

GE Energy Connections
Power Conversion

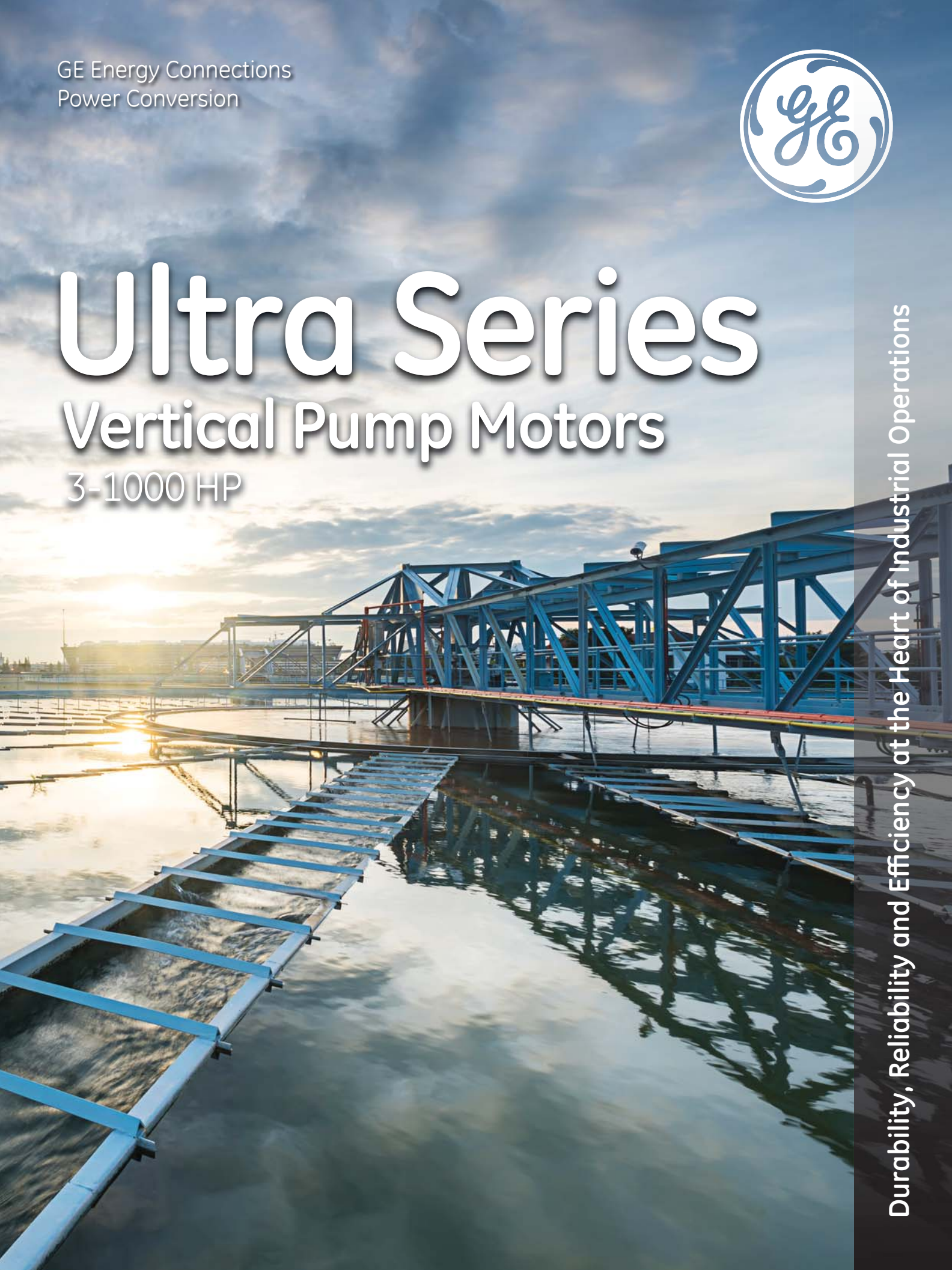


Ultra Series

Vertical Pump Motors

3-1000 HP

Durability, Reliability and Efficiency at the Heart of Industrial Operations



Motor technology for tomorrows challenges.



