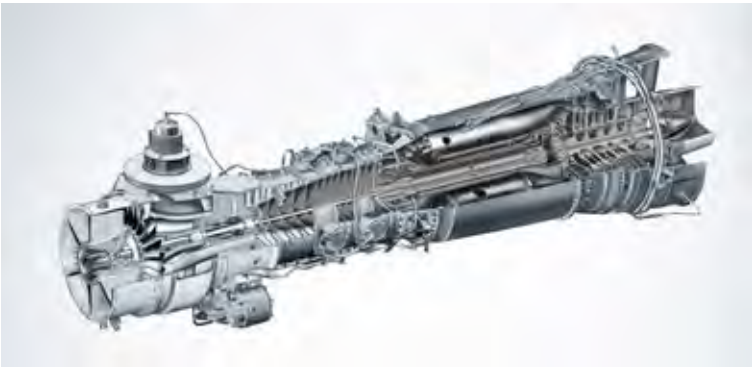
More than 2,100 SGT-A05 gas turbines have been sold for industrial use to more than 500 customers in 53 countries, accumulating an impressive 120 million operating hours since its introduction in 1963.

References

Grampian, Scotland

Combined heat and power plant
Customer: National Health Service, Foresterhill Health Campus
Scope: 1 × SGT-A05 (Industrial 501-K) gas turbine

Power station at Mitchelstown, Ireland



The SGT-A05 has black start and hot start capability. Full power is available within 60 seconds

SGT-A05 on a test stand at Siemens facility in Mount Vernon, Ohio, USA

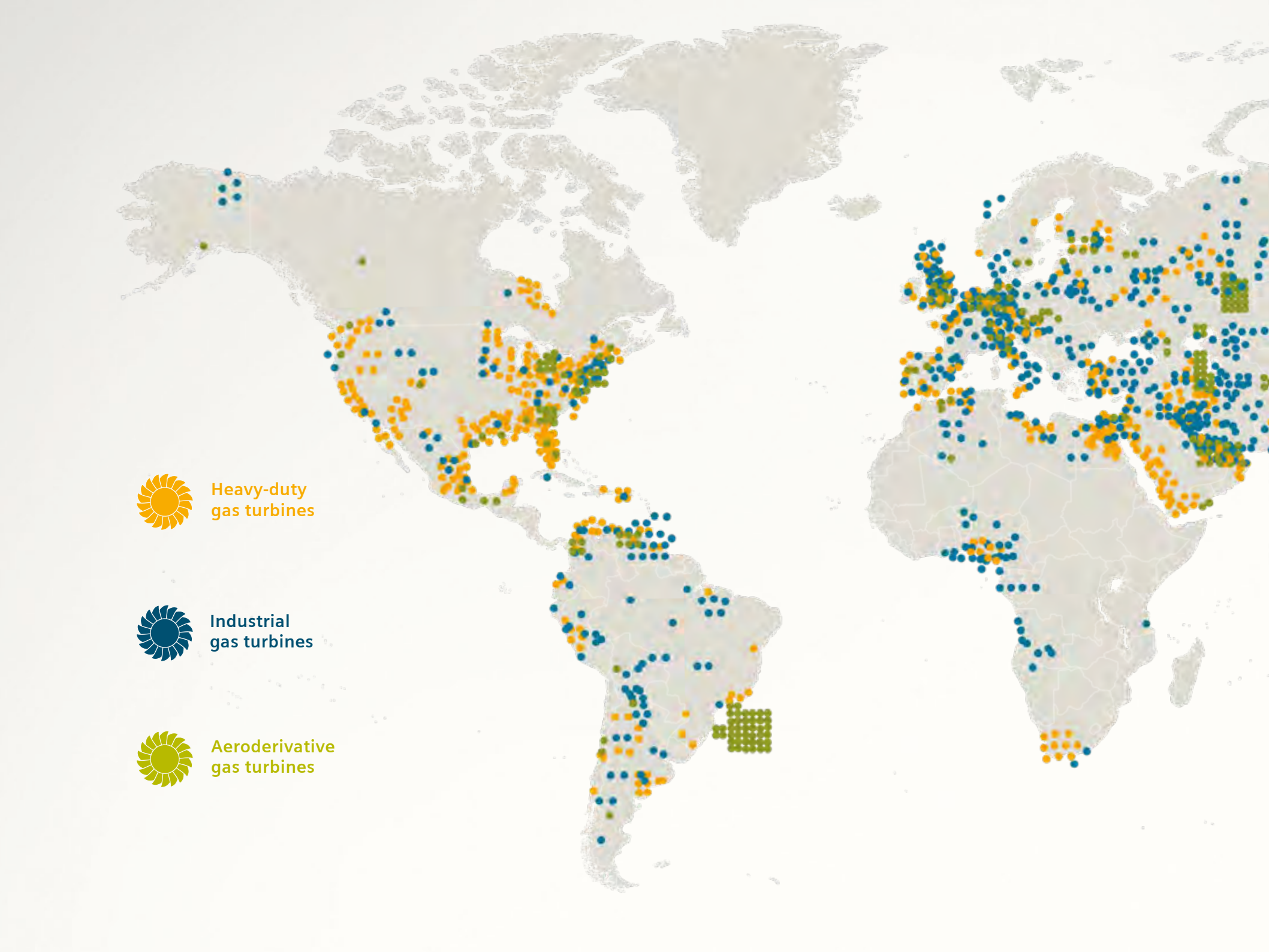
Power generation: 4.0 – 5.8 MW(e)

