SST-300 Industrial Steam Turbines

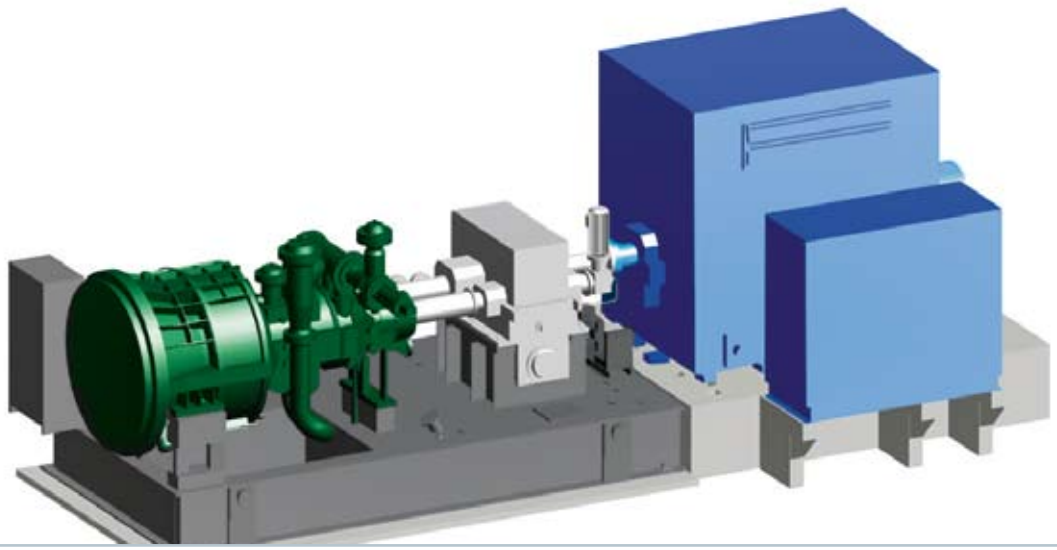
Up to 50 MW

The SST-300 is a single-casing steam turbine, providing geared drive to a 1,500 or 1,800 rpm generator. It has a compact and flexible design with a high degree of standardization.

The SST-300 generator drive is used in the following processes and applications:

- Steam turbine plants and combined-cycle power plants
- Cogeneration and district heating
- Waste incinerators, waste-fired power plants and biomass plants
- Plants using the waste heat from chemical processes for power generation

In residential, commercial, municipal and industrial power generation, e.g. captive power plants for the chemical and petrochemical industry, for refineries, pulp and paper mills, steelworks and mines, sugar industry, textile industry and others. In special cases, it can also be used as a mechanical drive.



Industrial Steam Turbines

Answers for energy.

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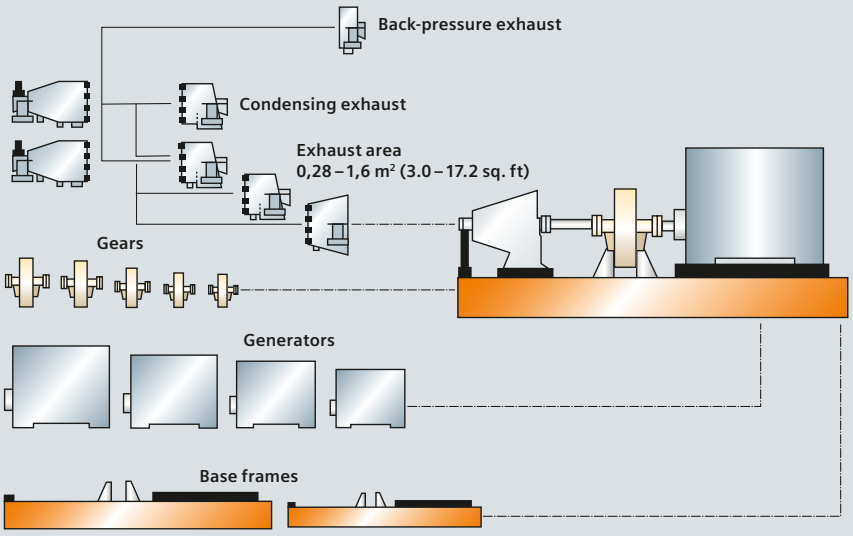
Design features

The SST-300 is a standardized single-casing geared steam turbine with customized reaction blading. It is used for both condensing and back-pressure applications with internally controlled extraction and scope for multiple bleeds. The modular package design with pre-engineered turbine modules and modular peripherals allows a wide variety of configurations to satisfy individual needs with maximum economy.

Modular package concept for the SST-300



Standard modules:
- Turbine casing
- Exhaust
- Gearbox
- Generator
- Base frame

Customized modules:
- Steam path (reaction blading)

Optional:
- Skid package with separate oil tank
- Double extraction

Turbine casing:
The single-body turbine with horizontal split has nearly symmetrical casing, which allows short start-up times and quick load changes. The design of all supports for labyrinths and blade carriers allows steam path flexibility and adjustment to individual steam parameters. Internal valve arrangements or adaptive stages control the steam flow to the back end of the turbine and are used to maintain constant process-steam extraction pressures over a wide flow range. The utilization of selected proven components assures high reliability and easy maintenance.

Rotor and blading:
The SST-300 rotor is fitted with resonance-proof blading. The blading design guarantees high efficiency over the whole operation range, including rapid changes of load for smooth plant operation. The reliability of the blading is achieved primarily through a low total stress load on the blades.

Gearbox:
The reduction gears are taken from the existing range of world-class gear manufacturers and have proven high reliability and performance.