Ultra Series Vertical Pump Motors



**NEMA
PREMIUM
EFFICIENT**

- Industry-leading inverter-duty capability
- Advanced high thrust bearing system
- Innovative patented air-cooling system
- New insulated bearing
- Reliable ball non-reverse ratchet
- Standardized and modular design
- Industry standard CD dimensions
- Optional API 610 12th Edition adherence
- Cast iron frame and cast aluminum top hat
- Coupling kits convertible from NRR to SRC



Product Name	WPI Ultra™ VHS	XSD Ultra™ VSS NT	XSD Ultra® VHS	XSD Ultra® 841 VSS
Enclosure/Shaft Type	WPI hollow shaft	TEFC solid shaft	TEFC hollow shaft	TEFC solid shaft
Speed	1200, 1800, 3600	1800/3600	1800, 3600	1800, 3600
Voltage (60Hz*)	230/460, 460 PWS, 575, 380-440	230/460, 460	230/460, 460 PWS	460
Base/Face	P-Base	P-Base	P-Base	P-Base and C-Face
Thrust	100, 175, 300% High	Normal	100, 175, 300% High	Inline and 100% High
HP Range (Standard)	5 - 600	3 - 150	5 - 300	3 - 300
HP Range (Custom)	5 - 1000	3 - 500	5 - 600	3 - 500
Efficiency	NEMA Premium	NEMA Premium	NEMA Premium	NEMA Premium
Warranty	3 Years	3 Years	3 Years	3 Years

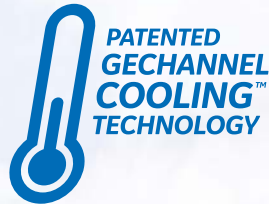
Notes: *Also dual 50Hz nameplated.



Industry leading coil insulation system

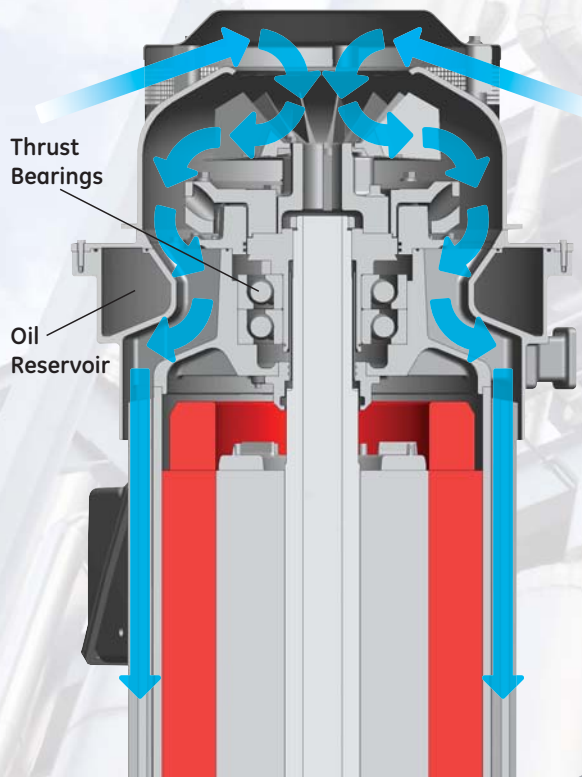
GE pump motors are manufactured standard with a GEGARD2400 insulation system. This system exceeds NEMA MG1-31 (which is 3.1 times the nameplate voltage) for motors operating on inverters.

This insulation system is comprised of class H materials. The combination of this and the varnish process provides a typical Corona Inception Voltage of 2400 volts peak with a rise time of 0.1 seconds.



Innovative patented air-cooling technology

GE engineers found a better way to air cool bearings in larger frame TEFC motors. The design improvements result in an amazing ~30°C temperature reduction helping to dramatically extend bearing and winding life.





