



GENERATORS

GE is bringing generator technology and performance to the next level. We engineer and build our generators to meet the demanding specifications that keep you on the leading edge of efficient, reliable output. Our equipment installs quickly, integrates easily, operates reliably and delivers more power. With over 12,000 generators shipped since 1901, GE understands your challenges, and offers a complete range of configurations and cooling technologies to meet industry needs.

Our validation program is rigorous. Every new product is subjected to endurance and thermal-cyclic testing that simulate one full year of operation. This approach helps ensure that we deliver the world-class reliability you expect.

GE fully integrates engineering, manufacturing and life cycle services to keep your generators operational for the life of the equipment and to provide more value to you.



Product Families

GIGATOP (water-cooled) – Installed fleet of more than 680

These generators are the ideal solution for large combined cycle or simple cycle power plants when output requirements exceed the capabilities of conventional hydrogen-cooled machines. They are highly efficient and operate within a small footprint.

TOPGAS (hydrogen-cooled) – Installed fleet of more than 3,185

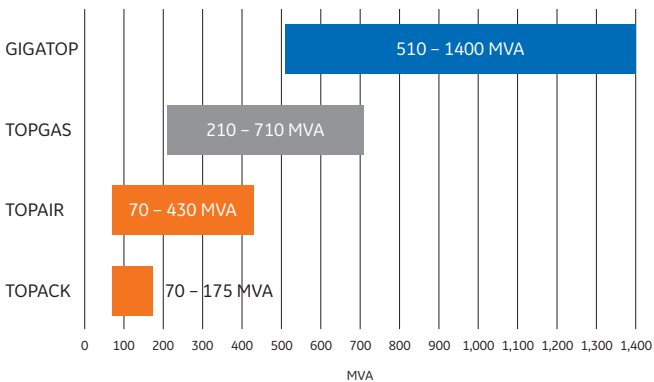
These generators are highly efficient and have a maximum power output capable of providing a cost-effective alternative to many water-cooled machines.

TOPAIR (air-cooled) – Installed fleet of more than 3,570

These generators are the choice for power plant applications that demand simple, flexible operation.

TOPACK (air-cooled) – Installed fleet of more than 1,350

These prepackaged generator solutions are reliable and arrive ready to install.



Generator Technologies

Modular Generator Architecture

- Constant cross-section core segments are used to achieve higher product ratings with common designs.
- Common end components drive greater spare parts efficiency, interchangeability, and maintenance familiarity.
- One-piece frame and flexible terminal lead arrangements provide ease of installation and reduce plant construction costs.

Armature Systems

- Micapal*, MICADUR* and DURITENAX* stator bar insulation technologies enable higher power density, advanced voltage stress, and thermal conductivity capabilities for greater armature performance.
- Robust mechanical features, such as TETRALOC* and self-tightening end winding support systems, allow thermal expansion of the winding during operational transients while simultaneously tightening the winding.
- Armature slot retention systems to ensure constant pressure on the bars, restraining them from radial and tangential motion during operation. These features include top-ripple and side-ripple springs as well as concave-convex and piggy-back wedging systems.

Water-Cooled Technology

- Stainless steel armature bar cooling tubes provide a proven method of eliminating the risk of cooling tube clogging, which can result in armature overheating.
- Advanced phosphorous-free brazed connections help reduce leakage.
- The high oxygen deionized water system prevents cuprous oxide buildup.
- Optimized for both rail and road transport. Only a small number of individual parts are transported, which translates into short delivery and faster erection time.

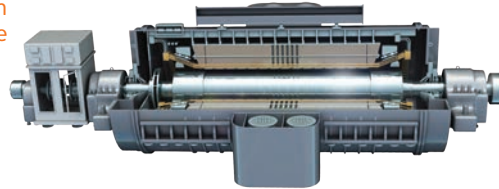


WATER-COOLED

GIGATOP GENERATOR

HIGH POWER DENSITY

GE's water-cooled generators are exceptionally well suited to large power station applications where output requirements exceed the cooling capabilities of air-cooled or conventional hydrogen-cooled options. This reliable generator incorporates advanced technology and robust construction for enhanced operability and ease of maintenance.



	50 Hz	60 Hz
Power Factor	0.80	0.85
Apparent Power	Up to 1,400 MVA	Up to 1,120 MVA
Efficiency	Up to 99.0%	Up to 98.9%
Terminal Voltage	Up to 27 kV	Up to 26 kV

Industry-Leading Reliability

Use of stainless steel tubes in stator bars reduces forced outages due to cooling tube clogging.

