

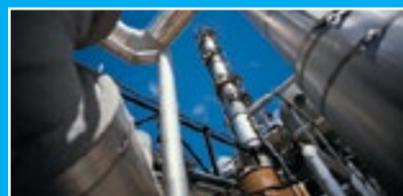
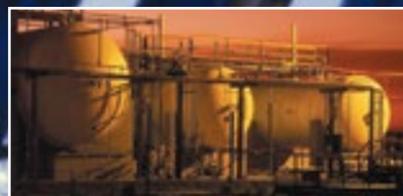
GE
Power Conversion

Motors

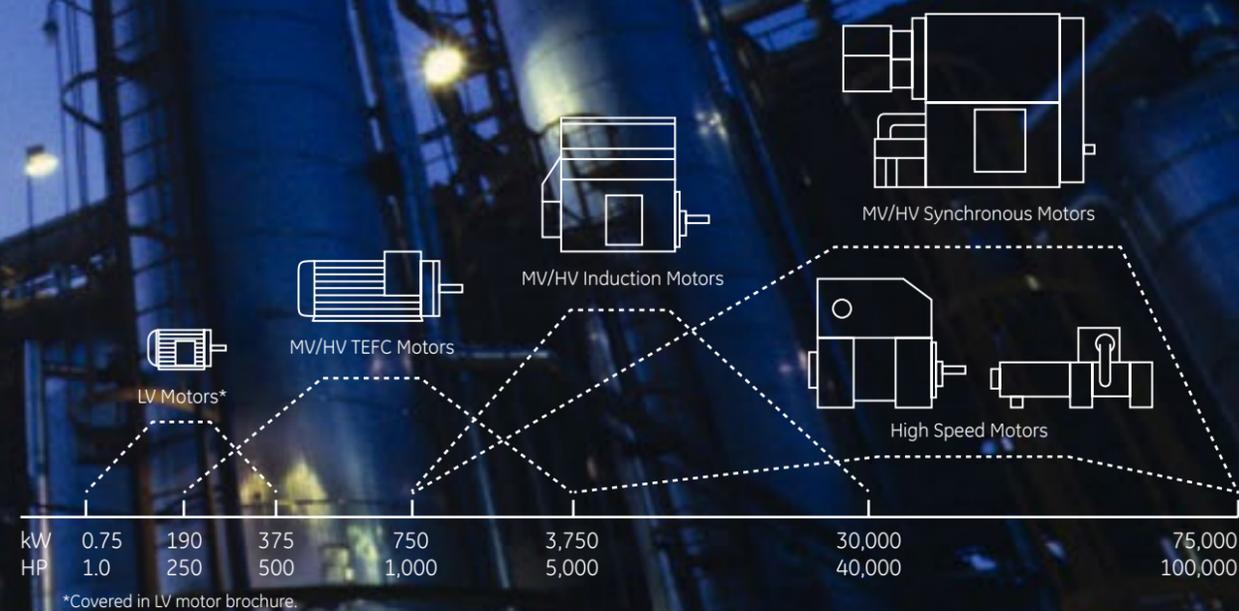
Medium / High Voltage
and High Speed
190 to 75,000 kW
250 to 100,000 HP



imagination at work



GE has been setting the standard in manufacturing motors for over 125 years.



GE manufactured motors for some of the first commercial and industrial electrical applications. We continue to deliver innovative mechanical power solutions to the world.

We continue to innovate with product quality

Motors are designed and manufactured to operate efficiently and reliably in challenging applications and severe environments where reliability and ease of maintenance is critical.

Standards & Certifications

We work with all global standards such as ABS, API, ATEX, CSA, GOST, IEC, IEEE, and NEMA. GE machines are available for use in Division I or II and Zone 1, 2, or 22. GE manufacturing facilities are ISO 9001 certified.

