



Electric motors make an average **70%** of total power cost\*

# \$87k/hr

Average cost of unplanned downtime for a typical industrial processing plant\*\*

## Challenges

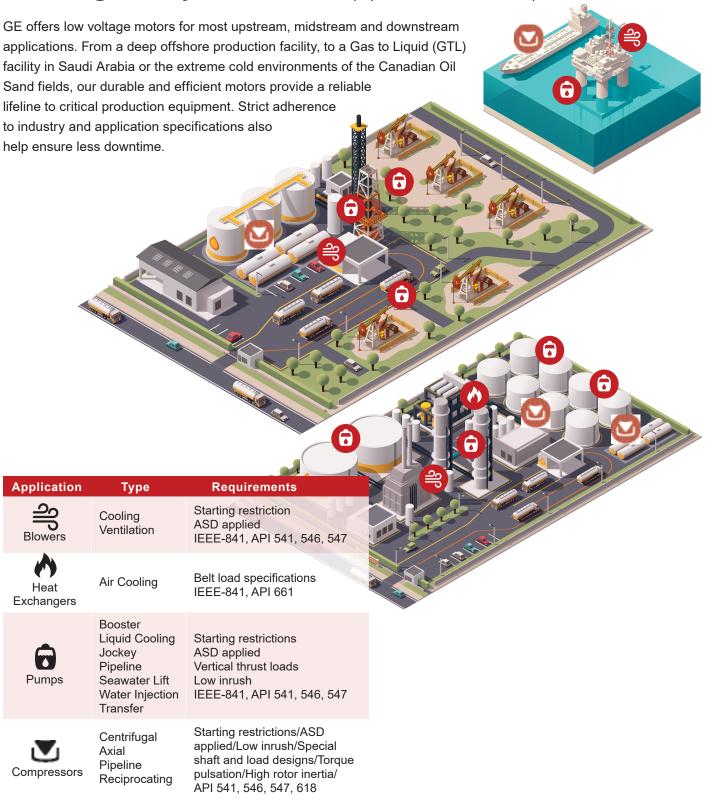
- Multiple suppliers, designs and specifications tying up resources.
- Frequent unplanned maintenance disrupting operations requiring replacement motors onsite.
- · Older low efficient motors eating profits.

# **Our Solutions**

- Frame agreements increase supply and specification efficiency freeing up resources.
- Less unplanned maintenance and downtime with more robust motor designs.
- +1% energy efficiency gains translate to less than a two year payback.



# Meeting Heavy Industrial Application Requirements



# Consider Lifecycle Operating Costs First

The initial cost of an electric motor makes up 5% or less of the total cost of operation. So all aspects of the motor operation should be considered when purchasing motors.

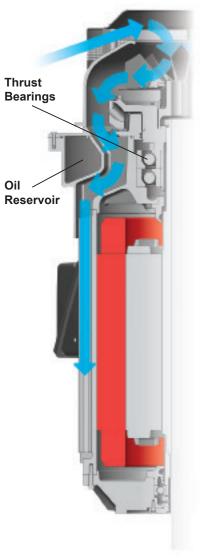
# **Purchase Price** (5% or less) Lifecycle Operating Costs Energy Consumption Ease of Maintenance Environmental Impact System Criticality Misc. Engineered to Address the Common Causes of Motor **Failure** Windings **Bearings** Heat Heat Load Vibration Inverters Misalignment Contamination Contamination Lubrication Issues Voltage Issues

Electrical Discharge

Stress, Load, Fatigue

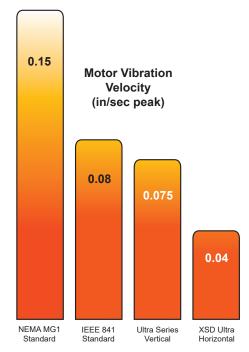
# Innovative Patented Air-Cooling Technology

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



# Low Vibration Means Long Life

Vibration is bad for motors and driven equipment. Motor bearings, in particular, begin to wear faster with high vibration levels. Beyond focusing on proper alignment, base, and voltage, users should also pay more attention to the design of the motor itself. In most cases, manufacturers are content to simply stay within the NEMA or IEEE standards because many engineers, of course, specify these limits.



# It is well documented that motors designed with low vibration have longer bearing life.

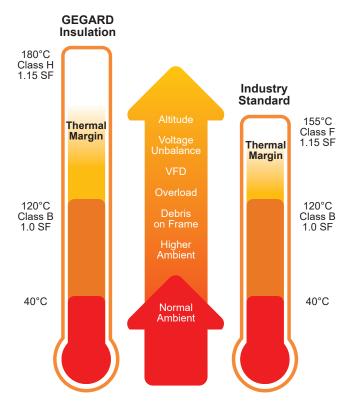
Since bearing wear is one of the leading causes of motor failure, reducing its chances reduces your unplanned downtime. Our application engineers have been told by many users that their driven equipment tends to run smoother with low vibration motors. All of this leads to lower maintenance costs on the entire drive system.