Less Manual Intervention

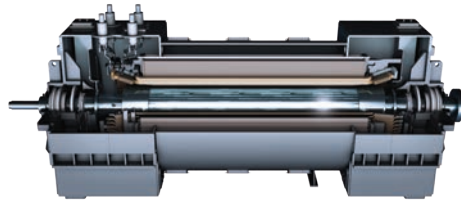
Automated hydrogen gas control and sealing, enabled by the Mark[®] V1e control system, reduces the need for manual intervention and allows more efficient accessories operation.

HYDROGEN-COOLED

TOPGAS GENERATOR

HIGHLY EFFICIENT

The low density, high specific heat and high thermal conductivity of hydrogen gas enable the highest efficiency generators in GE's portfolio. Hydrogen-cooled generators use proven technologies and advanced materials to deliver up to 99 percent efficiency. They are well suited for combined cycle or simple cycle applications on both steam and gas turbines.



	50 Hz	60 Hz
Power Factor	0.80	0.85
Apparent Power	Up to 710 MVA	Up to 690 MVA
Efficiency	Up to 99.0%	Up to 99.0%
Terminal Voltage	Up to 23 kV	Up to 25 kV

Automated Hydrogen Gas Control and Sealing

Automated hydrogen gas control and sealing, enabled by the Mark V1e control system, reduces the need for manual intervention and allows more efficient accessories operation.

Enhanced Seal Performance

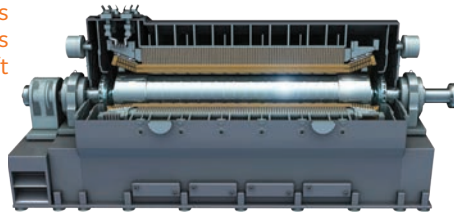
Upgraded end shield reduces deflection for enhanced seal system performance, accommodates increased drive train axial expansion, and improves maintenance access to seal casing and bearing housing.

AIR-COOLED

TOPAIR GENERATOR

SIMPLICITY AND FLEXIBILITY

GE's TOPAIR generator is the world's most powerful air-cooled generator with output that frequently allows it to displace more costly and complex hydrogen-cooled generators. With a fleet of more than 3,570 units, the TOPAIR generator's design has been proven to be robust, reliable and maintainable. It is flexible and can be used with gas turbines and steam turbines in single- or multi-shaft configurations.



	50 Hz	60 Hz
Power Factor	0.80	0.85
Apparent Power	Up to 430 MVA	Up to 360 MVA
Efficiency	Up to 98.9%	Up to 98.8%
Terminal Voltage	Up to 22 kV	Up to 22 kV

High Power Rating and Efficiency

A high power rating and high efficiency make the TOPAIR generator an attractive alternative to bigger, hydrogen-cooled generators.

Continuous Development

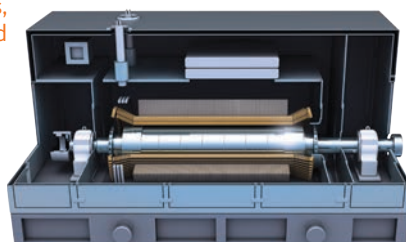
Application of the latest technology continuously improves the TOPAIR generator's efficiency, enabling it to generate more megawatts with the same frame size and weight.

AIR-COOLED

TOPACK GENERATOR

HIGHLY RELIABLE ALL-IN-ONE SOLUTION

The TOPACK generator is more than just a generator, it is a ready-to-install, easy to integrate, packaged solution that comes complete with electrical equipment to reduce your risk and save you time, effort, and money. Its compact and modular design is based on standardized manufacturing processes, so you'll get exactly the product you need delivered when you need it.



	50 Hz	60 Hz
Power Factor	0.80	0.85
Apparent Power	Up to 175 MVA	Up to 120 MVA
Efficiency	Up to 98.7%	Up to 98.6%
Terminal Voltage	Up to 15 kV	Up to 13.8 kV

Customized Packages

The TOPACK generator has a flexible list of options to meet your specific needs.

Quick and Easy

Its compact size allows for easy worldwide delivery, installation, and maintenance.

Reliable and Robust

Built to high quality standards, the TOPACK generator operates successfully in virtually any environment.