



Siemens Steam Turbine SST-5000 Series

for combined cycle and subcritical steam applications



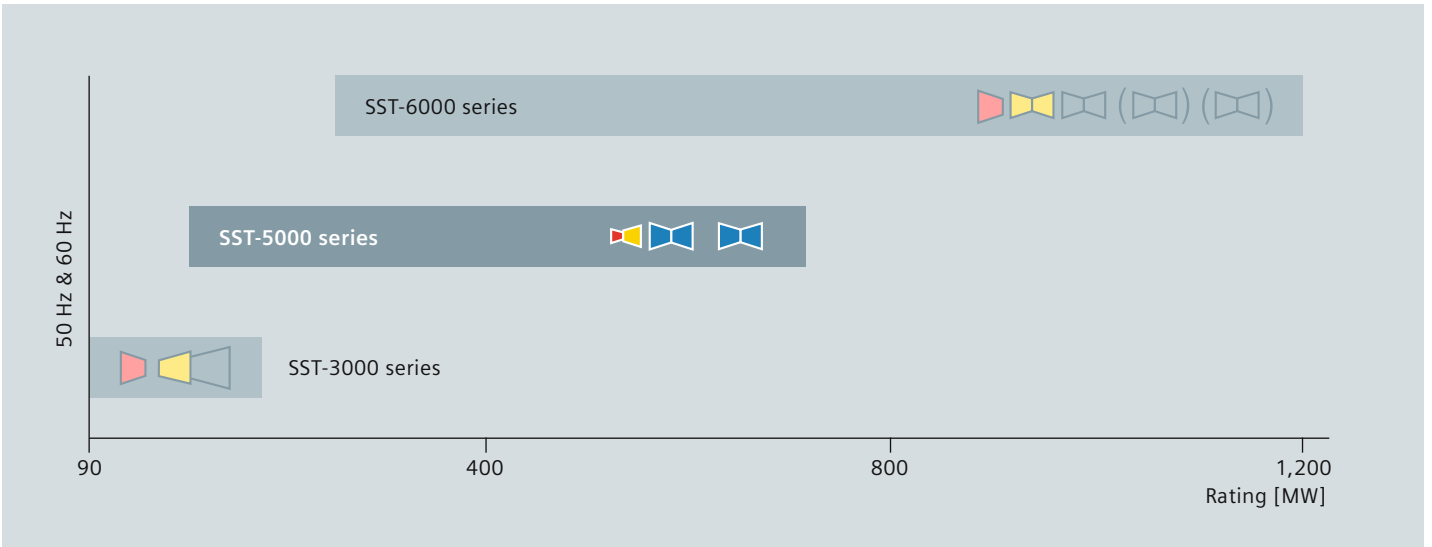
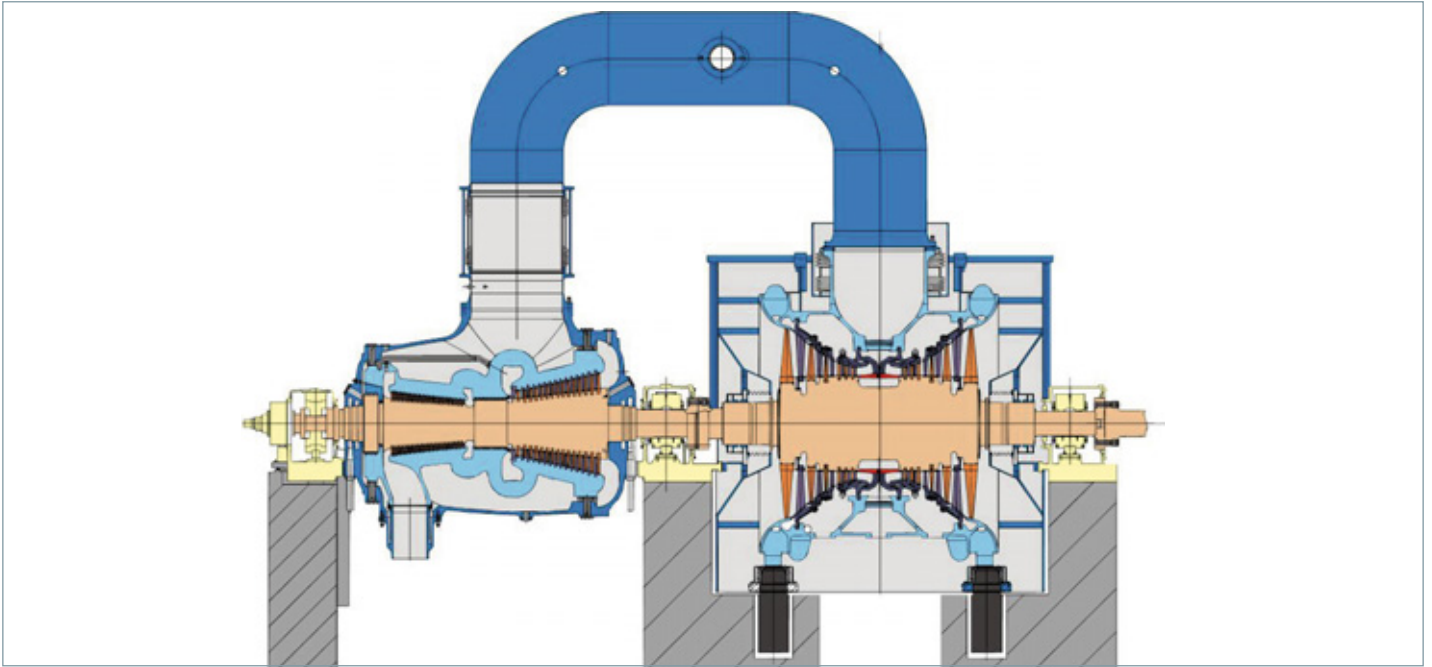
SST6-5000 steam turbine in the combined cycle power plant (CCPP) Osprey.