The most robust WPI vertical hollow shaft motor in the industry

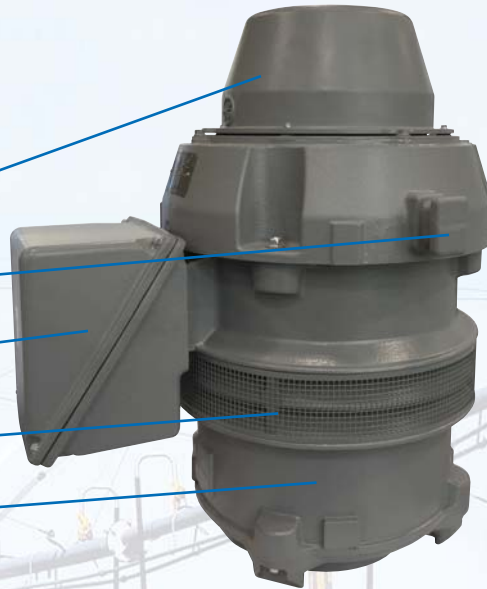
Cast aluminum top hat

Multi-direction cast in lifting lugs

Oversized cast iron conduit box

Aluminum anti-rodent screens

Heavy-duty cast-iron frame



Standard VHS Scope

	WPI Ultra	WPI Ultra+
Efficiency	NEMA Premium	NEMA Premium
HP	5-400	40-600
Warranty	3 Years	3 Years
Speed	1200, 1800, 3600	1800
Thrust	100 or 175% HT	100, 175%, 300% HT
Voltage	230/460, 460 PWS	230/460, 460 PWS, 575

VHS Standard Features

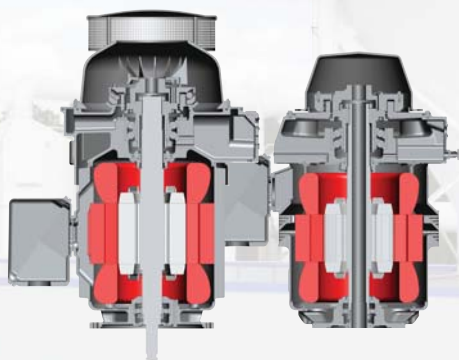
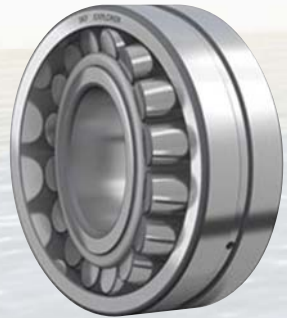
	WPI Ultra	WPI Ultra+
NEMA Premium Efficiency	Yes	Yes
Space Heater	Yes	Yes
GEGARD 2400 Inverter Duty Insulation	Yes	Yes
Class H Insulation System	Yes	Yes
3 Year Warranty including Inverter Duty	Yes	Yes
Winding Thermostats		Yes
Insulated Thrust Bearings		Yes
Shaft Grounding Ring on NDE		Yes
Aegis SGR Extended Warranty		Yes



20% average higher standard thrust

GE high thrust vertical pump motors have, on average, 20% higher thrust and extended performance than any other similar product in the industry. As a result, motors in all deep well applications can be air-cooled with any bearing configuration.

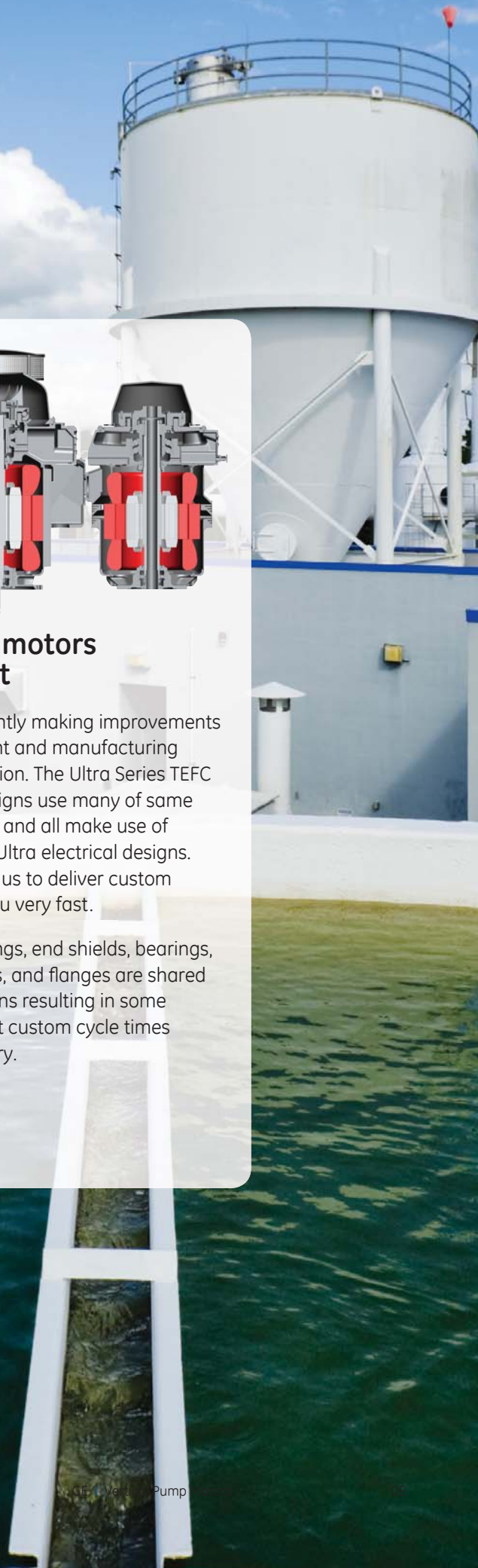
In response to ever-demanding performance requirements of modern machinery, GE achieved a substantial improvement in performance with a bearing that features an optimal internal geometry, ultra clean contact surface finish, and high quality homogenous steel formed through a unique heat treatment.