Testing

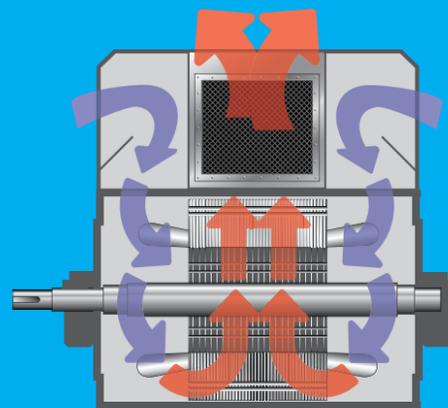
Every machine is tested in our global state-of-the-art facilities to your exacting requirements. GE has one of the largest capacities for full load testing.

Applications

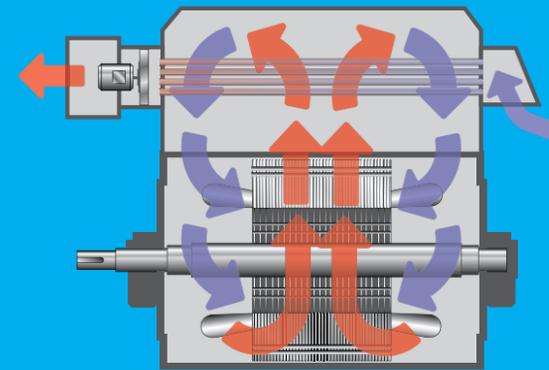
Fans, pumps, compressors, grinding mills, metal rolling, mine hoists, refiners, propulsion and many others.

Industries

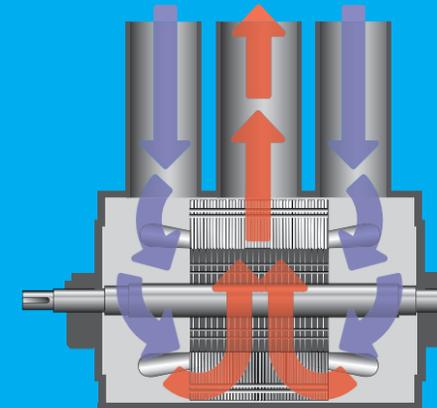
- Oil & Gas
- Power & Energy
- Metals
- Pulp & Paper
- Water & Wastewater
- Other Process Industries
- Mining
- Cement
- Marine



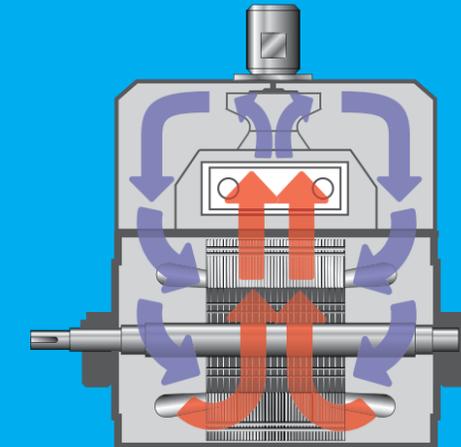
Weather Protected
WPII, ICOA1



Totally Enclosed Air to Air Cooled
TEAAC/CACA, IC6A1A6



Pipe Ventilated, Forced Ventilated
Ducted - IC3A7



Totally Enclosed Water to Air Cooled
TEWAC/CACW, IC8A6W7



Enclosures Designed for Performance

Global Enclosure Designations for Heat Exchange Designs

IEC and NEMA Enclosure Codes	IP	IC
Open, Drip proof and/or weather protected (ODP, WPI, WPII)	IP00 - IP44	IC0A1
Open, externally ventilated (machine mounted blower) (ODP)	IP00 - IP44	IC0A6
Duct ventilated (separate blower) (TEPV)	IP22 - IP44	IC3A7
Totally enclosed non-ventilated (TENV)	IP54 - IP56	IC4A1A0
Totally enclosed fan cooled (TEFC)	IP54 - IP56	IC4A1A1
Totally enclosed fan cooled (machine mounted blower) (TEFC)	IP54 - IP56	IC4A1A6
Totally enclosed air-to-air cooled (TEAAC, CACA)	IP54 - IP56	IC6A1A1
Totally enclosed air-to-air cooled (machine mounted blower) (TEAAC, CACA)	IP54 - IP56	IC6A1A6
Totally enclosed water-air cooled (TEWAC, CACW)	IP54 - IP56	IC8A1W7
Totally enclosed water-air cooled (machine mounted blower) (TEWAC, CACW)	IP54 - IP56	IC8A6W7