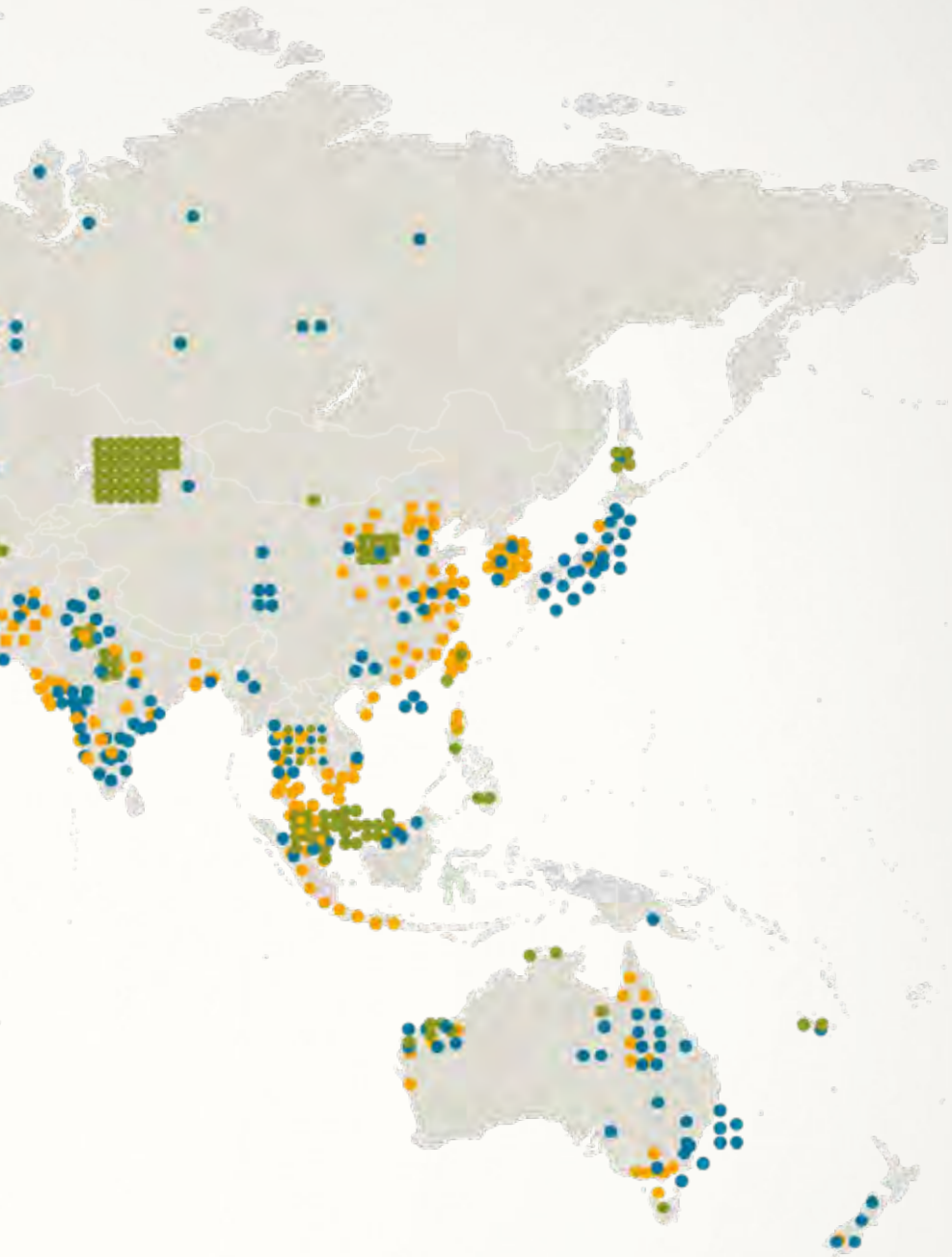
- More than 1,675 gas turbines supplied
- Full power available within 60 seconds
- High electrical and cycle efficiency

	Simple cycle power generation		
	SGT-A05 (KB5S)	**SGT-A05 (KB7S)**	**SGT-A05 (KB7HE)**
Power output	4.0 MW(e)	5.4 MW(e)	5.8 MW(e)
Fuel	Natural gas, liquid fuel, duel fuel; other fuels on request; automatic changeover from primary to secondary fuel at any load		
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Gross efficiency	29.7%	32.3%	33.2%
Heat rate	12,137 kJ/kWh	11,152 kJ/kWh	10,848 kJ/kWh
Turbine speed	14,200 rpm	14,600 rpm	14,600 rpm
Pressure ratio	10.3 : 1	13.9 : 1	14.0 : 1
Exhaust mass flow	15.4 kg/s	21.3 kg/s	21.4 kg/s
Exhaust temperature	560 °C (1,040 °F)	494 °C (921 °F)	522 °C (972 °F)
NO_x emissions	≤ 25 ppmvd at 15% O_2 on fuel gas (with DLE)		

	Physical dimensions
	Power generation package
Approx. weight	35,000 kg (77,000 lb)
Length	9 m (29.5 ft)
Width	2.7 m (8.9 ft)
Height	3.1 m (10.2 ft)

Note:
Dimensions exclude inlet filter housing and exhaust stack.
For power generation, AC generator is included.


