Siemens Steam Turbine
SST-5000 Series

for combined cycle and subcritical steam applications

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.

SST6-5000 steam turbine in the combined cycle power plant (CCPP) Osprey.
**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 m² to 16 m²
  - 27.5 inches to 56 inches*
- 60 Hz: 4.4 m² to 11.1 m²
  - 24 inches to 47 inches*

* Last blade profile length
Leading technology for efficient, flexible and reliable power generation

The SST-5000 series steam turbine

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
  - Generator: Air- and hydrogen-cooled series

- **Steam cycle parameters:**
  - Main steam: 111 bar / 1,604 psi
  - 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
  - Generator: Hydrogen-cooled series

- **Steam cycle parameters:**
  - Main steam: 125 bar / 1,813 psi
  - 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

- **Steam cycle parameters:**
  - Main steam: 167 bar / 2,421 psi
  - Reheat: 535 °C / 995 °F
  - Steam turbine power output: 379 MW