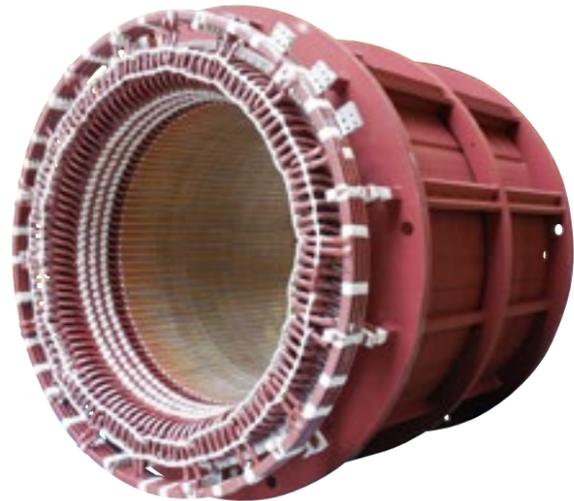
Superior Construction

Stator Frame and Magnetic Core

- Low Loss Core Design
- Easy Access for Routine Maintenance
- Low Vibration – Long Life

Our stator frame has been optimized utilizing advanced finite element analysis tools. Over the decades, these structures have been proven to comply with the most demanding industry standards and requirements.

The stator core is made up of low loss, high grade electrical sheet steel insulated with an inorganic coating. By combining high performance materials, well-proven design techniques and modern manufacturing tools, we are able to offer some of the most compact and efficient designs in the industry.

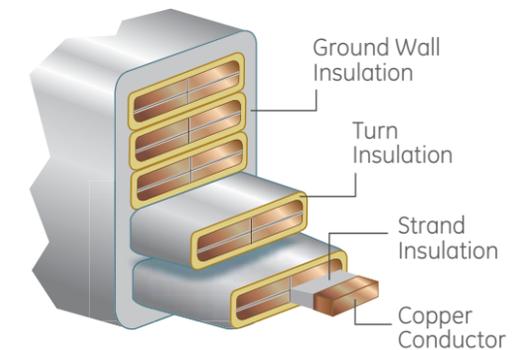


Insulation System

The reliability of our insulation systems are validated through a combination of rigorous qualification testing and service life experience.

Our insulation system ensures long life and reliability by meeting the stringent mechanical and thermal requirements of a wide range of challenging specifications.

Our system is comprised of specially engineered materials selected for thermal capability, high dielectric strength, electrical reliability and chemical resistance. The system then undergoes a Vacuum Pressure Impregnation (VPI) process for added protection and rigidity.



Acceptance Testing

Tests are made during the manufacture of the windings to assure that each machine meets critical material and manufacturing quality standards. Additional tests are available to assure the machines meet unique functional, environmental or even regional requirements for every application.

Rotors to Fit Your Applications

Cage Induction Rotors

- High Performance
- Rugged Reliability
- Small Footprint

This well proven industry work horse is available in a number of different designs from low voltage fractional horse power up to 300 ton machines. Designs are offered with copper or copper alloy, or for smaller machines, both copper and fabricated aluminum. Each machine is optimized to suit specific needs by modifying the stator and stator winding as well as the rotor cage bar profiles and materials. In this way a design can be optimized to give the right starting torque capability, ensuring high efficiency and an optimized power factor.