Heavy-duty
gas turbines
Industrial
gas turbines
Aeroderivative
gas turbines



References

Siemens gas turbines are operating in more than 60 countries.

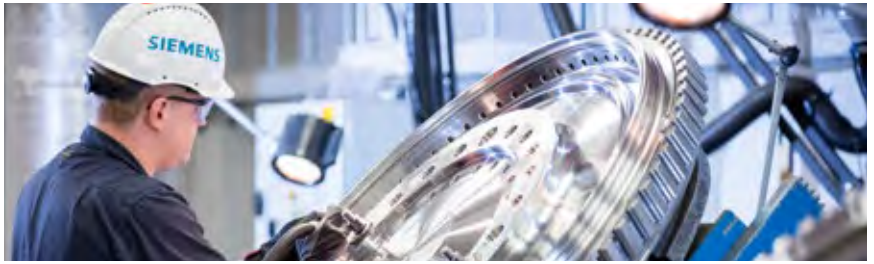
We provide proven technology with more than 7,000 installed heavy-duty, industrial, and aeroderivative gas turbines.

Performance data overview

Mechanical drive applications (metric units)							
	Power output	Gross efficiency	Heat rate	Drive shaft speed*	Pressure ratio	Exhaust mass flow	Exhaust temperature
SGT-750 (41 MW)	41.0 MW	41.6%	8,661 kJ/kWh	3,050 – 6,100 – 6,405 rpm	24.3 : 1	115.4 kg/s	468° C
SGT-750 (34 MW)	34.0 MW	40.4%	8,912 kJ/kWh	3,050 – 6,100 – 6,405 rpm	21.9 : 1	107.5 kg/s	439° C
SGT-700	33.7 MW	38.2%	9,424 kJ/kWh	3,250 – 6,500 – 6,825 rpm	18.7 : 1	95.0 kg/s	533° C
SGT-600	25.2 MW	34.6%	10,390 kJ/kWh	3,850 – 7,700 – 8,085 rpm	14.0 : 1	81.3 kg/s	543° C
SGT-400 (15 MW)	14.9 MW	36.8%	9,774 kJ/kWh	4,750 – 9,500 – 9,975 rpm	18.9 : 1	44.0 kg/s	540° C
SGT-400 (13 MW)	13.4 MW	36.2%	9,943 kJ/kWh	4,750 – 9,500 – 9,975 rpm	16.8 : 1	39.4 kg/s	555° C
SGT-300 (9 MW)	9.2 MW	35.6%	10,104 kJ/kWh	5,750 – 11,500 – 12,075 rpm	14.5 : 1	30.5 kg/s	512° C
SGT-300 (8 MW)	8.4 MW	35.1%	10,265 kJ/kWh	5,750 – 11,500 – 12,075 rpm	13.8 : 1	29.7 kg/s	491° C
SGT-100	5.7 MW	32.9%	10,948 kJ/kWh	6,500 – 13,000 – 13,650 rpm	14.9 : 1	19.7 kg/s	543° C
SGT-A65 DLE	57.9 MW	43.6%	8,250 kJ/kWh	3,400 rpm	34.3 : 1	157.7 kg/s	447° C
SGT-A65 DLE with ISI	62.3 MW	43.4%	8,290 kJ/kWh	3,400 rpm	34.3 : 1	162.8 kg/s	441° C
SGT-A35 (GT30 38 MW)	38.1 MW	40.3%	8,938 kJ/kWh	2,400 – 3,429 – 3,600 rpm	25.2 : 1	109.5 kg/s	488° C
SGT-A35 (GT30 34 MW)	33.7 MW	39.1%	9,219 kJ/kWh	2,400 – 3,429 – 3,600 rpm	22.8 : 1	99.3 kg/s	501° C
SGT-A35 (GT30 34 MW) DLE	33.1 MW	38.9%	9,255 kJ/kWh	2,400 – 3,429 – 3,600 rpm	22.3 : 1	98.2 kg/s	500° C
SGT-A35 (GT61)	33.8 MW	40.4%	8,912 kJ/kWh	3,153 – 4,850 – 5,093 rpm	22.1 : 1	95.0 kg/s	510° C
SGT-A35 (GT61) DLE	33.0 MW	40.3%	8,922 kJ/kWh	3,153 – 4,850 – 5,093 rpm	21.6 : 1	94.0 kg/s	510° C
SGT-A35 (GT62)	30.9 MW	38.6%	9,336 kJ/kWh	3,120 – 4,800 – 5,040 rpm	22.0 : 1	96.0 kg/s	503° C
SGT-A35 (GT62) DLE	30.6 MW	38.5%	9,341 kJ/kWh	3,120 – 4,800 – 5,040 rpm	21.7 : 1	96.0 kg/s	503° C
SGT-A35 (G62)	29.1 MW	37.7%	9,540 kJ/kWh	3,120 – 4,800 – 5,040 rpm	21.3 : 1	93.0 kg/s	501° C
SGT-A35 (G62) DLE	27.9 MW	37.3%	9,648 kJ/kWh	3,120 – 4,800 – 5,040 rpm	20.6 : 1	91.0 kg/s	501° C

