GE's Power Conversion business:
Having the right partner is as vital as having the right technology.
About GE Power Conversion
We are at the heart of efficiently connecting electricity to industry. We build industry-leading technologies and integrated solutions. Designing and delivering advanced motor, generator, drive and control technologies that evolve today’s industrial processes for a cleaner, more productive future, it serves specialized sectors such as energy, marine, industry and all related services.

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MV Motors Product Portfolio

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Induction Motors
A reliable choice for almost all applications

GE’s induction motor technology delivers high reliability and efficiency, primarily by drastically reducing the rotor’s parts. It means a leaner, lower maintenance motor that consistently delivers the power you need.

With the recent advances of GE’s high powered, variable frequency drives, induction motors can now be used in almost all applications where high reliability and robust performance is required.

ROBUSTNESS & SIMPLICITY
The main advantages of an induction motor are the robust mechanical construction of the rotor and the reduction in the number of parts required compared to a synchronous motor. Induction motors offer lower weight and inertia, high efficiency, higher overload capacity and are more cost effective to manufacture than the equivalent synchronous machine.

The design and features of induction motors also allow almost maintenance free operation, providing dependable performance in any circumstance.

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

INDUSTRIES
• Oil & Gas
• Mining & Metals
• Power & Energy
• Marine
• Pulp & Paper
• Water & Wastewater
• Other Process Industries

Synchronous Motors
For high efficiency and reliability

GE offers a full range of horizontal and vertical synchronous motors, ranging from direct-drive high torque density motors (at speeds as low as 20 rpm) to turbo-type motors for compressor applications.

SYNCHRONOUS MOTOR ROTOR PLATFORMS
• Salient pole rotors (both laminated and solid pole versions available-depending upon starting requirements or duty cycle)

Applications
• Oil & Gas
• Mining & Metals
• Power & Energy
• Marine
• Pulp & Paper
• Water & Wastewater
• Other Process Industries

APPLICATIONS
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INDUSTRIES
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• Water & Wastewater
• Other Process Industries
GE Value

Solutions built on extensive rotating machine experience

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**SETTING THE STANDARD IN MANUFACTURING MOTORS FOR OVER 125 YEARS**

*Electric Motors Range*

<table>
<thead>
<tr>
<th>Low Voltage Motors</th>
<th>NGV Machines</th>
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<tbody>
<tr>
<td>HP 92</td>
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**WE CONTINUE TO INNOVATE WITH PRODUCT QUALITY**

GE has been setting the standard in manufacturing rotating machines for over 125 years. We continue to deliver innovative mechanical power solutions to the world. Motors are designed and manufactured to operate efficiently and reliably in challenging applications and severe environments where reliability and ease of maintenance is critical.

**HIGH SPEED MACHINES**

With over 120 machines in our reference list, GE is one of the leading suppliers of high speed motors. We have 20 years of experience with high speed machine designs and are constantly improving it to ensure reliable performance for this demanding application. Eliminating the gear box allows significant overall footprint savings.

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.

**Integrated Compressor Line (ICL):** Centrifugal compressors directly driven by high-speed electric motors for applications up to 15 MW / 20,000 hp. ICL delivers high efficiency and reliability, fast start/stop, low maintenance, low operating cost, and a much broader operating range than conventional compressors.

**INDUCTION MOTORS**

**UP TO 48% INCREASED UPTIME**

- Delivers greater reliability and efficiency primarily by reducing the rotor’s parts by X 10
- Leaner, low-maintenance motor that delivered extended maintenance periods and longer periods of uninterrupted operation. 5+ years of operation.

**INCREASED SYSTEM EFFICIENCY FOR LOWER POWER CONSUMPTION**

- Increased operational flexibility and efficiency
- Up to 98.1% operational efficiency

**SYNCHRONOUS MOTORS**

**STATOR FRAME AND MAGNETIC CORE**

- Low loss core design
- Easy access for routine maintenance
- Low vibration long life
- Pin Vent technology reduces hot-spot compared to I-beams technology

**ROTOR**

- The shaft is single piece, solid forging or laminated steel
- All rotor are carefully balanced to comply with standards requirements

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**A RANGE OF SOLUTIONS TO MEET YOUR NEEDS**

- **N XD Series**
  - ExD Series
  - High Speed Induction Motors

- **N HP Series**
  - High Power Induction Motors

- **N M P Series**
  - Medium Power Induction Motors

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Few manufacturers can claim the depth and breadth of experience that GE has in building and delivering electrical and mechanical solutions for customers.

