GE Energy

PRIMUS MOTORS

Motors Product Line

imagination at work

Expect More...

We've manufactured motors for over 125 years.

In 1879, GE founder, Thomas Edison constructed the first electric motor ever made for a 110 to 120 Volt line at Menlo Park, NJ. This device still exists and is operative! It is located in the Edison Historical Collection in New Jersey.

GE continues to innovate product quality.

Leading the way in Six Sigma, value analysis, and lean manufacturing processes helps to ensure that GE can deliver the best value in its product.

Standards and Certifications

GE has the capability to design electrical rotating machines that comply with global standards and certifications, including but not limited to NEMA, IEC, API 541 and 547, CSA, ABS, ATEX ,or IEC Exn Zone 2, Division 1, Division 2, and PTB Imperial (English) or metric systems compliant components are available per customer specification. Our manufacturing facilities are ISO 9001 certified.

Applications

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

Industries

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

X$D Ultra® Extra Severe Duty

- Power: 0.75–300 HP
- Speed: 900–3600 RPM
- Voltage: 230/460, 460, 575 V
- Frequency: 60 Hz
- Alternate 50 Hz data on nameplate
- TEFC (IP55)
- Frame sizes: 143T–449T
- NEMA, CSA, IEEE 45, IEEE 841, IEEE 112 B
- Division 2 applications
- NEMA Premium Efficiency
- Class H insulation, 1.25 Service Factor
- Five-year warranty

X$D Ultra® 841 Extra Severe Duty

- Power: 0.75–300 HP
- Speed: 900–3600 RPM
- Voltage: 460, 575 V
- Frequency: 60 Hz
- TEFC (IP55)
- Frame sizes: 143T–449T
- NEMA, CSA, IEEE 45, meets or exceeds IEEE 841, GM 7E-TA, IEEE112B
- Division 2 applications
- NEMA Premium Efficiency
- Class H insulation
- Five-year warranty

X$D Ultra® KGS Plus-High Torque Extra Severe Duty

- Power: 40–300 HP
- Speed: 1200–1800 RPM
- Voltage: 230/460, 460, 575 V
- Frequency: 60 Hz
- TEFC (IP55)
- Frame sizes: 143T–449T
- NEMA Design “C”, CSA, IEEE 45, IEEE 112B
- NEMA Premium Efficiency
- Class H insulation
- Five-year warranty

X$D Ultra® Explosion Proof Motor

- Power: 1.5–30 HP
- Speed: 900–3600 RPM
- Voltage: 230/460, 575 V
- Frequency: 60 Hz
- Alternate 50 Hz data on nameplate
- TEFC (IP55)
- Frame sizes: 182T–286T
- NEMA, CSA, IEEE 112B
- NEMA Premium Efficiency
- Class H insulation
- Five-year warranty

A$D Ultra® Adjustable Speed Motor

- Power: 1.5–300 HP
- Speed: 1800 RPM
- Voltage: 230/460, 460, 575 V
- Frequency: 60 Hz
- TEFC, TEBC, TENV (IP55)
- Frame sizes: 143TC–449T
- NEMA, IEEE 841, IEEE 112 B
- Premium Efficiency
- Class H insulation
- Five-year warranty

X$D Ultra® 661 Heat Exchanger Extra Severe Duty

- Power: 5–75 HP
- Speed: 1800 RPM
- Voltage: 460 V
- Frequency: 60 Hz
- TEFC (IP55)
- Frame sizes: 184T–365T
- NEMA, CSA, exceeds API 661 and IEEE 841, IEEE 45, GM 7E-TA, IEEE 112B
- Division 2 application
- NEMA Premium Efficiency
- Class H insulation
- Five-year warranty

Energy $aver®

- Power: 1–300 HP
- Speed: 1200–3600 RPM
- Voltage: 200, 230/460, 460, 575 V
- Frequency: 60 Hz
- Alternate 50 Hz data on nameplate
- ODP
- Frame sizes: 143T–449T
- NEMA, CSA, IEEE 112B
- NEMA Premium Efficiency
- Class F insulation
- Three-year warranty

