

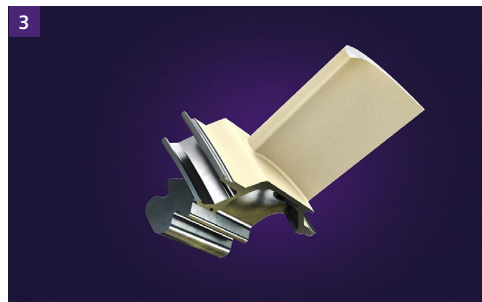
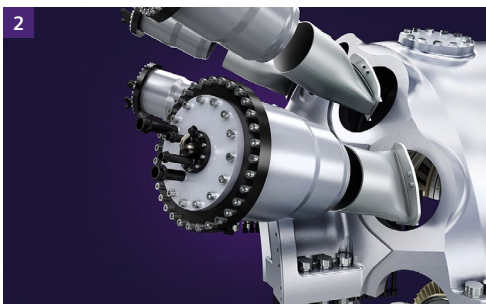
## HL-class gas turbines

The next generation of advanced air-cooled gas turbines



The HL-class is paving the way to the next level of efficiency and performance. This evolutionary development step, derived from proven H-class technology, combines a series of new but already tested technologies. The result: A technology carrier to the next level with a combined cycle efficiency beyond 64%.

The HL-class consists of the SGT5-9000HL engine for 50 Hz and the SGT6-9000HL for 60 Hz.



### Key technologies

- 1** Evolutionary 3D blading for higher aero-efficiency
- 2** Advanced combustion system for higher firing temperatures and more operational flexibility
- 3** Innovative multi-layer coating for better blade robustness and less cooling-air consumption
- 4** Ultra-efficient internal cooling features for blades and vanes for less cooling air consumption
- 5** Optimized sealings for minimized leakage air
- 6** Large free-standing turbine blade 4 for higher power output



## SGT-9000HL series

### Performance data for simple cycle operation

	SGT5-9000HL	SGT6-9000HL
Power output	593 MW	440 MW
Fuel	Natural gas, LNG, distillate oil, other fuels on request	
Frequency	50 Hz	60 Hz
GT ramp-up	85 MW/min	85 MW/min
Gross efficiency	>43%	>43.2%
Heat rate	<8,375 kJ/kwh (<7937 Btu/kWh)	<8,333 kJ/kwh (<7898 Btu/kWh)
Turbine speed	3,000 rpm	3,600 rpm
Pressure ratio	24.0 : 1	>24.01 : 1
Exhaust mass flow	1,050 kg/s (2,315 lb/s)	760 kg/s (1,676 lb/s)
Exhaust temperature	670 °C (1,238 °F)	675 °C (1,247 °F)
NO <sub>x</sub> emissions	down to 2 ppm with SCR, down to 25 ppm without SCR	down to 2 ppm with SCR, down to 25 ppm without SCR
CO emissions	10 ppm	10 ppm

### Performance data for combined cycle operation

	SGT5-9000HL		SGT6-9000HL	
	CC 1x1/1S	CC 2x1	CC 1x1/1S	CC 2x1
Frequency	50 Hz	50 Hz	60 Hz	60 Hz
Net plant output	880 MW	1,760 MW	655 MW	1,310 MW
Net plant efficiency	>64%	>64%	>64%	>64%
Plant turn down	<40%	<40%	<40%	<40%
Net heat rate	<5,625 kJ/kWh (<5331 Btu/kWh)	<5,625 kJ/kWh (<5331 Btu/kWh)	<5,625 kJ/kWh (<5331 Btu/kWh)	<5,625 kJ/kWh (<5331 Btu/kWh)
Number of gas turbines	1	2	1	2
Pressure/reheat	Triple/yes	Triple/yes	Triple/yes	Triple/yes
Steam temperature	>600 °C (>1,112 °F)	>600 °C (>1,112 °F)	>600 °C (>1,112 °F)	>600 °C (>1,112 °F)

### Physical dimensions

	SGT5-9000HL	SGT6-9000HL
Weight (approx.)	497,000 kg (1,095,700 lb)	305,000 kg (672,400 lb)
Length	13.0 m (42.6 ft)	10.8 m (35.4 ft)
Width	5.3 m (17.4 ft)	5.0 m (14.1 ft)
Height	5.5 m (18.1 ft)	4.3 m (14.1 ft)

All ratings are gross values at ISO ambient conditions. Actual performance will vary with project-specific conditions and fuel.

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