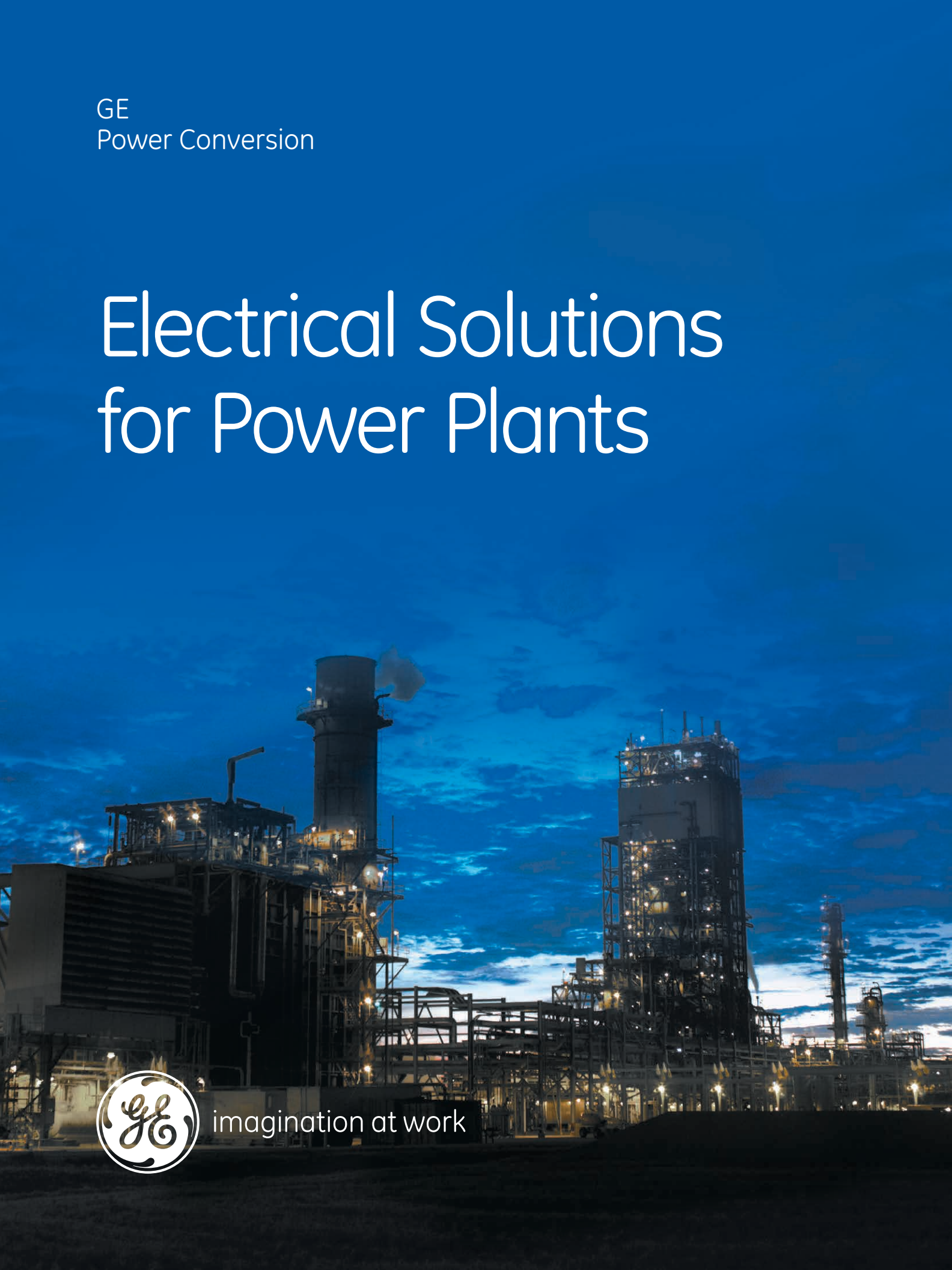
GE
Power Conversion

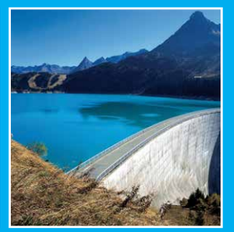
Electrical Solutions for Power Plants



imagination at work

Combining a wealth of expertise with innovation, GE's Power Conversion business is at the heart of solving power generation challenges helping you to increase the operational flexibility, efficiency, and reliability of your power generation assets.