Custom motors built fast

GE is constantly making improvements in component and manufacturing standardization. The Ultra Series TEFC and WPI designs use many of same components and all make use of proven X\$D Ultra electrical designs. This enables us to deliver custom motors to you very fast.

Fans, couplings, end shields, bearings, bearing caps, and flanges are shared across designs resulting in some of the fastest custom cycle times in the industry.



All pump motors are not built the same!

Effects of VFD's on Induction Motors

When the motor impedance is greater than the impedance of the conductor cable between the motor and the drive, the voltage waveform will reflect at the motor terminals. Longer motor cables favor higher amplitude standing waves.

Voltage spikes have occurred with peak values as high as 2,150 volts (V) in a 480V system operating at 10% overvoltage.

These high spikes can lead to insulation breakdown, which results in phase-to-phase or turn-to-turn short circuits, and subsequently overcurrent drive sensor trips.

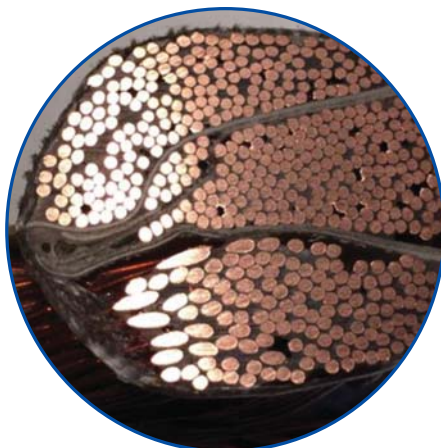


Source: US Department of Energy, Advanced Manufacturing Office, Energy Efficiency and Renewable Energy



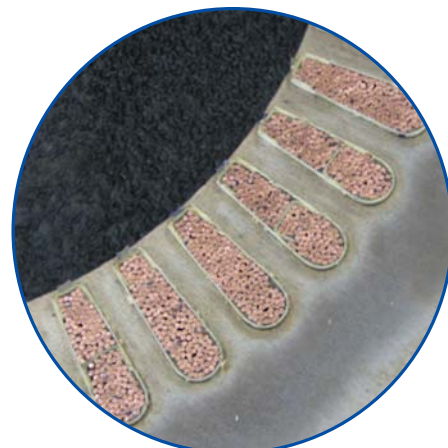
Rotational Varnish Application

All low voltage motor coils are rotationally varnished with a "Trickle Treat" process while an electric current is passed through the windings to ensure a penetrating, thorough and even coating. This proven process fills air gaps that could cause corona inception damage during operation.



Wire Bonding

The varnish resin penetrates deep into tightly packed coil wire creating a strong bond that guards against end-turn vibration.