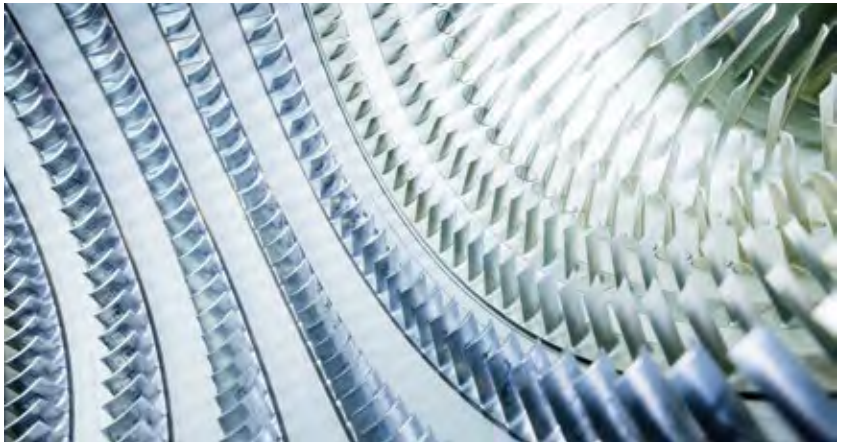
* Values shown indicate 100%-design speed of drive shaft

Mechanical drive applications (imperial units)								
	Power output	Gross efficiency	Heat rate		Drive shaft speed*	Pressure ratio	Exhaust mass	Exhaust temperature
SGT-750 (41 MW)	54,994 hp	41.6%	6,121 Btu/hph	8,209 Btu/kWh	3,050 - 6,100 - 6,405 rpm	24.3 : 1	253.5 lb/s	875° F
SGT-750 (34 MW)	45,595 hp	40.4%	6,299 Btu/hph	8,447 Btu/kWh	3,050 – 6,100 – 6,405 rpm	21.9 : 1	236.9 lb/s	822° F
SGT-700	45,151 hp	38.2%	6,661 Btu/hph	8,932 Btu/kWh	3,250 - 6,500 - 6,825 rpm	18.7 : 1	209.0 lb/s	991° F
SGT-600	33,847 hp	34.6%	7,344 Btu/hph	9,848 Btu/kWh	3,850 - 7,700 - 8,085 rpm	14.0 : 1	179.2 lb/s	1,009° F
SGT-400 (15 MW)	20,006 hp	36.8%	6,908 Btu/hph	9,264 Btu/kWh	4,750 - 9,500 - 9,975 rpm	18.9 : 1	97.0 lb/s	1,004° F
SGT-400 (13 MW)	18,000 hp	36.2%	7,028 Btu/hph	9,424 Btu/kWh	4,750 - 9,500 - 9,975 rpm	16.8 : 1	86.8 lb/s	1,031° F
SGT-300 (9 MW)	12,388 hp	35.6%	7,141 Btu/hph	9,577 Btu/kWh	5,750 - 11,500 - 12,075 rpm	14.5 : 1	67.2 lb/s	954° F
SGT-300 (8 MW)	11,216 hp	35.1%	7,255 Btu/hph	9,729 Btu/kWh	5,750 - 11,500 - 12,075 rpm	13.8 : 1	65.5 lb/s	916° F
SGT-100	7,640 hp	32.9%	7,738 Btu/hph	10,377 Btu/kWh	6,500 - 13,000 - 13,650 rpm	14.9 : 1	43.4 lb/s	1,009° F
SGT-A65 DLE	77,645 hp	43.6%	5,831 Btu/hph	7,819 Btu/kWh	3,400 rpm	34.3 : 1	347.7 lb/s	837° F
SGT-A65 DLE with ISI	83,545 hp	43.4%	5,859 Btu/hph	7,857 Btu/kWh	3,400 rpm	34.3 : 1	358.9 lb/s	825° F
SGT-A35 (GT30 38 MW)	51,092 hp	40.3%	6,317 Btu/hph	8,471 Btu/kWh	2,400 – 3,429 – 3,600 rpm	25.2 : 1	241.4 lb/s	910° F
SGT-A35 (GT30 34 MW)	45,195 hp	39.1%	6,516 Btu/hph	8,737 Btu/kWh	2,400 – 3,429 – 3,600 rpm	22.8 : 1	218.9 lb/s	934° F
SGT-A35 (GT30 34 MW) DLE	44,387 hp	38.9%	6,541 Btu/hph	8,772 Btu/kWh	2,400 – 3,429 – 3,600 rpm	22.3 : 1	216.5 lb/s	932° F
SGT-A35 (GT61)	45,316 hp	40.4%	6,299 Btu/hph	8,447 Btu/kWh	3,153 – 4,850 – 5,093 rpm	22.1 : 1	209.0 lb/s	950° F
SGT-A35 (GT61) DLE	44,230 hp	40.3%	6,307 Btu/hph	8,456 Btu/kWh	3,153 – 4,850 – 5,093 rpm	21.6 : 1	207.0 lb/s	950° F
SGT-A35 (GT62)	41,495 hp	38.6%	6,599 Btu/hph	8,849 Btu/kWh	3,120 – 4,800 – 5,040 rpm	22.0 : 1	211.9 lb/s	937° F
SGT-A35 (GT62) DLE	41,084 hp	38.5%	6,602 Btu/hph	8,854 Btu/kWh	3,120 – 4,800 – 5,040 rpm	21.7 : 1	209.0 lb/s	937° F
SGT-A35 (G62)	39,075 hp	37.7%	6,743 Btu/hph	9,042 Btu/kWh	3,120 – 4,800 – 5,040 rpm	21.3 : 1	205.9 lb/s	934° F
SGT-A35 (G62) DLE	37,465 hp	37.3%	6,819 Btu/hph	9,145 Btu/kWh	3,120 – 4,800 – 5,040 rpm	20.6 : 1	201.0 lb/s	934° F