Energy $aver®

- Power: 1–250 HP
- Speed: 1200–3600 RPM
- Voltage: 200, 230/460, 460, 575 V
- Frequency: 60 Hz
- Alternate 50 Hz data on nameplate
- TEFC (IP55)
- Frame sizes: 143T–449T
- NEMA, CSA, IEEE 112 B
- NEMA Premium Efficiency
- Class F insulation
- Three-year warranty

Energy $aver® and X$D Custom

- Power: 5–800 HP
- Speed: 900–3600 RPM
- Voltage: 200–4160 V
- Frequency: 50 Hz or 60 Hz
- ODP,TEFC, XP
- Frame sizes: 143T–449T
- NEMA,CSA, IEEE 112B
- Class F insulation
- NEMA Premium Efficiency
- Hundreds of custom features available
- Two-year warranty

Quantum™ LMV Severe Duty Low and Medium Voltage Induction

- Power: 200–2,000 HP
- Speed: 750–3000/900–3600 RPM
- Voltage: up to 6900 V
- Frequency: 50 Hz or 60 Hz
- TEFC Severe Duty (IP55)
- Frame sizes: 509–7011
- NEMA, API 541, API 547, IEEE 841
- NEMA Premium Efficiency where applicable
- Class F insulation
- Three-year warranty

X$D® IEC Extra Severe Duty

- Power: 0.55–220 kW
- Speed: 750–3000/900-3600 RPM
- Voltage/Frequency: 400 V 400/690V, 690V/50 Hz
- Voltage/Frequency: 230/460, 460, 575 V, 690 V/60 Hz
- TEFC (IP55)
- Frame sizes: 90S–280H
- IEC, IEEE 841, IEEE 45
- IE2 Efficiency
- 1.6 mm/sec (0.063 ips) vibration
- Class H insulation
- Two-year warranty

X$D Ultra® 841 IEC Extra Severe Duty

- Power: 0.55–220 kW
- Speed: 750–3000/900–3600 RPM
- Voltage/Frequency: 200 V, 400 V, 400/690, 690 V/50 Hz
- Voltage/Frequency: 230/460, 460, 575, 690 V/60 Hz
- TEFC (IP55)
- Frame size: 90S–280H
- IEC, IEEE 841, IEEE 45, ATEX and IEC Exn
- IE3 Efficiency
- Zone II, ABS, GOST-R
- 1.4 mm/sec (0.055 ips) vibration
- Class H insulation
- Five-year warranty

Quantum™ LMV Severe Duty Low and Medium Voltage Induction

- Power: 150–1500 kW
- Speed: 600–3000/720–3600 RPM
- Voltage: up to 6900 V
- Frequency: 50 Hz or 60 Hz
- TEFC (IP55)
- Frame Sizes: 315 and 450
- IEC designs
- Low noise option
- API 541,API 547, IEEE 841
- IE2 or IE3 Efficiency
- Class F insulation
- Three-year warranty

Custom Vertical

- Power: 2–800 HP
- Speed: 900–3600 RPM
- Voltage: 200–4160 V
- Frequency: 50 Hz or 60 Hz
- WPI, WPII, TEFC
- Frame sizes: 213–5013
- NEMA, CSA, IEEE 841, IEEE, 112B
- Hollow or solid shaft
- High or Premium Efficiency
- Class F insulation

ValueLine™ VHS Vertical

- Power: 5–500 HP
- Speed: 1200–3600 RPM
- Voltage: 230/460 V, 460 V (part winding start)
- Frequency: 60 Hz
- De-rated at 50 Hz and noted on nameplate
- WPI
- Frame sizes: 213–509
- High Efficiency
- Class F insulation
- Three-year warranty