The global energy landscape is transitioning, and traditional business models of global power producers are challenged by rising cost, carbon markets, policies and regulations as well as changing consumption behavior. Operational flexibility is a key to cost-efficient power production across the load range.

To keep pace with global electricity demand growth, grid integration requirements and peak load management, the implementation of highly efficient and flexible technologies in new power generation plants, as well as the improvement of operational efficiency in existing power plants become increasingly important.

With more than a century of acknowledged industry achievements and technological breakthroughs behind it, GE offers electrical solutions to the power industry.

GE`s Power Conversion business can help you to meet the requirements for base or peak load operations, whether you are planning a new power plant or seeking to optimize existing assets.

Our offering comprises a wide range of solutions for gas, steam and water driven power plants. It includes starting static frequency converters (SFC), static excitation equipment (SEE), medium and low voltage drive systems for auxiliaries, variable speed drives for pumped storage power plants, motors, generators, automation, power quality systems, and remote monitoring and diagnostics.

Thermal power plants – Operational flexibility and efficiency

Gas-fired power plants are playing a major role in both low emission base load and peak load applications, enhancing plant efficiency when combined with steam turbines using gas turbine exhaust air. Increasingly often, main generators have to be started and ramped up quickly at short notice to cover demand peaks.

Steam power plants contribute to the base power supply in most countries of the world. The requirement to improve the overall efficiency and the environmental compatibility of steam power plants is leading to an increased demand for reliable and efficient drives and power electronics.

Our solutions for gas and steam turbine power plants are designed to improve efficiency of your processes, increasing flexibility and reliability.

They include:

- Starting static frequency converters (SFC) and static excitation equipment (SEE) units for gas turbine driven generators and large synchronous machines
- Compact units, a combination of a SEE and SFC in space and cost saving design
- Electrical variable speed drive systems for thermal power plant auxiliaries
- Induction and synchronous motors, generators, high-speed direct-drive solutions.

Customers benefit from GE's specific knowledge and long-time experience resulting in space saving compact designs, operational flexibility, high reliability and low maintenance.

Soft gas turbine starting

GE's static frequency converters (SFC) enable a soft starting system for gas turbines with generators running as motors, and help to enhance process performance by means of:

- Shaft speed control and adjustable acceleration function
- Utilization of SFC as turning gear to facilitate shaft line balancing and cooling
- SFCs operate the gas turbine during maintenance for washing and purging purposes
- Optimal user friendliness for local or remote monitoring, controlling, diagnostics and network integration
- Extended factory tests which can help shorten commissioning time and increase reliability

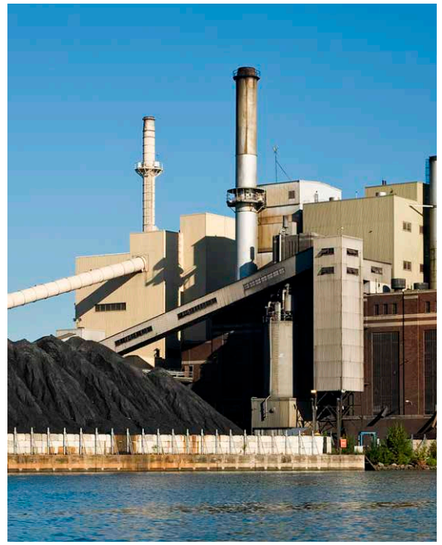
Variable speed drive systems for thermal power plant auxiliaries

Thermal power plants typically consume a percentage of the power they produce. This consumption mainly comes from the operation of auxiliary systems such as boiler feed pumps, circulation pumps, cooling water pumps, condensate pumps, exhaust and draught fans, conveyors, or coal mills.