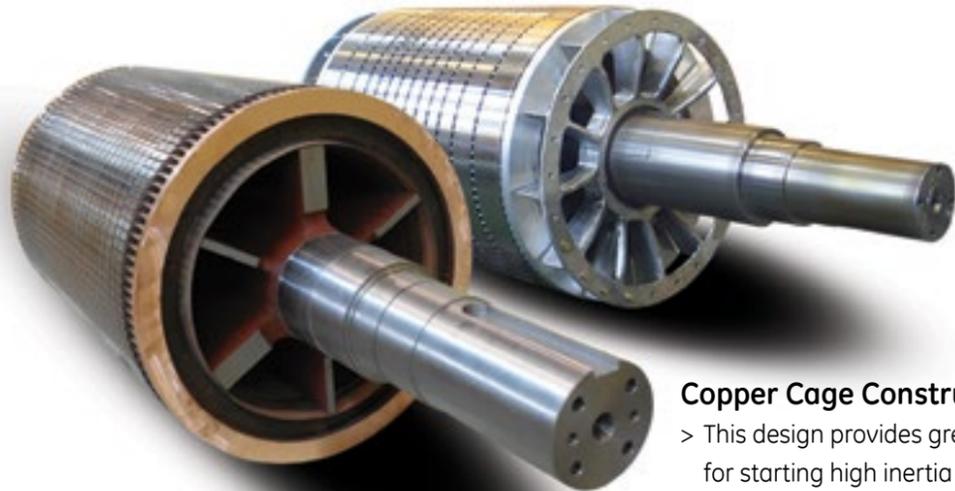
With our ability to optimize motor designs for use with variable frequency drives, cage motors are now being supplied for applications never previously considered. GE has supplied very high speed cage induction motors that eliminate the need for gearboxes (some of which operate at 20,000 rpm!) Our mine hoist technology supplies shaft-less induction motors in excess of 100 tons.

Aluminum Cage Construction

- > Low mass bars and end-rings reduce centrifugal force.

Copper Cage Construction

- > This design provides greater capability for starting high inertia loads.
- > High efficiency helping to reduce CO₂ emissions.



Synchronous Rotors

- Highest Available Efficiency
- Brushless Excitation for Minimum Maintenance and Maximum Reliability

Synchronous motors are utilized for a number of applications across a broad range of industries. Because of the high efficiency and controllable power factor of the design, utility costs (and CO₂ emissions) are minimal. Starting characteristics and normal operating performance can be optimized separately and independently giving you the benefits of both. A number of different design options are available for your application. Included are laminated and solid pole designs – both cylindrical and salient pole. GE also offers a unique forged integral pole tip design well suited to high load inertia applications. Field windings are optimized to suit individual applications utilizing either wire wound or strip wound options. By eliminating the need for a rotor-mounted synchronizing module, GE has further improved motor reliability. Fixed speed applications benefit from the use of our ESP1 excitation control. This not only gives reliable starting but also ensures the best protection for your investment.