GE offers a complete portfolio of rotating machines.

- Motors up to 100 MW (134,000 HP)
- Generators up to 80 MVA
- High speed machines up to 20,000 rpm

GE has the global resources and capabilities to maximize the performance and reliability of your machines.

- A highly experienced team of application and sales engineers
- Engineering support optimized for your application

GE is constantly innovating product technologies to meet and exceed customer expectations.
Comprehensive offering
Portfolio of electric motors for industrial applications
NGV Series
High Power Induction Motors

SIMPLY MORE RELIABLE

- Delivers greater reliability and efficiency primarily by reducing the rotor’s parts by $10 \times$
- Leaner, low-maintenance motor that delivered extended maintenance periods and longer periods of uninterrupted operation. 5+ years of operation.

INCREASED SYSTEM EFFICIENCY

- Increased operational flexibility and efficiency
- Up to 98.1% operational efficiency
- OPEX savings when combined with VSI drive (+1.25%** increased overall system efficiency...lower power consumption)

UP TO 48% INCREASED UPTIME*

- Increased availability

NGV MACHINE DATA

- Frame Size: 450 to 2000
- Poles: 2
- Frequency: up to 300Hz
- Cooling: TEWAC, TEAAC, TEPV
- Power: up to 100 MW
- Client Network Voltage: 1000 to 13800 V

DRIVEN MACHINES: Reciprocating compressors, Centrifugal compressors, Pumps, blower, fan, extruders

ATEX/IEC/IECEX PROTECTION

NHP Series
High Power Induction Motors

MORE POWER IN A SMALLER PACKAGE

GE’s NHP Series machines provide the highest power density in its class, plus an innovative upgrade to the well-established N3 motor line in a compact frame doesn’t compromise on efficiency and reliability. A specially-designed frame and stator design in the N Series cools so effectively, that higher power ratings are easily achieved by smaller frame sizes.

COMPACT BUT MIGHTY

- Power density 0.65 KW/KG

NHP MACHINE DATA

- Frame Size: 500 to 1400
- Poles: 2 to 30
- Frequency: 50 Hz , 60 Hz, or VFD
- Cooling: TEAAC, TEA
- Power: 4.6 to 30 MW
- Client Network Voltage: 3300 to 13800 V

DRIVEN MACHINES: Reciprocating compressors, Centrifugal compressors, Pumps, blower, fan, extruders

KEY FEATURES & BENEFITS

- Best in class power density
- Best in class efficiency
- Low noise
- Low weight
- Proven design + innovative components
- Installed base of 7.6+ GW
- Designed to last 20+ years
- Low inrush current machines for weak networks
- State of the art manufacturing equipment
- Test facility up to 27MW

WHEN SPACE MATTERS MOST

- With a lower frame size than conventional induction motors, this compact design translates to space savings and lower weight. This is essential both in onshore and offshore applications where space is at a premium and in platforms that require less weight.

KEY FEATURES & BENEFITS

- Lower OPEX
- Easy installation
- Easy maintenance
- More efficient speed ranges
- Lower CAPEX
- A smaller motor requiring smaller foundations
- Greater availability
- Ideal for the typical five year run time of large liquefaction units

* Based on a comparison study with equivalent 80MW synchronous motor
** Estimate from comparison between global system efficiency of Freeport project – induction vs synchronous

POWER DENSITY

0.65 KW/KG

INCREASED AVAILABILITY

+48% UPTIME
NMP Series
Medium Power Induction Motors

BEST IN CLASS MACHINES
- Reduce opex with longer durability & lower vibration
- Reduce capex with lighter machines that enable less foundations and associated costs
- Safer machines that reduce energy consumption

BUILT FOR DURABILITY
- For over 100 years, GE has produced countless medium voltage induction machines for the petrochemical, power generation, mining and minerals, water and wastewater industries.

