

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

# \$87k/hr

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

Multiple suppliers, designs and specifications tying up resources.

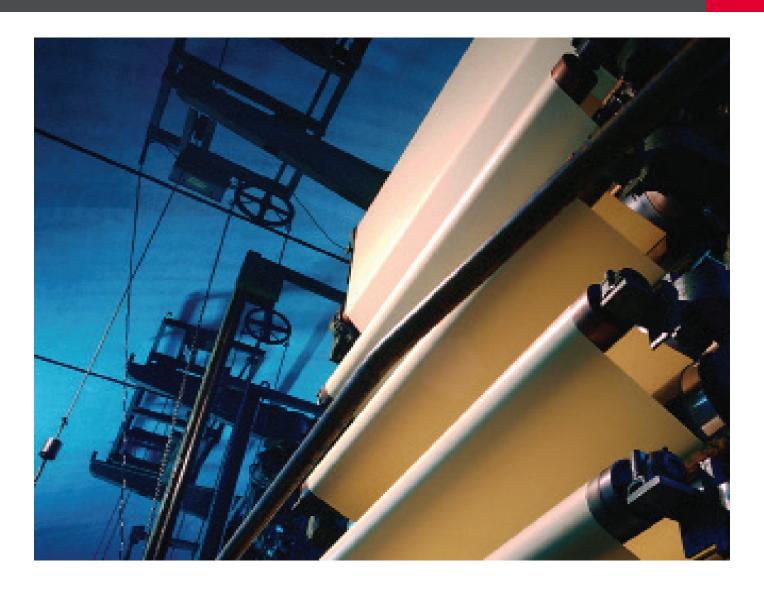
Frequent unplanned maintenance disrupting operations requiring replacement motors onsite.

Older low efficient motors eating profits.

<sup>\*</sup> http://energy.gov/eere/amo/downloads/optimizing-your-motor-driven-system

<sup>\*\*</sup> https://iac.university/technicalDocs/prodman.pdf (Page 67)





# \$930k/yr

Energy savings uncovered during a plant motor audit\*\*\*

Frame agreements increase supply and specification efficiency freeing up resources.

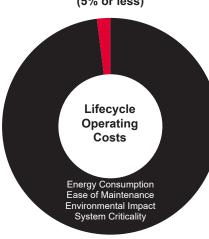
Less unplanned maintenance and downtime with more robust motor designs. +1% energy efficiency gains translate to less than a two year payback.

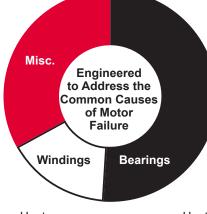
<sup>\*\*\*</sup> Large pulp and paper producer motor audit results 2014

#### 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)





Heat Heat
Load Vibration
Inverters Misalignment
Contamination
Voltage Issues Lubrication Issues
Electrical Discharge
Stress, Load, Fatigue

# **Engineering** Requirements

Each petroleum, chemical, power generation, pulp/paper, mining, metal, mineral, water/wastewater, and general process application has unique torque, speed, voltage, enclosure, temperature, and industry standard requirements that must be designed into motors.









Heat Exchangers





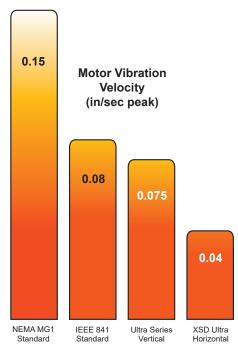




We also have the expertise to diagnose the mechanical and electrical requirements for special applications and custom engineer designs as they warrant.

#### 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.

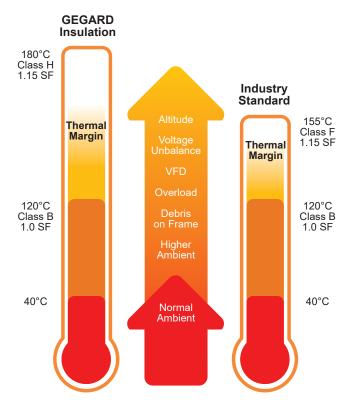


Rigid and recessed severe-

# 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

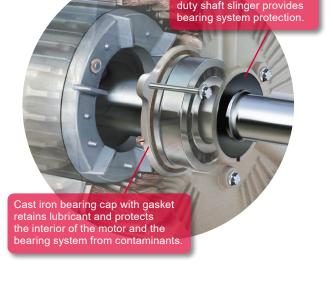
#### **Guarding Against Bearing Failure**

grounding rings are optional

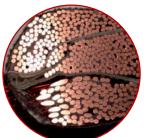
on all ratings.

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<sup>TM</sup> shaft

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

# Severe Duty IEC IE3

# Explosion Proof NEMA

# Adjustable Speed NEMA



#### 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



### 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



# 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



# Excels in Constant Torque Applications

Optimized performance in metal processing, plastic extrusion, winders, test stands, crane and hoist and material handling.

#### **MODEL**

ASD Ultra

#### **Technical Capabilities**

0.75-300 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 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) or Class F (ES) insulation

Five Year Warranty

#### **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

#### **Technical Capabilities**

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

TEFC (IP55)

Frame sizes: 143T-449T NEMA, UL, CSA, IEEE 112B

Division 1,

Class I - Groups C, D Class II - Groups F, G

Five Year Warranty

#### **Technical Capabilities**

1.5-300 HP, 1800 RPM 230/460, 460, 575V / 60 Hz TEFC, TEBC, TENV (IP55) Frame sizes: 143TC-449T NEMA, IEEE 841, IEEE 112B VFD ready with GEGARD Class H 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

100-1750 HP

• Quantum 580

#### **Technical Capabilities**

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
(IEEE 841)

#### **Direct Current**



#### Reliable Workhorses

A reliable lifeline to driven equipment and backbone for production and operation.

#### MODEL

- Kinamatic
- CD6000 Series
- Mill Duty

230, 460

Meets AIST standard

#### **Technical Capabilities**

1-500 HP, 300-3600 RPM
Armature voltage: 180, 240, 500
Field voltage: 300/150, 240/120
DPFG, DPFG-BV, TE, and
Explosion proof
TREC coils on large frames
Two Year Warranty
(CD6000 Series)
500-2000 HP, 300-1750 RPM
Armature voltage: 500, 600
(Mill Duty)
5-500 HP, 340-1025 RPM
Armature and Field voltage