In our Siemens Steam Turbine (SST™) portfolio, we offer the SST-5000 series steam turbine, that features a combined high-pressure/intermediate-pressure (HI) cylinder and a double-flow low-pressure (L) cylinder.

Turbine modules of different sizes provide a broad range of power ratings. To meet specific project requirements, Siemens selects the appropriate modules and custom engineers the individual blade path.

The SST-5000 series is designed for short start-up times and high operational performance.

Proven pre-engineered modules reduce site assembly and commissioning times as well as technical risk. High reliability and availability is demonstrated with a forced outage rate that is less than half of the North American Electric Reliability Council (NERC) average.

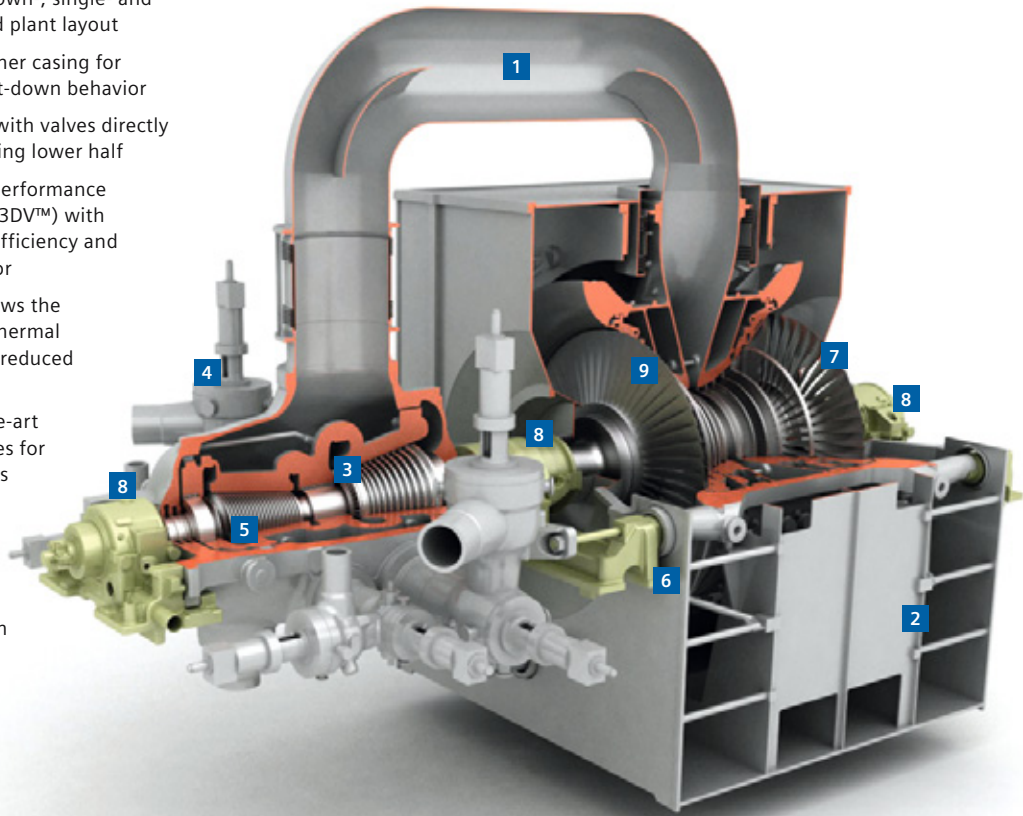


Turbine series	Combined high-pressure/intermediate-pressure reverse-flow (HI) cylinder and low-pressure (L) cylinder for 50 Hz and 60 Hz
Plant type	Combined cycle and conventional steam
Output range	120 MW to 500 MW for combined cycle applications 120 MW to 750 MW for conventional steam applications
Main steam (Typical parameters)	Temperature: up to 600 °C / 1,112 °F Pressure: up to 190 bar / 2,756 psi
Reheat steam (Typical parameters)	Temperature: up to 600 °C / 1,112 °F
Exhaust areas	50 Hz: 5 m ² to 16 m ² 27.5 inches to 56 inches* 60 Hz: 4.4 m ² to 11.1 m ² 24 inches to 47 inches*
* Last blade profile length	

Leading technology for efficient, flexible and reliable power generation

The SST-5000 series steam turbine

- 1 Large diameter single crossover pipe to minimize losses
- 2 Exhaust configurations: Down-, single- and double-sided for optimized plant layout
- 3 Spring back seals in the inner casing for excellent start-up and shut-down behavior
- 4 Short maintenance times with valves directly connected to the outer casing lower half
- 5 Fully 3-dimensional high performance variable reaction blading (3DV™) with integral shrouds for high efficiency and excellent damping behavior
- 6 Push rod arrangement allows the LP-inner casing to follow thermal expansion of the shaft for reduced differential expansion
- 7 Broad range of state-of-the-art high-performance LP blades for different exhaust area sizes
- 8 Single fixed bearing between cylinders for simple alignment and stable operation