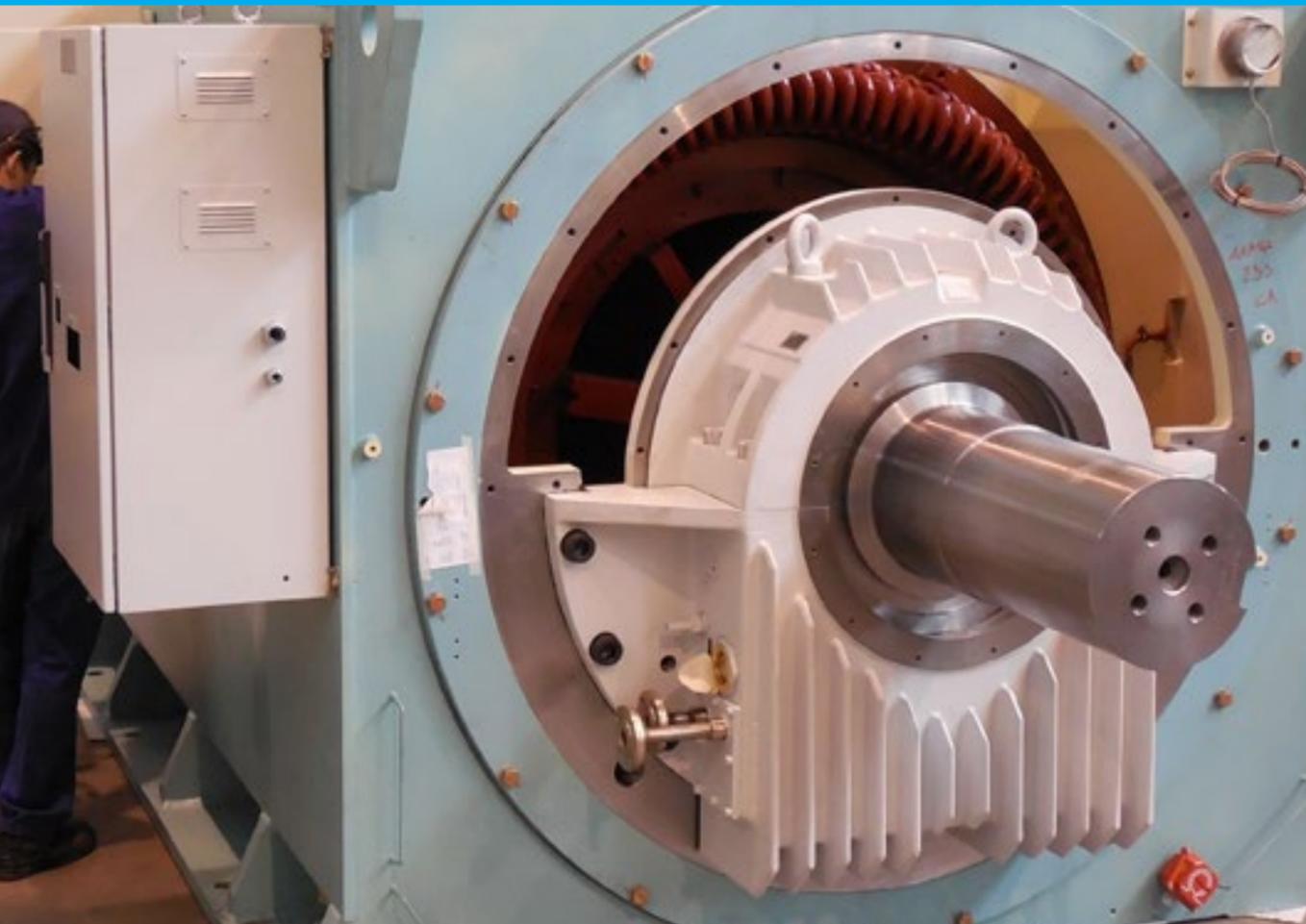
Wound Rotors

- Versatile
- Long Track Record of Success
- Soft Starts

With the ability to provide a ‘soft-start’ when used in conjunction with a liquid resistor as well as some speed control, the wound rotor motor has long been utilized in mining and other process industries with great success.

By employing modern design techniques and updated materials, we have revitalized this technology. Through our variable speed drive expertise, we are now able to offer slip energy recovery systems making this an efficient option.



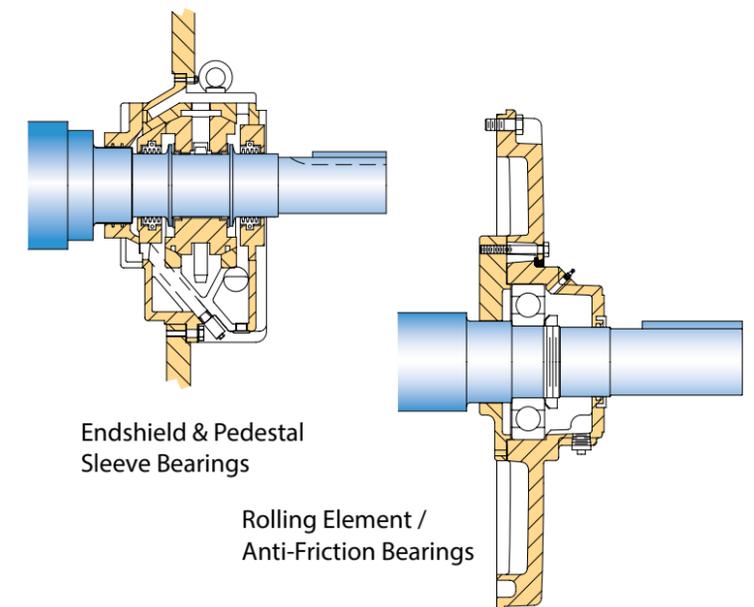


Bearings and Lubrication

Plain white metal or rolling element endshield-mounted bearings are available appropriate to the motor speed and application. All bearings are of the highest quality produced to the standards of internationally recognized manufacturers. This ensures replacement bearings will be readily available.