Pegasus™ MHV Vertical

- Power: 500–8500 HP (373–6300 kW)
- Speed: 333–1800 RPM
- Voltage: up to 13.8 kV
- Frequency: 50 Hz or 60 Hz
- WPI, WPII, TEAAC, TEWAC
- Frame sizes: PV 500–PV 900
- API 541, IEC, NEMA

8200–8900 Frame Vertical

- Power: 500–12500 HP (9,000 kW)
- Speed: 360–1800 RPM
- Voltage: up to 13800 V
- Frequency: 50 Hz or 60 Hz
- WPI, WPII, TEAAC, TEWAC
- API 541, IEC, NEMA

509–5013 Frame Low and Medium Voltage

- Power: 100–800 HP
- Speed: 750–3000/900–3600 RPM
- Voltage: 400–4160 V
- Frequency: 50 Hz or 60 Hz
- NEMA
- ODP, WPI, WII, TEFC, XP
- Frame sizes: 509–5013
- Vertical or horizontal configuration
- High or Premium Efficiency
- Class F insulation

Pegasus™ LMV Medium and High Voltage Induction

- Power: 500–22000 HP (16000 kW)
- Speed: 900–1200 RPM
- Voltage: up to 13800 V
- Frequency: 50 Hz or 60 Hz
- Frame sizes: 8200–8900
- WPI, WPII, TEAAC, TEWAC
- API 541, 547, NEMA, IEC designs

Pegasus™ MHV Wound Rotor Induction Motor

- Power: 1000–10500 HP (750–7830 kW)
- Speed: 900–1200 RPM
- Voltage: 4000–6600 V
- Frequency: 50 Hz or 60 Hz
- WPI, WPII, TEAAC, TEWA
- NEMA frames 8100–8500
- IEC frames 500–710

Permanent Magnet DC Totally Enclosed

- Power: .25–3 HP
- Speed: 1725, 2500, 1150/1380, 1750/2050, 2500/2750 RPM
- Voltage: 90 or 180 VDC field
- Frame size: 56C, 146ATC–412ATC
- C-Face w/bolt on feet
- Provision for tachometer
- Drive capable
- Continuous torque to 5% base speed with free-wheeling diode

Kinamatic® II

- Power: 1–500 HP
- Speed: 300–3600 RPM
- Armature voltage: 180, 240, 500
- Field voltage: 300/150, 240/120
- DPFG, DPFG-BV, TE, Explosion proof
- TREC coils: 365AT–5010AY frame
- Two-year warranty

CD6000-CD6900

- Power: 500–2000 HP
- Speed: 300–1750 RPM
- Armature voltage: 500, 600
- Field voltage: 300/150
- DPFG, DPFG-BV, TE
- TREC main and commutating coils

MD Motors and Generators

- Power: 5–500 HP
- Speed: 340–1025 RPM
- Armature voltage: 230, 460
- Field voltage: 230, 460
- Meets AIST standard
- Split frame design
- Double tapered shaft
- Class H insulation TREC coils

Large DC Motors

- Power: up to 12000 HP (8952 kW)
- Speed: up to 2500 RPM
- Voltage: up to 1200 V
- Enclosure: as required by the application
- Standards: NEMA, CSA

Large AC Synchronous Motors

- Power: 1000–100000 HP (75000 kW)
- Speed: 150–1800 RPM
- Voltage: up to 15000 V
- Frequency: 50 Hz and 60 Hz
- Enclosures: all types
- Standards: NEMA, CSA, IEEE, IEC, API 546

Quadramatic™

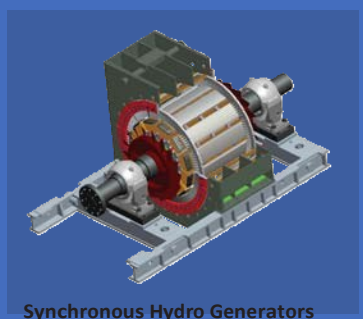
- Power: up to 30000 HP (up to 22000 kW)
- Speed: 166 RPM–240 RPM
- Voltage: up to 15000 V
- Frequency: 50 Hz or 60 Hz
- Enclosures: ODP, WPI
- Standards: NEMA, CSA