Base frame:
SST-300 turbines are delivered as packaged units. The components of the turboset are installed on a common base frame, including the complete oil system. The oil tank is inside the base frame. All instrumentation is pre-wired to junction boxes located at the front of the frame. The number of external connections is reduced to the minimum; all connections (piping, wiring, etc.) are clearly defined.

The SST-300 base-frame packaged unit can either be placed on a simple ground-level concrete block foundation or on an elevated foundation. It can be placed on an existing foundation or be elevated on simple concrete or steel columns on spring packages (a concrete foundation upper desk is not required if the base frame is placed on springs).

Exhaust:
The SST-300 range can be equipped with upward, downward or axial exhaust orientation to fit in with the selected installation arrangement.

Technical data

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- Power output up to 50 MW
- Speed up to 12,000 rpm
- Live steam conditions
  Pressure up to 120 bar / 1,740 psi
  Temperature up to 520 °C / 968 °F
- Bleed: Pressure up to 60 bar / 870 psi
- Controlled extraction (single or double)
  Pressure up to 45 bar / 655 psi
  Temperature up to 400 °C / 750 °F
- Exhaust steam pressure
  Back pressure up to 16 bar / 232 psi
  District heating up to 3 bar / 43 psi
  Condensing up to 0.3 bar / 4.4 psi

(All data are approximate and project-related.)

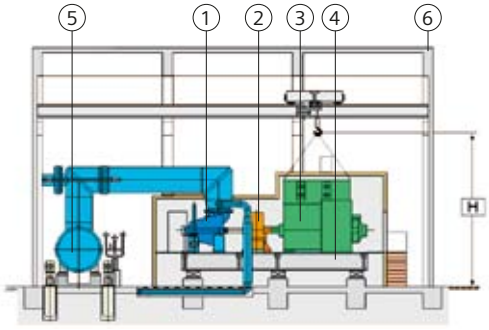
Design features

- Back pressure / condensing type
- Compact package unit design for minimal space requirements
- Modular design, extensive pre-design
- Customized steam path
- Proven, thermoflexible design

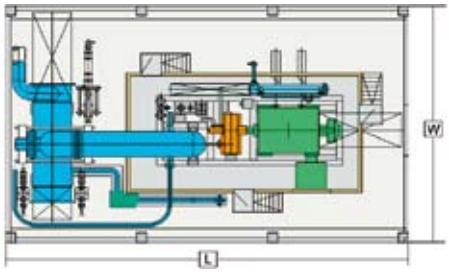
Benefits

- Fast and early layout planning
- Easy access to mechanical components facilitates maintenance
- Remote control for simple operation
- High reliability and availability
- High efficiency
- Low civil cost

Modular layout and compact design



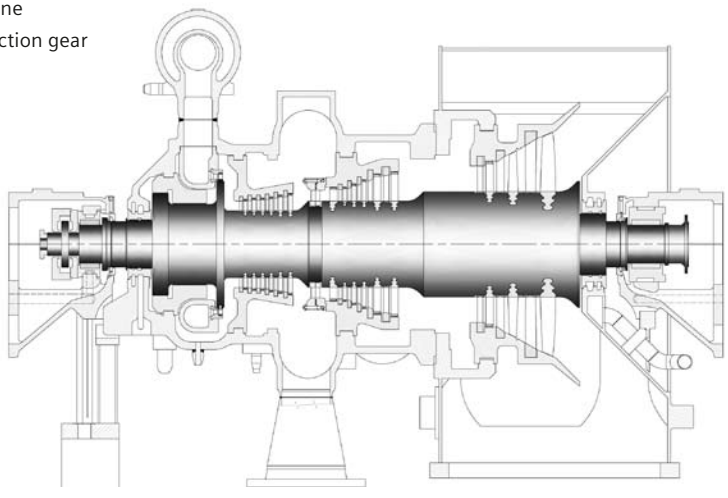
1. Steam turbine
2. Speed reduction gear
3. Generator
4. Base frame
5. Condenser
6. Noise hood



Typical dimensions

- L Length 21 m / 69 ft
- W Width 11.5 m / 38 ft
- H Height 7.5 m / 24 ft

Typical plant layout for turboset with an SST-300 steam turbine



Cross-sectional view of an SST-300 steam turbine

Installation and maintenance

Our proven installation and maintenance concept lowers maintenance cost by enabling easy access to the installed components – the turbine, gearbox, generator and auxiliaries.

As all SST-300 turbines are prepared for remote monitoring, Siemens offers service contracts for condition-based maintenance, customized for the specific operating status of each machine to reduce outage and overhaul costs. Using the remote monitoring technology, customers are able to get fast telephone advice and secure remote support, online help, advanced troubleshooting and intervention, provided by specialist personnel who know the plant's design and understand its operation.

Additionally, we offer comprehensive spare-part service, repairs and maintenance solutions designed to increase the reliability and availability of the plant. Our retrofit solutions return turbines to the state of the art even after a normal operating life. Long-term maintenance contracts assure prolonged plant operation at predefined costs.

Our service solutions are based on long experience of taking care of a substantial global fleet. This experience is incorporated systematically into our design and manufacturing as well as our service and maintenance practice, making Siemens a reliable partner now and in the future.

SST-300: *26 MW back pressure turbine for a sugar and ethanol plant in Brazil*

Reference examples

The SST-300 has been sold for a rich variety of applications around the world. The following references exemplify this versatility of application.

Mielec, Poland: *21 MW extraction condensing turboset in a coal-fired cogeneration plant of the Polish IPP Elektrociepłownia Mielec*

Ceske Budejovice, Czech Republic: *29 MW back-pressure turbine for district heating plant*

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