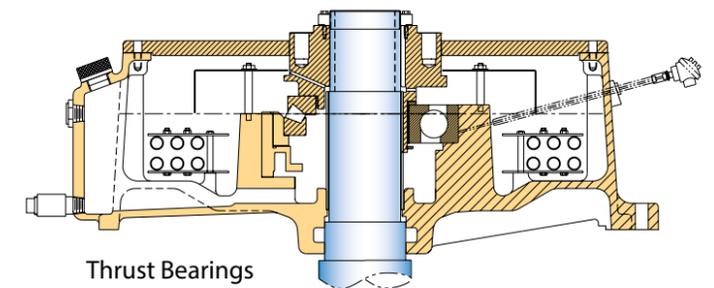
Endshield & Pedestal Sleeve Bearings

These bearing designs incorporate specially developed multiple labyrinth floating oil and air-seals. This ensures dynamic pressure changes inside the motor will not adversely affect the lubrication system and allow for IP56 degree protection. Center flange bearings are used on larger machines improving rotor dynamic performance and overall efficiency. Self-contained or flood lubricated options are available along with suitable provisions for emergency run-down.



Rolling Element / Anti-Friction Bearings

Ball or roller type bearings on horizontal machines are regreaseable and operate smoothly providing long life with low running noise. They are assembled with grease in a sealed housing to avoid contamination and allow for IP56 degree protection. The lubrication system includes a suitable pressure relief plug to purge excess or old grease during lubrication.