Series 9000 – RCM

- Power: 3000–22000 HP
- Speed: 167–428 RPM
- Voltage: up to 13800 V
- Frequency: 50 Hz and 60 Hz
- Open, WPI, WPII, TEWAC, TEFV, TEAAC
- Frame size: two sizes – 800 mm shaft height
- API 546, NEMA, IEC, IEEE

Steam and Gas Turbine Generators

- Power: up to 75000 kVA
- Speed: 900–1800 RPM
- Voltage: up to 13800 V
- Frequency: 50 Hz and 60 Hz
- Enclosures: all types
- Standards: NEMA, CSA, IEEE, IEC, API



Synchronous Hydro Generators

Horizontal and Vertical Applications:

- Power: 2000–37500 kVA
- Speed: 150–900 RPM
- Voltage: up to 13800 V
- Frequency 50 Hz and 60 Hz
- Enclosures IDP, TEWAC
- Standards: ANSI, CSA, IEEE 115, NEMA MG-1, IEC 60034

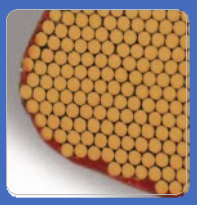
- Genuine GE parts built to original designs, using the latest materials and manufacturing processes
- A full complement of spare parts are available for the entire range of GE motors

- Average installation time is reduced compared to competitor parts in GE motors

- Our dedicated Renewal Parts Team is fully integrated with technology and manufacturing
- Identification of common spare parts is based simply on machine model or serial number

- Customers minimize downtime with an adequate spare parts inventory plan for their GE motors

- Operate cooler and last longer than most designs
- Superior heat migration with a high-precision winding process
- Encapsulated outer shell makes coils rugged and durable
- Used in all GE mill-duty motors, CD4000 machines and Kinamatic™ frame sizes 360-500 AT



Close-up detail of the high-precision TREC® coil winding.

Coils
- Armature
- Field
- Stator
- Ammortisseur
- Synchronous rotor poles
- Equalizer

Commutators/Collectors
- Replacement commutator
- Slip ring assemblies

Brush Assembly
- Brushes
- Springs
- Brushholders

Bearings
- Sleeve bearings
- Oil rings

Exciters
- Rotor and stators

Accessories
- Air filters
- Molded equalizer trays
- Speed limit switches
- Heaters
- Thermostats
- Thyristors
- Converter assemblies
- Oil gauges
- Fans
- Blower assembly or wheel

- GE Motors FastTrack Motor Modification Shop modifies stock GE Value Line™, Energy $aver®, X$D Ultra®, X$D Ultra® 841 and A$D motors to meet your specific requirements
- Most modifications can be completed in 1 to 2 weeks

is offered as an external mount option on the Energy $aver® ODP and TEFC motor products using a specially designed mounting bracket. The Aegis™ SGR is offered as an internal mount option on X$D Ultra® motors.

Today's demands on AC motors are greater than ever before. Operators are challenged to maintain a continuous, reliable operation while reducing costs. A rigorous, proactive motor reliability program is key to minimizing AC motor failures and unplanned outages.

GE's experienced AC motor services team can assist you to develop and implement an effective AC motor maintenance plan. Whether you need a day of service on a single motor, or a comprehensive plan for your entire facility, GE can help you do the following:

- **Evaluate** the condition of your motors and status of existing maintenance programs
- **Structure** a maintenance plan to balance your financial needs
- **Plan** the required services according to your schedule
- **Perform** the required work—on time, on budget

During the evaluation of your motor, GE can offer the following:

- Continuous technical support through GE's Monitoring and Diagnostic (M&D) Center
- GE motor engineers with remote access to motor condition data can identify potential failures of industrial machines
- Advanced technology products designed to easily retrofit existing customer equipment and provide the highest levels of protection and reliability
- Installation and commissioning—prompt comprehensive service built upon GE's years of field engineering experience, OEM product knowledge, and access to product information