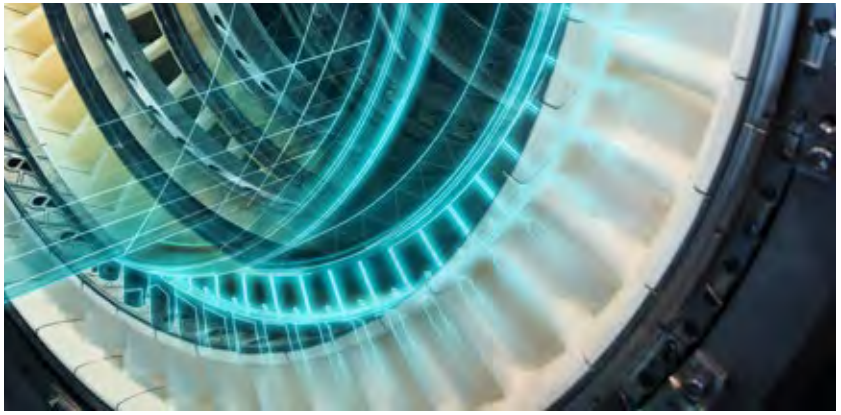
* Values shown indicate 100%-design speed of drive shaft

Simple cycle power generation (metric units)								
	Power output	Frequency	Gross efficiency	Heat rate	Turbine speed	Pressure ratio	Exhaust mass flow	Exhaust temperature
SGT5-9000HL	567 MW	50 Hz	42.6%	8,461 kJ/kWh	3,000 rpm	24.0 : 1	1,000 kg/s	680° C
SGT6-9000HL	388 MW	60 Hz	42.3%	8,519 kJ/kWh	3,600 rpm	24.0 : 1	700 kg/s	680° C
SGT5-8000HL	481 MW	50 Hz	42.6%	8,447 kJ/kWh	3,000 rpm	24.0 : 1	850 kg/s	680° C
SGT5-8000H	450 MW	50 Hz	> 41%	< 8,780 kJ/kWh	3,000 rpm	20.0 : 1	935.0 kg/s	630° C
SGT6-8000H	310 MW	60 Hz	> 40%	< 9,000 kJ/kWh	3,600 rpm	20.0 : 1	650.0 kg/s	645° C
SGT5-4000F	329 MW	50 Hz	41.0%	8,780 kJ/kWh	3,000 rpm	20.1 : 1	724.0 kg/s	599° C
SGT6-5000F	250 MW	60 Hz	39.3%	9,160 kJ/kWh	3,600 rpm	18.9 : 1	588.0 kg/s	598° C
SGT5-2000E	187 MW	50 Hz	36.5%	9,863 kJ/kWh	3,000 rpm	12.8 : 1	558.0 kg/s	536° C
SGT6-2000E	117 MW	60 Hz	35.4%	10,169 kJ/kWh	3,600 rpm	12.0 : 1	368.0 kg/s	532° C
SGT-800 (57.0 MW)	57.0 MW(e)	50/60 Hz	40.1%	8,970 kJ/kWh	6,608 rpm	21.8 : 1	136.6 kg/s	565° C
SGT-800 (54.0 MW)	54.0 MW(e)	50/60 Hz	39.1%	9,206 kJ/kWh	6,608 rpm	21.4 : 1	135.5 kg/s	563° C
SGT-800 (50.5 MW)	50.5 MW(e)	50/60 Hz	38.3%	9,389 kJ/kWh	6,608 rpm	21.0 : 1	134.2 kg/s	553° C
SGT-800 (47.5 MW)	47.5 MW(e)	50/60 Hz	37.7%	9,547 kJ/kWh	6,608 rpm	20.1 : 1	132.8 kg/s	541° C
SGT-750	39.8 MW(e)	50/60 Hz	40.3%	8,922 kJ/kWh	6,100 rpm	24.3 : 1	115.4 kg/s	468° C
SGT-700	32.8 MW(e)	50/60 Hz	37.2%	9,675 kJ/kWh	6,500 rpm	18.7 : 1	95.0 kg/s	533° C
SGT-600	24.5 MW(e)	50/60 Hz	33.6%	10,720 kJ/kWh	7,700 rpm	14.0 : 1	81.3 kg/s	543° C
SGT-400 (15 MW)	14.3 MW(e)	50/60 Hz	35.4%	10,178 kJ/kWh	9,500 rpm	18.9 : 1	44.0 kg/s	540° C
SGT-400 (13 MW)	12.9 MW(e)	50/60 Hz	34.8%	10,355 kJ/kWh	9,500 rpm	16.8 : 1	39.4 kg/s	555° C
SGT-300	7.9 MW(e)	50/60 Hz	30.6%	11,773 kJ/kWh	14,010 rpm	13.7 : 1	30.2 kg/s	542° C
SGT-100 (5.4 MW)	5.4 MW(e)	50/60 Hz	31.0%	11,612 kJ/kWh	17,384 rpm	15.6 : 1	20.6 kg/s	531° C
SGT-100 (5.1 MW)	5.1 MW(e)	50/60 Hz	30.2%	11,913 kJ/kWh	17,384 rpm	14.0 : 1	19.5 kg/s	545° C

