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Siemens Air-Cooled Generators SGen-1000A Series Efficient and Reliable

165 MVA to 350 MVA

Answers for energy.

SIEMENS

Air-cooled generators

Siemens offers in its Siemens Generator (SGen™) product line advanced air-cooled, two-pole generators, called SGen-1000A series, with ratings between 165 and 350 MVA for steam and gas turbines. This generator product line brings together all of the experience gained in the manufacturing of more than 9,000 generators over the past 100 years, with a combined total of more than 700 GW of installed capacity.

Siemens generator design principles, which have been validated both in the manufacturing process and in continuous generator operation, have been further improved by applying the patents and experience that came to us through acquisition of Westinghouse's Power Generation Business Unit, with the objective of increasing the benefits to plant operations.

Consistent improvements in the design of these generators have enabled efficiencies up to and more than 98.94% to be achieved at rated load, setting a new record among air-cooled generators worldwide.

The proven modular system makes it possible to produce a wide range of generators by using rotors with different diameters as well as different active body lengths.

The same active generator components are used in both the air-cooled and hydrogen-cooled generators. This means that customers who choose air-cooled generators benefit from the manufacturing and operational advances made with respect to hydrogen-cooled generators.

A design requiring low maintenance in connection with our worldwide service network guarantees the highest availability.

The complete stator core and winding assembly is Global Vacuum Pressure Impregnated (GVPI) with an epoxy-mica (MICALASTIC®) insulation system that provides uniform electrical insulation and added mechanical strength.

Acoustic weatherproof enclosures provided for outdoor installation and sound attenuation.

Collector housing for static excitation system. Brushless exciters also available.

The radially direct cooled stator core provides maximum heat transfer capability for the stator winding with minimum flow resistance for the overall cooling circuit.

Radial path rotor cooling with flow path that provides a uniform flow and temperature distribution and reduces field current requirements.

Shipping dimensions and configuration suitable for transport by rail in most countries.

Symmetrical ventilation system uses two low-pressure air blowers in conjunction with a multi-zone stator cooling construction.

The aluminium "high-efficiency endplate" acts as both a mechanical pressure plate for the laminated stator core and a shield for the magnetic field. The design of the generator makes use of materials that reduce eddy-current losses in the area of the pressure plate.

The RIGI-FLEX® end-winding support system has been in successful operation since the 1980s. This well-proven bracing system provides rigidity to withstand transient fault loads combined with flexibility to withstand normal operation cyclic thermal expansion and contraction, which occurs during startups and load changes.

Installation and foundation design is simplified through the use of a baseframe.

Symmetrical arrangement of the coolers (TEWAC application shown) supports a uniform temperature profile.

The use of multiple cooling zones in the active part of the generator yields a more uniform temperature profile.

The stator core is flexibly supported in the outer casing by spring assemblies. This prevents vibration at double rotational frequency from impacting the outer casing and thus the foundation tabletop.

Technical data					
Frequency	Model	Power factor	Apparent power	Efficiency	Terminal voltage
50 Hz	SGen5-1000A	0.85	165 MVA to 350 MVA	up to 98.94%	10.5 kV to 20 kV
60 Hz	SGen6-1000A	0.85	165 MVA to 310 MVA	up to 98.94%	13.8 kV to 18 kV

Coolant:	Air-, OAC (Open Air-Cooled) or TEWAC (Totally Enclosed Water to Air-Cooled)
Design:	In accordance with IEC and ANSI standards
Thermal classification:	Class F insulation system
Type of enclosure:	IP55 (IEC34-5); suitable for outdoor installation
Excitation:	Static or brushless
Transport dimensions:	Suitable for rail transport in most countries

Customer benefits
■ Highest efficiency among air-cooled turbo-generators
■ Uniform temperature profile for decades of reliable service
■ Suitable for outdoor installation
■ Simplified installation through use of a baseframe
■ Transport dimensions suitable for rail transport in most countries
■ Design based on field-proven generator component designs