GE's electric variable speed drive solutions adjust quickly to the required plant output and address the key needs which are:

- improve operational flexibility during low and peak demands
- reduce production cost through energy savings
- enhance plant heat rate by increasing process efficiency
- obtain higher power output per energy input, to increase profitability and fast ROI
- reduce emissions and maintenance costs

A powerful range of low and medium voltage variable speed drives are available for gas or steam fired power stations to help optimize operation of auxiliary systems.



Hydro Power

Across the broadest rivers. On the largest reservoirs. Our power conversion expertise help improve production and storage flexibility, operating efficiency, and grid compatibility. We are working with our customers to meet the demands and opportunities of the new electric age.

Pumped storage:
proven technology and track record

Today, pumped-storage hydroelectricity is the largest-scale form of energy storage within an electrical power grid. Potential energy of water is stored by pumping water from a lower reservoir to a higher elevated reservoir. During periods of high electricity demand, the stored water is released through turbines and produces electric power.

Our static frequency converters (SFC) start up the units sequentially in pump mode and launch them to the grid within a few minutes.

GE is offering innovative AC excitation technology based on a powerful, robust and flexible solution of high end variable speed drive system for any type and size of pumped storage power plant, addressing the key needs which are:

- Flexible and efficient operation of alternating pump and turbine mode
- Speed control of the turbine when regenerating the power to the grid
- Start of generator/motor in synchronous condenser mode, saving reservoir water
- Flexibility to be used for rotor balancing, bearing inspection and shaft maintenance

Run off river:
dynamic power control and grid stabilization

Our VSDS can function as an electronic gear box and allow direct coupling of generator and turbine which may result in advantageous equipment sizing configuration.

GE`s systems help optimize the turbine starting curve and are able to isolate generators from the grid when needed. Our VSDS control full speed and power variation, and manage extended unit operation at varying hydraulic conditions and partial loads.

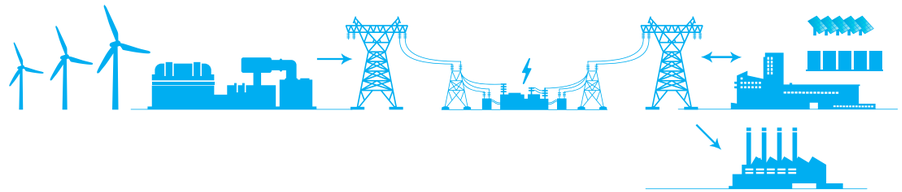
Technology for tomorrow's challenges

GE combines a wealth of experience with innovation to deliver consistency, reliability and the latest technology to meet our customers' requests. We serve the power industry with advanced technological solutions for converters, drive systems, generators, connections, and power electronics specifically designed for power plants.

Global reach and response

Our highly skilled engineers offer broad-based experience and expertise on a vast array of power generation and power quality applications at a global level.

GE's comprehensive customer support crosses the complete product life cycle, including spares and repairs, training, routine service contracts, breakdown assistance, and upgrade/enhancement projects.



MAIN OFFICES

Australia, Botany
Tel: +61 (0) 2 8313 9980

Brazil, Minas Gerais
Tel: +55 31 3330 1930

Canada, Mississauga
Tel: + 1 905 858 5100

Chile, Santiago
Tel: + 56 2 652 6500

China, Shanghai
Tel: +86 21 6498 2600

France, Massy Cedex
Tel: +33 1 77 31 20 00

Germany, Berlin
Tel: +49 30 7622 0

India, Chennai
Tel: +91 44 4968 0000

Japan, Tokyo
Tel: +81 3 5544 3852

Norway, Oslo
Tel: +47 67 83 82 50

Russia, Moscow
Tel: +7 495 981 13 13

Singapore
Tel: +65 6332 0940

South Africa, Midrand
Tel: +2711237 0000

South Korea, Busan
Tel: +82 51 710 9015

UAE, Dubai
Tel: +971 44296161

UK, Rugby
Tel: +44 1788 563 563

USA, Pittsburgh
Tel: +1 412 967 0765

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www.gepowerconversion.com

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