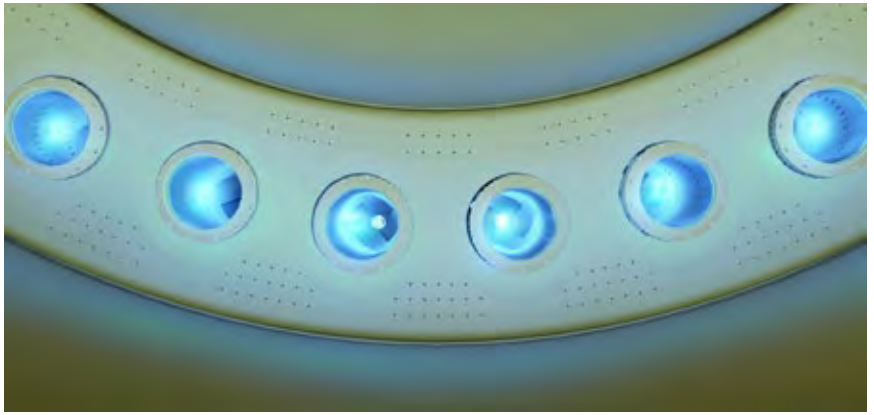


Simple cycle power generation (imperial units)								
	Power output	Frequency	Gross efficiency	Heat rate	Turbine speed	Pressure ratio	Exhaust mass flow	Exhaust temperature
SGT5-9000HL	567 MW	50 Hz	42.6%	8,019 Btu/kWh	3,000 rpm	24.0 : 1	2,204 lb/s	1256° F
SGT6-9000HL	388 MW	60 Hz	42.3%	8,074 Btu/kWh	3,600 rpm	24.0 : 1	1,543 lb/s	1256° F
SGT5-8000HL	481 MW	50 Hz	42.6%	8,222 Btu/kWh	3,000 rpm	24.0 : 1	1,873 lb/s	1256° F
SGT5-8000H	450 MW	50 Hz	> 41%	< 8,322 Btu/kWh	3,000 rpm	20.0 : 1	2,061.0 lb/s	1,166° F
SGT6-8000H	310 MW	60 Hz	> 40%	< 8,530 Btu/kWh	3,600 rpm	20.0 : 1	1,433.0 lb/s	1,193° F
SGT5-4000F	329 MW	50 Hz	41.0%	8,322 Btu/kWh	3,000 rpm	20.1 : 1	1,596.0 lb/s	1,110° F
SGT6-5000F	250 MW	60 Hz	39.3%	8,682 Btu/kWh	3,600 rpm	18.9 : 1	1,296.0 lb/s	1,108° F
SGT5-2000E	187 MW	50 Hz	36.5%	9,349 Btu/kWh	3,000 rpm	12.8 : 1	1,230.0 lb/s	997° F
SGT6-2000E	117 MW	60 Hz	35.4%	9,639 Btu/kWh	3,600 rpm	12.0 : 1	811.0 lb/s	990° F
SGT-800 (57.0 MW)	57.0 MW(e)	50/60 Hz	40.1%	8,502 Btu/kWh	6,608 rpm	21.8 : 1	301.2 lb/s	1,049° F
SGT-800 (54.0 MW)	54.0 MW(e)	50/60 Hz	39.1%	8,725 Btu/kWh	6,608 rpm	21.4 : 1	298.7 lb/s	1,045° F
SGT-800 (50.5 MW)	50.5 MW(e)	50/60 Hz	38.3%	8,899 Btu/kWh	6,608 rpm	21.0 : 1	295.8 lb/s	1,027° F
SGT-800 (47.5 MW)	47.5 MW(e)	50/60 Hz	37.7%	9,048 Btu/kWh	6,608 rpm	20.1 : 1	292.8 lb/s	1,007° F
SGT-750	39.8 MW(e)	50/60 Hz	40.3%	8,456 Btu/kWh	6,100 rpm	24.3 : 1	253.5 lb/s	875° F
SGT-700	32.8 MW(e)	50/60 Hz	37.2%	9,170 Btu/kWh	6,500 rpm	18.7 : 1	209.0 lb/s	991° F
SGT-600	24.5 MW(e)	50/60 Hz	33.6%	10,161 Btu/kWh	7,700 rpm	14.0 : 1	179.2 lb/s	1,009° F
SGT-400 (15 MW)	14.3 MW(e)	50/60 Hz	35.4%	9,647 Btu/kWh	9,500 rpm	18.9 : 1	97.7 lb/s	1,004° F
SGT-400 (13 MW)	12.9 MW(e)	50/60 Hz	34.8%	9,815 Btu/kWh	9,500 rpm	16.8 : 1	86.8 lb/s	1,031° F
SGT-300	7.9 MW(e)	50/60 Hz	30.6%	11,158 Btu/kWh	14,010 rpm	13.7 : 1	66.6 lb/s	1,008° F
SGT-100 (5.4 MW)	5.4 MW(e)	50/60 Hz	31.0%	11,007 Btu/kWh	17,384 rpm	15.6 : 1	45.4 lb/s	988° F
SGT-100 (5.1 MW)	5.1 MW(e)	50/60 Hz	30.2%	11,292 Btu/kWh	17,384 rpm	14.0 : 1	43.1 lb/s	1,013° F