MAXIMIZING CUSTOMER OUTCOMES
- Reduce opex with longer durability & lower vibration
- Reduce capex with lighter machines that enable less foundations and associated costs
- Safer machines that reduce energy consumption

NXD Series
High Power Induction Motors

SAFEY AND PERFORMANCE
- Up to 97.8% efficiency

DELIVERING A RANGE OF HIGH PERFORMANCE FLAMEPROOF MOTORS
In many industrial sectors explosion protection is the significant necessity, e.g. in the chemicals industry, in refineries, or drilling platforms. The risk of explosion is always present when gases, fumes, mist or dust are mixed with oxygen in the air in an explosive ratio close to sources of ignition that are able to release the so-called minimum ignition energy.

Our scope of supply for the range of flameproof motors addressed to various markets to prevent explosion hazards that result in serious injury to persons and severe damage to property.

NMP MACHINE DATA
- Frame Size: 450, 500, 560
- Poles: 2, 4, 6
- Frequency: 50 or 60 Hz, or VFD
- Cooling: TEAAC, TEWAC, WPII
- Power: 1MW to 5MW
- Client Network Voltage: 50 Hz: 3.3, 6.6, 11 KV; 60 Hz: 4.16, 6.6, 13.8 KV

Made for DURABILITY
- Over 100 years of production of induction machines in the petrochemical, power generation, mining and minerals, water and wastewater industries.

KEY FEATURES & BENEFITS
- Best in class Noise level
- Best in class Design
- High Reliability
- Energy savings
- <85 dB(A)
- Robust design optimize footprint and weight
- Reduced vibration & maintenance
- Reduced energy consumption for lower OPEX

NXD MACHINE DATA
- Frame Size: 355, 400, 450, 500
- Poles: 2 to 12
- Frequency: 50 or 60 Hz, or VFD
- Cooling: TEFC
- Power: 200 to 1600kW
- Client Network Voltage: 2000 to 11000 V

DRIVEN MACHINES: Reciprocating compressors, Centrifugal compressors, Pumps, blower, fan, extruders

ATEX/IEC/IECEX PROTECTION

DRIVEN MACHINES: Pumps, Screw Compressors, Extruders and Fans

ATEX/IEC PROTECTION
SERVICES... Across the product life cycle

CAREING 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, in-shop repairs, service agreements, unit upgrades and technical support. Our mission is to satisfy our customers needs in the aftermarket of power generation.

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

INSPECTION & REPAIR
We offer a broad array of generator, excitation and protection relaying inspection and repairs services, supported through our international network of GE specialists and service shops.

Our team of project management experts are available to support and schedule your overhaul requirements, working with you to ensure that you are provided regular project updates and work is completed to your satisfaction on time.

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.

SERVICE CONTACT CENTERS
Our global service call center is available 24 hours a day, 7 days a week. Supporting our customers to register and assign your enquiry to the appropriate expert team within the GE Power Conversion technical network for assistance.

Contact our global service call centre* by telephone or email: escc.geem@ge.com.

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*Note that you may be charged different rates when calling from a mobile. Toll free numbers are toll free only in certain countries. Please check with your local provider.

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 efficiency, production and to reduce emissions.

SERVICE FOR A LIFETIME
Our goal is to provide you with a complete product life-cycle solution, to minimize risk and help you get the most out of your asset.

We’re at work with you
Wherever you are across the globe... We’re adding people, parts and perspective to your everyday operations. Helping to keep your operations running smoothly... for the long term.
HAVING THE RIGHT PARTNER IS AS VITAL AS HAVING THE RIGHT TECHNOLOGY.

Global Partner. Local Footprint.

Motor Manufacturing Capabilities

PROVEN EXPERIENCE
Few manufacturers can claim the depth and breadth of experience that GE has in building and delivering electrical and mechanical solutions for customers.

COMPLETE PRODUCT OFFERING
GE offers a complete portfolio of rotating machines.
• Motors up to 100 MW (134,000 HP)
• Low and medium voltage variable frequency drives

WORLD CLASS SERVICE
GE has the global resources and capabilities to enhance the performance and reliability of your machines.
• A highly experienced team of application and sales engineers
• Engineering support optimized for your application

INNOVATIVE TECHNOLOGY
GE is constantly innovating product technologies to solve your challenges.

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