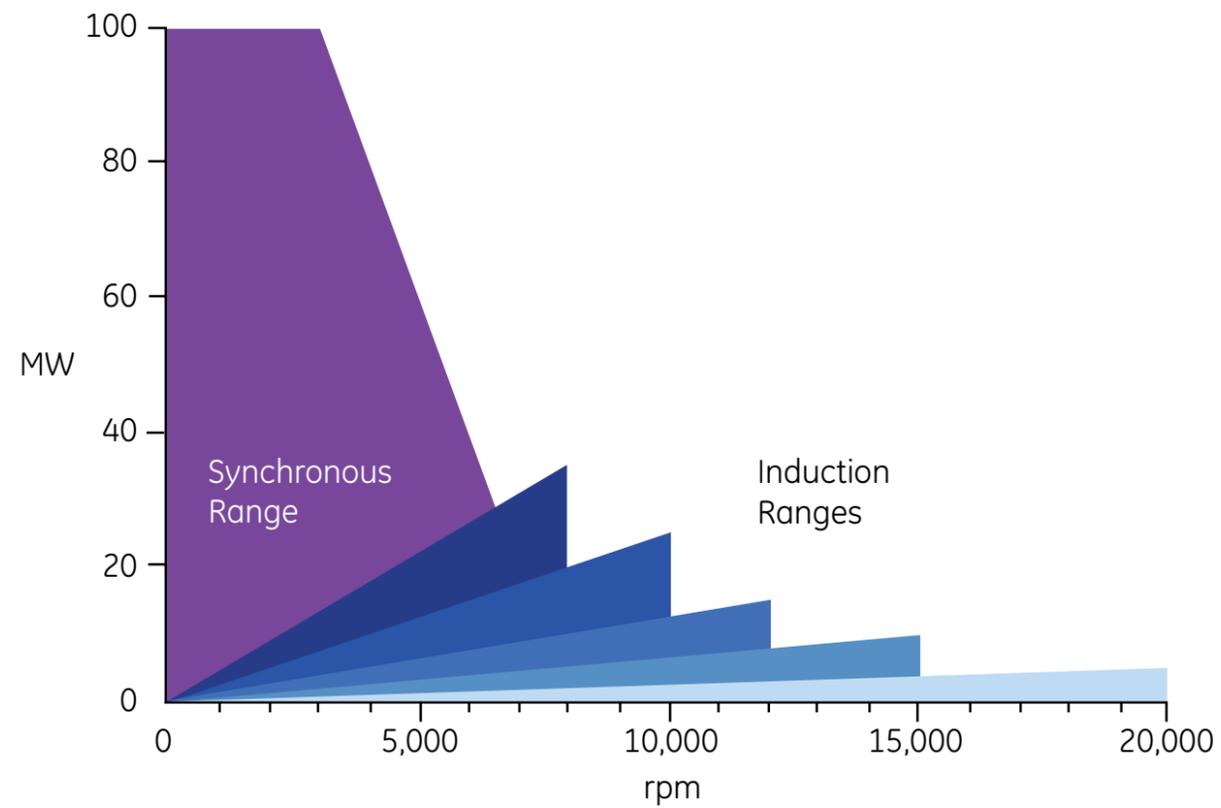
Thrust Bearings

Angular contact ball, spherical roller and sleeve tilting pad (hydrodynamic plate) thrust bearings are designed to meet specific project requirements. Depending upon application, bearings can be self-contained grease or oil lubricated, water cooled or flood lubricated.

Vibration

All motors are capable of complying with the requirements of API 541, 547 or 546 (as applicable). The rotors are dynamically balanced in two or more planes. The vibration level is then checked in the factory before and after over-speed tests. This check is designed to prove the stability required to achieve quiet operation and long bearing life.

High Speed Motors



With over 120 machines in our reference list, GE is the leading supplier of high speed motors. We have 20 years of experience with this design and are constantly improving it to ensure reliable performance for this demanding application.

Our third generation MGV induction range is based on a reliable 'stiff-shaft' design. Available with a Class H insulation system, sleeve, tiling pad or active magnetic bearings, we offer a flexible design suitable for a broad range of applications.



Parts & Services



Superior Product Quality

- OEM parts designed using the latest materials and manufacturing processes.
- A full complement of spare parts are available for the entire range of GE motors.

Exact Fit and Specification

- Experience less replacement time and more efficiency using genuine GE parts.

Spare Parts Program

- Save time with a GE spare parts inventory plan.