Simple cycle power generation (metric units)								
	Power output	Frequency	Gross efficiency	Heat rate	Turbine speed	Pressure ratio	Exhaust mass flow	Exhaust temperature
SGT-A65 50 Hz DLE	61.9 MW(e)	50 Hz	43.34%	8,307 kJ/kWh	3,000 rpm	38.1 : 1	171.0 kg/s	441° C
SGT-A65 50 Hz DLE with ISI	65.9 MW(e)	50 Hz	43.8%	8,228 kJ/kWh	3,000 rpm	39.6 : 1	178.0 kg/s	431° C
SGT-A65 60 Hz DLE	59.6 MW(e)	60 Hz	43.2%	8,330 kJ/kWh	3,600 rpm	36.6 : 1	165.0 kg/s	443° C
SGT-A65 60 Hz DLE with ISI	64.9 MW(e)	60 Hz	43.3%	8,311 kJ/kWh	3,600 rpm	38.0 : 1	171.0 kg/s	437° C
SGT-A65 50 Hz WLE with ISI	67.4 MW(e)	50 Hz	41.3%	8,724 kJ/kWh	3,000 rpm	39.9 : 1	178.0 kg/s	431° C
SGT-A65 60 Hz WLE with ISI	70.8 MW(e)	60 Hz	41.4%	8,696 kJ/kWh	3,600 rpm	39.3 : 1	176.0 kg/s	447° C
SGT-A45 50 Hz (at 15 °C ambient)	41.0 MW(e)	50/60 Hz	39.0%			27.7 : 1	127.0 kg/s	477° C
SGT-A45 50 Hz (at 30 °C ambient)	39.3 MW(e)	50/60 Hz	38.4%			26.7 : 1	120.0 kg/s	501° C
SGT-A45 60 Hz (at 15 °C ambient)	44.0 MW(e)	50/60 Hz	40.4%			27.9 : 1	126.0 kg/s	483° C
SGT-A45 60 Hz (at 30 °C ambient)	39.6 MW(e)	50/60 Hz	39.5%			25.8 : 1	116.0 kg/s	498° C
SGT-A35 (GT30 38 MW) 50 Hz	36.6 MW(e)	50 Hz	38.7%	9,298 kJ/kWh	3,000 rpm	25.4 : 1	111.0 kg/s	489 °C
SGT-A35 (GT30 34 MW) 50 Hz	32.2 MW(e)	50 Hz	37.5%	9,611 kJ/kWh	3,000 rpm	22.9 : 1	99.8 kg/s	503 °C
SGT-A35 (GT30 34 MW) DLE 50 Hz	31.9 MW(e)	50 Hz	37.3%	9,644 kJ/kWh	3,000 rpm	22.6 : 1	99.2 kg/s	504° C
SGT-A35 (GT30 38 MW) 60 Hz	37.4 MW(e)	60 Hz	39.7%	9,074 kJ/kWh	3,600 rpm	25.0 : 1	109.1 kg/s	487 °C
SGT-A35 (GT30 34 MW) 60 Hz	33.2 MW(e)	60 Hz	38.5%	9,362 kJ/kWh	3,600 rpm	22.7 : 1	98.9 kg/s	501 °C
SGT-A35 (GT30 34 MW) DLE 60 Hz	32.5 MW(e)	60 Hz	38.3%	9,397 kJ/kWh	3,600 rpm	22.3 : 1	97.9 kg/s	500° C
SGT-A35 (GT61) DLE	32.1 MW(e)	50/60 Hz	39.3%	9,159 kJ/kWh	4,850 rpm	21.6 : 1	94.0 kg/s	509° C
SGT-A35 (GT62) DLE	29.9 MW(e)	50/60 Hz	37.5%	9,589 kJ/kWh	4,800 rpm	21.7 : 1	95.0 kg/s	503° C
SGT-A35 (G62) DLE	27.2 MW(e)	50/60 Hz	36.4%	9,904 kJ/kWh	4,800 rpm	20.6 : 1	91.0 kg/s	501° C
SGT-A05 (KB7HE)	5.8 MW(e)	50/60 Hz	33.2%	10,848 kJ/kWh	14,600 rpm	14.0 : 1	21.4 kg/s	522° C
SGT-A05 (KB7S)	5.4 MW(e)	50/60 Hz	32.3%	11,152 kJ/kWh	14,600 rpm	13.9 : 1	21.3 kg/s	494° C
SGT-A05 (KB5S)	4.0 MW(e)	50/60 Hz	29.7%	12,137 kJ/kWh	14,200 rpm	10.3 : 1	15.4 kg/s	560° C