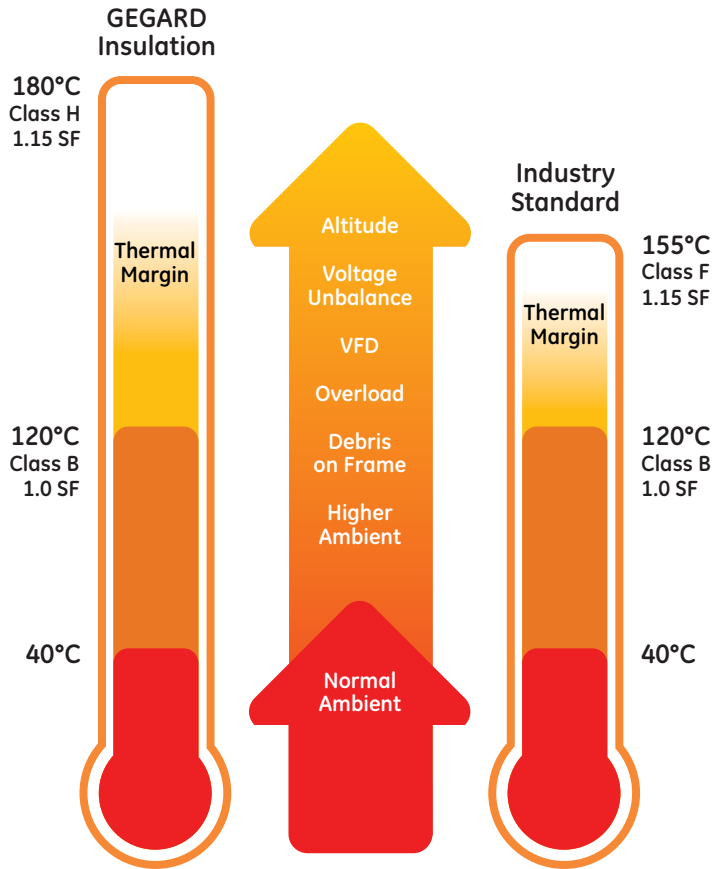
Protection from Contamination

Moisture and contaminant accumulation becomes less of an issue with carefully and tightly packed stator coils bonded by deep resin penetration into the slots.



Insulation Comparison	GE	Alternative
Varnish Application Process 140 to 445 Frame	Trickle Treat	Dip and Bake
Air Void Formation	Less	More
Moisture Accumulation	Less	More
Contaminant Accumulation	Less	More
Corona Inception Damage	Less	More
Wire Bonding	Solid Encapsulation	Brittle / Loose
Coil Winding End Turn Vibration	Less	More
Resin Distribution	Even / High Penetration	Uneven / "Icicles"

Engineered for reliability.



GEGARD™ Insulation offers added protection in severe applications.

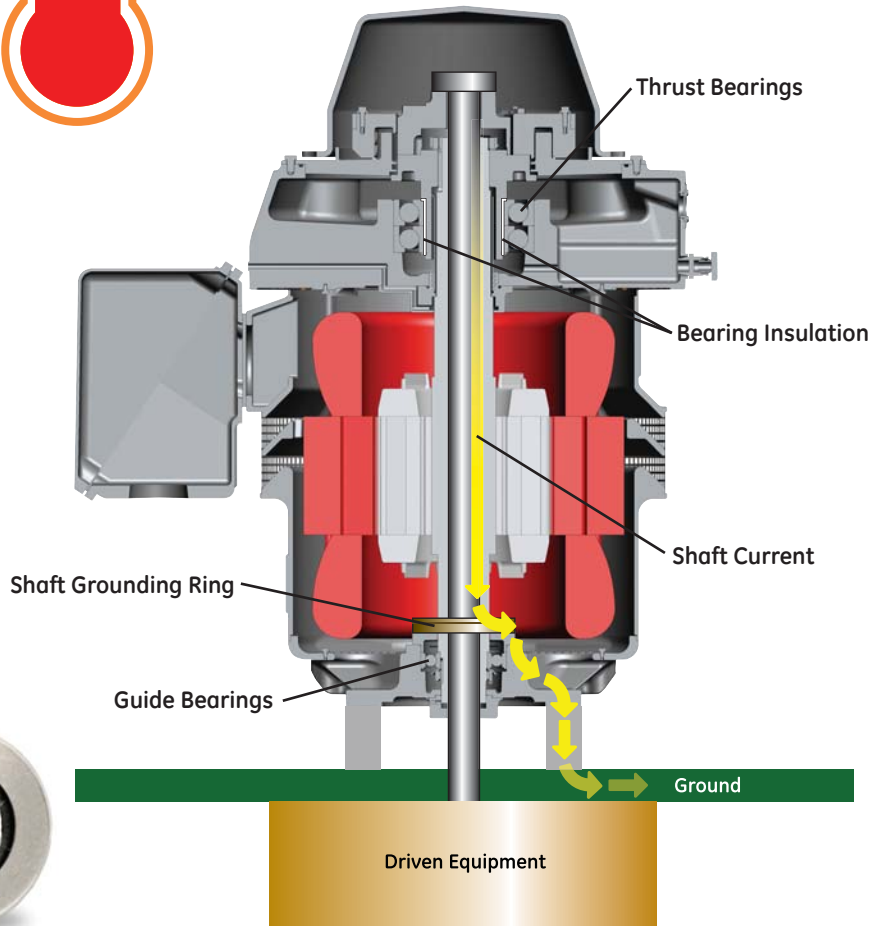
Heat is the primary enemy of electric motors. The most common causes of motor failure are overheating coils and bearings. Our Class H GEGARD insulation system is designed to run lower than a standard temperature rise of 80 degrees Celcius. Often, existing application conditions drive up the operating temperature of the motor to exceed acceptable standard levels. That's why its critical to have a large thermal margin to handle multiple application challenges.