When structuring a maintenance plan, GE will review the following options to see what works best to meet your needs:

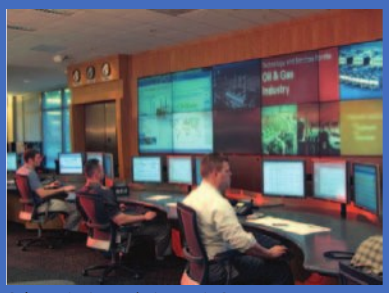
- Managed Maintenance Program (MMP)
- Transactional Service Agreements
- Contractual Service Agreements (CSA), which can include fixed pricing and long-term service agreements

In order to help you plan your motor service, GE provides you with the following:

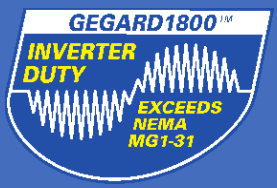
- Equipment Management Program (EMP), which includes service planning and solutions
- Project Management Services
- Outage Planning Service

With over 1,300 service engineers and technicians globally, GE is ideally positioned to provide you with the knowledge, experience and skills for the full range of motor monitoring, services and repairs.

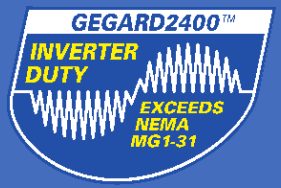
From system design to testing, maintenance and outage support, GE has the resources and capabilities to enable you to enhance the performance and reliability of your motor.



GE's Monitoring and Diagnostic Center



This system exceeds NEMA MG1-31 (which is 3.1 times the nameplate voltage) for motors operating on inverters. The insulation system is comprised of class F materials and the varnish is non-hygroscopic, anti-fungus. The varnish is either applied via a Dip and Bake, or Vacuum Pressure Impregnation (VPI) process. The combination of materials and processes provides a minimum Corona Inception Voltage (CIV) up to 1800 volts peak with a rise time of 0.1 microseconds.



This system exceeds NEMA MG1-31 (which is 3.1 times the nameplate voltage) for motors operating on inverters. The insulation system is comprised of class H materials and the varnish is non-hygroscopic, anti-fungus. The varnish is applied via a Trickle Treat process while a 60 Hz current is passed through the windings. This causes the varnish to flow through the winding, resulting in improved penetration into the stator slots and an increase in varnish build. The current also cures the winding from the inside out, rather than oven baking. The combination of materials and processes provides a typical Corona Inception Voltage (CIV) of 2400 volts peak with a rise time of 0.1 microseconds.

With GE, you have a single point of responsibility for all your motor needs. GE offers a complete portfolio of equipment from which to choose, including:

- Motors from 1 to 100,000 HP (0.75 to 75,000 kW)
- Generators up to 75 MVA
- Low and medium voltage variable frequency drives
- Multiple product lines covering all enclosures: WPI, WPII TEFC, TEAAC, TEWAC
- GE motors can adhere to these industry standards among others: NEMA, IEC, CSA, API 541, 546, 547, and 661; IEEE 841, GOST, DIV 2, Ex-n for Zone 2, Ex-p for Zone 1 or 2, ATEX

GE has over 125 years of experience in the electrical industry with successful global installations spanning a wide variety of applications. Very few competitors can claim the depth and breadth of experience that GE has in creating and executing solutions for its customers.

With GE's wealth of global experience comes a full coverage offering for its products along with leading experts in the industries they serve. Additionally, GE experience and innovation brings:

- Experienced sales force
- Engineering support optimized for your application
- Project management tools

GE is constantly innovating product technologies to meet and exceed customer expectations. Founded by world renowned inventors, General Electric continues to be a company made up of individuals striving to design, create, and build products and solutions that improve people's lives. Among the many tools used to produce innovative products are:

- Electromagnetic finite element analysis
- 3D solid modeling
- Virtual motor "building" while in design phase

PRIMUS MOTORS