# GEGARD™ Insulation offers added protection in severe applications.

Our Class H GEGARD insulation system is designed to excel in variable frequency drive applications where lesser designs often short circuit and cause overcurrent trips.



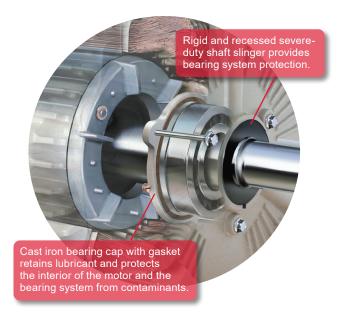


Larger Thermal Margin = Longer Motor Life

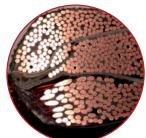
# **Guarding Against Bearing Failure**

Common shaft currents create voltage spikes that reach bearings causing them to vibrate in operation. Over a short period, this vibration (fluting) will degrade bearings to the point of failure. We include bearing insulation for higher ratings and Aegis™ shaft

grounding rings are optional on all ratings. est-aegis.com









# Rotational Varnish **Application**

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

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

# **Moisture Protection** Contaminants can't penetrate

carefully and tightly packed stator coils bonded by deep resin penetration into the slots.

# **Severe Duty NEMA IE3**



#### **NEMA Premium Efficient**

This versatile and robust design is ideal for a wide range of challenging industrial applications and environments.

#### **MODELS**

- XSD Ultra
- XSD Ultra 841

## **Technical Capabilities**

0.75-300 HP, 900-3600 RPM 230/460, 460, 575V / 60 Hz

Alternate 50 Hz data on nameplate

Frame sizes: 143T-449T

NEMA, UL, CSA, IEEE 45, 841, 112B, and GM 7E-TA

Division 2 applications

C-Face and high-torque

Design "C" models available

VFD ready with GEGARD Class H (XSD

Ultra) insulation

Five Year Warranty

# **Severe Duty** IEC IE3



# Rugged and Reliable

Based on the X\$D Ultra mechanical and electrical design for the global market. Ideal for extreme environments.

#### **MODEL**

XSD Ultra 841 IEC

## **Technical Capabilities**

0.55-220 kW, 750-3000 / 900-3600 RPM 200, 400, 400/690, 690V / 50 Hz 230/460, 460, 575, 690V / 60 Hz TEFC (IP55)

Frame size: 90S-280H

IEC, IEEE 841, IEEE 45, ATEX, and

IEC Exn

Zone II, ABS

VFD ready with GEGARD Class H

insulation

Five Year Warranty

# **Energy Saver XP NEMA**



# **Protects Systems in Hazardous Zones**

This enclosure has been specially designed to contain any sparking for hazardous environments where volatile gases may be present.

#### **MODEL**

- Energy Saver XP
- · Energy Saver

## **Technical Capabilities**

1-300 HP, 900-3600 RPM 230/460, 460, 575V / 60 Hz Alternate 50 Hz data on nameplate

TEFC (IP55) and (ODP) Frame sizes: 143T-449T

NEMA, UL, CSA, IEEE 112B

Division 1

Class I - Groups C, D

Class II - Groups F, G

Class F (ES) insulation

Five Year Warranty





# Heat Exchange NEMA IE3



## Stable, Reliable, Efficient

Specially rated and ideally suited for harsh outdoor heat exchange applications.

#### **MODELS**

• XSD Ultra 661

## **Technical Capabilities**

0.75-300 HP, 900-3600 RPM
460, 575V / 60 Hz
TEFC (IP55)
Frame sizes: 184T-449
NEMA, UL, CSA, API 661,
IEEE 841, 45, 112B and GM 7E-TA
CE, ATEX Zone 2
Division 2 application
VFD ready with GEGARD
Class H insulation
Five Year Warranty

# Vertical Pump NEMA IE3



## **Inverter-Duty and Efficient**

Combines extra severe duty engineering with advanced thrust and cooling technologies.

#### **MODELS**

- Ultra Series Vertical
- Large Custom Vertical
- Vertical Fire Pump
- ULTRASNOW-V Pump

# Technical Capabilities 3-1000HP, 600-3600 RPM

460, 575, 2300/4160 V
60Hz or 50Hz
WPI and TEFC Enclosures
Hollow and Solid Shaft
Normal, High, and Extra High Thrusts
Frame Size: 182-5013
API 610 12th Edition
P-Base mountings
VFD ready with GEGARD
Class H insulation
Three Year Warranty

# Medium Voltage NEMA



# Severe Duty, Long Lasting

Designed to operate in extreme Petrochemical, Power Generation, Mining and general process environments and applications.

#### **MODEL**

- Quantum LMV
- Quantum V

(IEEE 841)

Quantum 580

## **Technical Capabilities**

100-1750 HP
900-3600 RPM / 60 Hz
900-3000 RPM / 50 Hz
460, 575, 2300/4000, 6600V
TEFC
Available in IEEE 841 config.
Frame sizes: 440-7000
NEMA, CSA, UL, IEEE 112B, AEx nA
API 547 and 541, Division 2, Zone 2
Class F insulation
Three Year or Five Year Warranties

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