- 9 Efficient erosion protection measures for LP blades



Customer benefits

- Compact arrangement with single bearing between turbine cylinders
- Highest element efficiencies due to advanced blading technology 3DV™ profiles – variable reaction-type blading
- Designed for short start-up times and operational flexibility
- Standardized auxiliary modules for optimized plant layout and short installation times
- High availability and reduced maintenance costs with 10-year major inspection intervals
- Proven design for applications in single-shaft and multi-shaft combined cycle configurations as well as for steam power plant applications

SST-5000 series steam turbine: References

With almost 1,000 large scale steam turbine units in operation, the Siemens fleet contributes nearly about 380 GW of power generation capacity, representing 17% of the world's operating fleet. The following references show examples of combined cycle and steam power plant applications.



Osprey, United States Multi-shaft Combined Cycle Power Plant

Performance:	
Net plant output:	609 MW
Commercial operation:	2004
Major components:	
Gas turbine:	2 x SGT6-5000F
Steam turbine:	SST6-5000 2 x 8.7 m ² exhaust (37.6 inches)
Generator:	Air- and hydrogen-cooled series
Steam cycle parameters:	
Triple-pressure reheat:	
Main steam:	111 bar / 1,604 psi 565 °C / 1,050 °F
Reheat:	565 °C / 1,050 °F
Steam turbine power output:	280 MW



Knapsack, Germany Multi-shaft Combined Cycle Power Plant

Performance:	
Net plant output:	790 MW
Commercial operation:	2008
Major components:	
Gas turbine:	2 x SGT5-4000F
Steam turbine:	SST5-5000 2 x 12.5 m ² exhaust (45.1 inches) Hydrogen-cooled series
Generator:	
Steam cycle parameters:	
Triple-pressure reheat:	
Main steam:	125 bar / 1,813 psi 565 °C / 1,050 °F
Reheat:	565 °C / 1,050 °F
Steam turbine power output:	279 MW



Yangcheng, China Steam Power Plant 1

Performance:	
Net plant output:	6 x 350 MW
Commercial operation:	Unit 1 in 2000, Unit 6 in 2002
Major components:	
Steam turbine:	SST5-5000 2 x 10 m ² exhaust (38.5 inches) Hydrogen-cooled series
Generator:	
Steam cycle parameters:	
Triple-pressure reheat:	
Main steam:	167 bar / 2,421 psi 535 °C / 995 °F
Reheat:	535 °C / 995 °F
Steam turbine power output:	379 MW

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