World Class Service

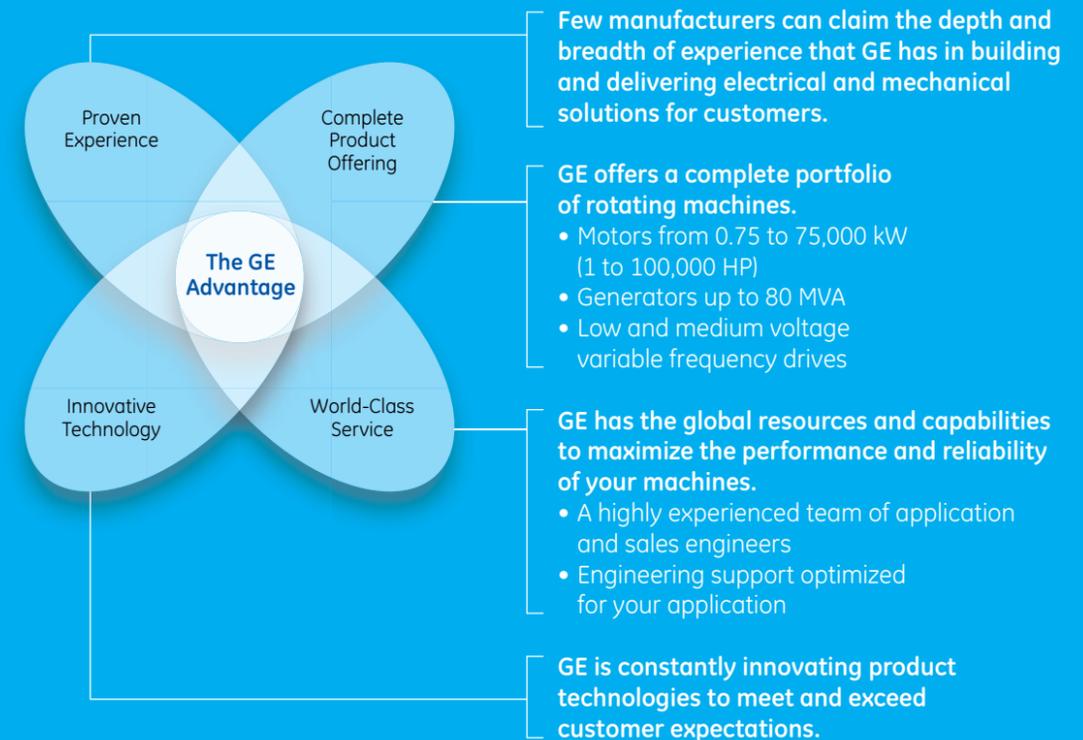
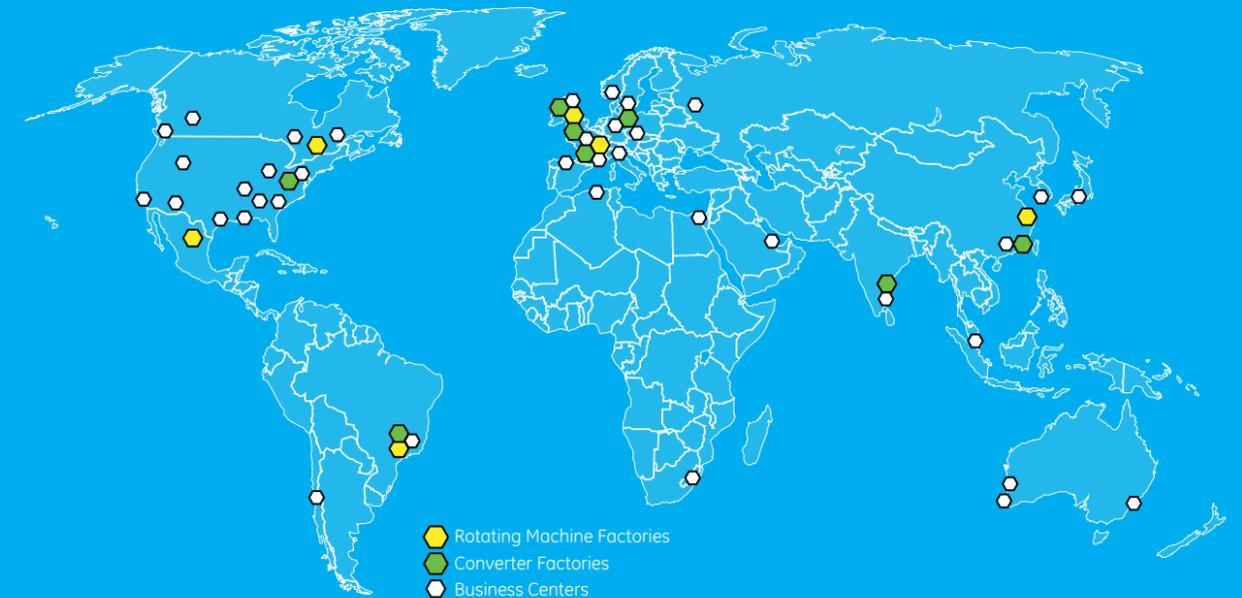
- Our technology and manufacturing teams have dedicated parts people to help you.

Remote Monitoring, Diagnostics and Prognostics

- **Commissioning Benefits**
 - > GE experts observe in real-time to guide engineers onsite
 - > Quicker and smoother commissioning process
- **Operations Benefits**
 - > Optimize your system with full visibility
 - > Full lifecycle coverage
- **Warranty Benefits**
 - > More proactive, less downtime
 - > Your teams can solve minor issues quicker based on remote diagnosis
 - > Field service engineers can arrive fully equipped with solutions

Machine Section	Parts
Coils	Armature, Field, and Stator coils Ammortisseurs, Synchronous Poles, Equalizers
Commutators/Collectors	Replacement Commutators and Slip Ring Assemblies
Brush Assembly	Brushes, Springs and Brushholders
Bearings	Sleeve Bearings and Oil Rings
Exciters	Rotors and Stators
Accessories	Molded Equalizer Trays, Air Filters, Thyristors, Speed Limit Switches, Heaters Thermostats, Converter Assemblies, Oil Gauges, Fans Blower Assemblies or Wheel

Global Expertise



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GEA30775 Motors (06/2013)