Simple cycle power generation (imperial units)								
	Power output	Frequency	Gross efficiency	Heat rate	Turbine speed	Pressure ratio	Exhaust mass flow	Exhaust temperature
SGT-A65 DLE	61.9 MW(e)	50 Hz	43.34%	7,874 Btu/kWh	3,000 rpm	38.1 : 1	377.0 lb/s	826° F
SGT-A65 DLE with ISI	65.9 MW(e)	50 Hz	43.8%	7,799 Btu/kWh	3,000 rpm	39.6 : 1	392.4 lb/s	808° F
SGT-A65 DLE	59.6 MW(e)	60 Hz	43.2%	7,895 Btu/kWh	3,600 rpm	36.6 : 1	363.8 lb/s	829° F
SGT-A65 DLE with ISI	64.9 MW(e)	60 Hz	43.3%	7,877 Btu/kWh	3,600 rpm	38.0 : 1	377.0 lb/s	819° F
SGT-A65 WLE with ISI	67.4 MW(e)	50 Hz	41.3%	8,269 Btu/kWh	3,000 rpm	39.9 : 1	392.4 lb/s	808° F
SGT-A65 WLE with ISI	70.8 MW(e)	60 Hz	41.4%	8,242 Btu/kWh	3,600 rpm	39.3 : 1	388.0 lb/s	837° F
SGT-A45 50 Hz (at 15 °C ambient)	41.0 MW(e)	50/60 Hz	39.0%		3,000/3,600 rpm	27.7 : 1	279.9 lb/s	891° F
SGT-A45 50 Hz (at 30 °C ambient)	39.3 MW(e)	50/60 Hz	38.4%		3,000/3,600 rpm	26.7 : 1	264.5 lb/s	934° F
SGT-A45 60 Hz (at 15 °C ambient)	44.0 MW(e)	50/60 Hz	40.4%		3,000/3,600 rpm	27.9 : 1	277.7 lb/s	901° F
SGT-A45 60 Hz (at 30 °C ambient)	39.6 MW(e)	50/60 Hz	39.5%		3,000/3,600 rpm	25.8 : 1	255.7 lb/s	928° F
SGT-A35 (GT30 38 MW) 50 Hz	36.6 MW(e)	50 Hz	38.7%	8,912 Btu/kWh	3,000 rpm	25.4 : 1	244.7 lb/s	912 °F
SGT-A35 (GT30 34 MW) 50 Hz	32.2 MW(e)	50 Hz	37.5%	9,109 Btu/kWh	3,000 rpm	22.9 : 1	220.0 lb/s	937 °F
SGT-A35 (GT30 34 MW) DLE 50 Hz	31.9 MW(e)	50 Hz	37.3%	9,140 Btu/kWh	3,000 rpm	22.6 : 1	218.6 lb/s	939° F
SGT-A35 (GT30 38 MW) 60 Hz	37.4 MW(e)	60 Hz	39.7%	8,600 Btu/kWh	3,600 rpm	25.0 : 1	240.5 lb/s	909 °F
SGT-A35 (GT30 34 MW) 60 Hz	33.2 MW(e)	60 Hz	38.5%	8,873 Btu/kWh	3,600 rpm	22.7 : 1	218.0 lb/s	934° F
SGT-A35 (GT30 34 MW) DLE 60 Hz	32.5 MW(e)	60 Hz	38.3%	8,906 Btu/kWh	3,600 rpm	22.3 : 1	215.8 lb/s	932° F
SGT-A35 (GT61) DLE	32.1 MW(e)	50/60 Hz	39.3%	8,681 Btu/kWh	4,850 rpm	21.6 : 1	207.0 lb/s	950° F
SGT-A35 (GT62) DLE	29.9 MW(e)	50/60 Hz	37.5%	9,387 Btu/kWh	4,800 rpm	20.6 : 1	201.0 lb/s	934° F
SGT-A35 (G62) DLE	27.2 MW(e)	50/60 Hz	36.4%	9,089 Btu/kWh	4,800 rpm	21.7 : 1	209.0 lb/s	933° F
SGT-A05 (KB7HE)	5.8 MW(e)	50/60 Hz	33.2%	10,281 Btu/kWh	14,600 rpm	14.0 : 1	47.1 lb/s	972° F
SGT-A05 (KB7S)	5.4 MW(e)	50/60 Hz	32.3%	10,570 Btu/kWh	14,600 rpm	13.9 : 1	47.0 lb/s	921° F
SGT-A05 (KB5S)	4.0 MW(e)	50/60 Hz	29.7%	11,504 Btu/kWh	14,200 rpm	10.3 : 1	34.0 lb/s	1,040° F



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