**Larger Thermal Margin
= Longer Motor Life**

Guarding against voltage spikes and bearing fluting.

Another common cause of motor failure is shaft currents that build up during normal operation. These currents create voltage spikes that reach thrust and guide bearings causing them to vibrate in operation. Over a short period, this vibration (fluting) will degrade bearings to the point of failure.

To divert shaft currents from bearings and driven equipment, we include insulation for the thrust bearings in ratings 100HP+ and Aegis™ shaft grounding rings are optional on all ratings.



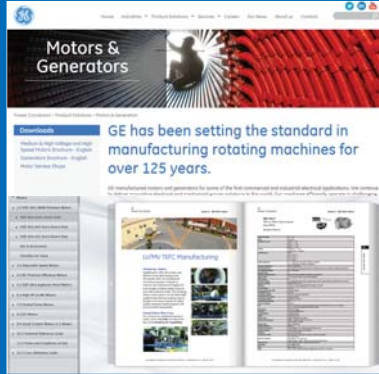
Discover. Configure. Purchase.

Website

The latest information on custom and standard rotating machines.

e-Catalog

GE motors on your computer
Auto-update online.
Can be viewed offline.



PC Store

Find a distributor.
Download data packs.
Access support library.



Manufacturing

Monterrey, Mexico
Employs over 500 people.
ISO9000-2008 facility
YouTube Virtual Tour



Services

CARING FOR YOUR NEEDS

At GE, we understand that the goals of your organization are demanding, and evolving. To help you meet these goals here at GE Power Conversion we provide a service that goes beyond just waiting for your call.

We offer a comprehensive range of aftermarket services including replacement units, field services, spares, service agreements, unit upgrades and technical support. Our mission is to satisfy our customers aftermarket needs.

INSTALLATION & COMMISSIONING

Installing with confidence. Our team of field service engineers are on hand to ensure your assets go into active service functioning efficiently.

TRAINING PROGRAMS

Through our in-depth training modules we provide our customers with the knowledge and skills to operate and maintain equipment in the field.

ENHANCED TECHNICAL SUPPORT

We offer enhanced technical support to customers with service agreements. Our enhanced technical support agreements are designed to suit your specific needs including the availability of 24/7 on-call technical assistance, remote support and immediate mobilization to emergencies.

SPARES AND CONSUMABLES

The GE Parts team is available to advise the appropriate spares and consumable parts for you to hold in stock. For those emergencies - the team will provide the parts you need on time and at the quality you expect.

DIAGNOSTICS AND SPECIALIZED

Delivering state of the art test and diagnostic services, our specialist field engineers will apply our in house analysis tools to analyse the asset's performance. Working with you to resolve issues on installations in the field efficiently and reliably.

UNIT UPGRADES

To extend the life of your asset, our engineering design team will provide you with suitable upgrade options aligned to meet your technical specification and requirements to improve



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NEMA Premium is a trademark of the National Electrical Manufacturers Association.
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