

Turbine generators for solar thermal power plants



ABB turbine generators deliver high reliability to ensure maximized power plant availability. Module-based construction means short lead times and enables customization to meet the special challenges of solar power production. Local support is available worldwide through ABB's global service network.

ABB has more than 140 years of experience in manufacturing motors and generators, with a very broad range that covers AC and DC, induction and synchronous products. We apply our deep know-how to tailor our steam turbine synchronous generators for high efficiency and reliability in concentrated solar power (CSP) production.

ABB can supply the complete generator package, including the generator, different cooling options, maintenance tools, main terminal box with metering and protective equipment, and control panel. The control system is designed to fit in smoothly with the driver and ancillary equipment. We can provide complete generator control, synchronizing and protection equipment that can be easily adapted to your needs and the special requirements of your installation.

Designs optimized for challenging conditions

Solar thermal power plants can be demanding installation and operating sites. The generator typically needs to be engineered to cope with extremely hot ambient temperatures, limited cooling water supplies, daily start-ups, a weak power network, and operation over a broad load spectrum. At ABB we are experienced in optimizing generator designs for these types of environments and conditions. Our expertise also covers designs to meet the different standards and grid codes that are in force around the world.

The generators can be single or double-shaft end driven, which enables use of both a steam and a gas turbine, for example, at plants which have to accommodate very large load variations or where continuous power production is required. They are module-based, with the active parts designed according to needs of the specific installation. This provides short lead times and ensures the generator will deliver the optimal electrical characteristics as well as reliable operation.

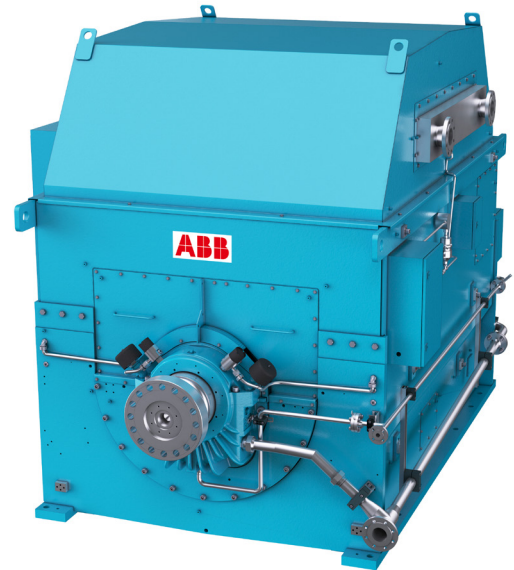
The solid salient pole rotor design operates below the first critical speed, which avoids the need to pass through natural frequencies before reaching the rated speed. The rotor design also provides high inertia, which gives inherent stability and an excellent permanence even when operated under low load conditions.

Symmetrical cooling makes higher efficiency possible as well as providing control of hot spots. The generators are mostly used within temperature rise class B, but the rotor insulation system is designed for class H, with class F for the rest of the machine, assuring a long operating lifetime.

The generator is at the heart of any power plant, and ABB supplies reliable, efficient, quality products that deliver the high uptime critical for profitable operations.

Main specifications

Power	2 to 80 MVA
Voltage	3 to 15 kV
Frequency	50 and 60 Hz
Standards	IEC, NEMA, CSA
Ambient temperature	-50 °C to +60 °C (-58 °F to +140 °F)
Hazardous area	Ex ec, Ex pz, Ex px Class 1 Div2 / Zone 2
Protection class	IP54, IP55, IP56
Cooling forms	IC81W, IC616



Key benefits

Maximized plant output



Each generator is specially designed to match the output of the turbine over the entire load spectrum, while operating at high efficiency.

Dependable generators for extreme environments



ABB has supplied many generators for installation in harsh environments, including desert locations, and we have a deep understanding of what works

in the most severe conditions.

Network support



ABB can optimize each generator to meet the needs of the site, whether this involves supporting a weak grid, starting a large motor, or helping minimize the

plant short-circuit current.

Return on investment



4-pole generators typically offer lower capital investment and lower operating costs compared to 2-pole units.

They are also smaller in size, and the package as a whole is lighter and quieter.

Reliable performance



Long-term profitable operation requires reliable performance from every component. To achieve this ABB not only supplies a dependable product but can also offer services that extend well beyond the warranty period. The service program has been developed and proven over many years and is available on a global basis.

Low environmental impact



ABB turbine generators are acknowledged for their high efficiency. ABB can also provide environmental product declarations, allowing calculation of total emissions during manufacturing and decommissioning.

For more information please visit:

new.abb.com/motors-generators/generators/generators-for-steam-and-gas-turbines



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