



SIEMENS

Ingenuity for life



Innovation fuels our
passion for reliable
performance

Siemens AboveNEMA Oil & Gas
Duty Motors



usa.siemens.com/AboveNEMA



From the wellhead to the refinery – consistent, reliable, low-maintenance motors ensure your production performance

Large motors used in oil and gas applications must perform in some of the worst conditions on the planet – from scorching desert temperatures to roiling, wind-driven oceans and the vast expanses in between. But regardless of the extreme environments where they operate, these motors must perform with reliable precision to ensure optimum production and processing of petroleum and liquefied natural gas. For more than 35 years, Siemens has been distinguished as the industry leader in the design, manufacture, and application of motors for oil and gas duty applications because we know how to combine innovative designs for precise motor operation with exceptional, low-maintenance, durability for highly specialized upstream, midstream or downstream applications.

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Upstream

From variable-speed pump motors that optimize pump performance with varying flow rates, to minimum vibration motors for operating compressors for oil or gas re-injection processes, Siemens motors offer the durability and reliability performance standards needed to keep onshore or offshore wells producing day after day and year after year.

Midstream

Ensuring a consistent flow of oil from wellheads, tankers and storage facilities through pipelines to maximize refinery throughput is critical. This is why companies around the world depend on the low vibration, high reliability, low noise, and assured variable-speed performance provided by Siemens AboveNEMA Motors.

Like oil producers and refiners, processors of liquefied natural gas depend on Siemens motors to reliably power critical refrigerant and reciprocating compressors. Special designs have been developed for these motors that include larger than normal shaft diameters required by reciprocating compressor manufacturers.

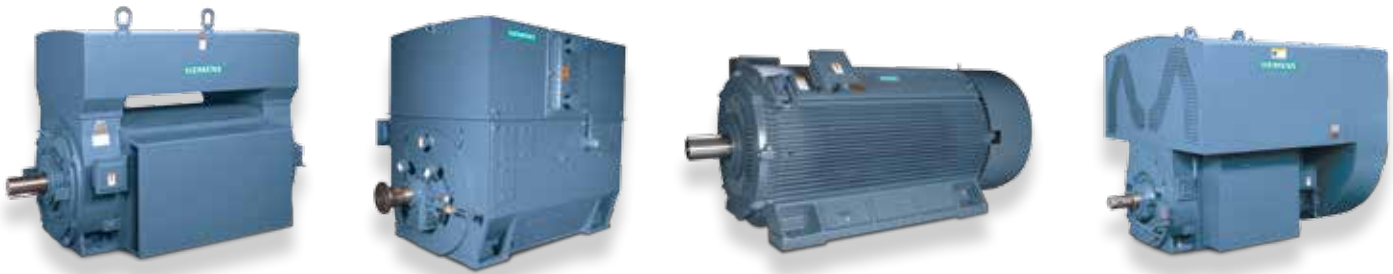
Downstream

Siemens meets or exceeds every important oil industry standard so our customers can specify our motors with confidence. This commitment is evident in our long-standing ability to meet the API standards including API 541 Fourth Edition, the new API 541 Fifth Edition and API 547 First Edition standards for severe and critical duty motors. But our standards are even higher than industry standards; Siemens goes beyond by custom tailoring our API Duty motors to meet the exact needs of refiners.

Petrochemical processors have come to depend on the extensive engineering and application knowledge offered by Siemens to solve specific application issues. Highly efficient rotor designs that reduce energy costs, reduced vibration and noise levels that improve performance, extended maintenance schedules that lower total cost of ownership, are but a few ways Siemens uses technology and experience to solve the toughest problems.

Siemens Oil & Gas Duty Motors						
Enclosure	Frame size	Ratings (HP) ¹	# Poles	Voltages	Mounting	Frame construction
WPII & TEWAC	500 - SH710	200 - 18,000	2 - 12	460 - 13,200	Horizontal & Vertical	Cast Iron (SH630 and SH710 Fab. Steel)
TEFC	500 - 580	250 - 1,000	2 - 12	460 - 6,600	Horizontal & Vertical	Cast Iron
	SH400 - SH560	1,000 - 3,000	2 - 12	2,300 - 11,000	Horizontal	Cast Iron
TEAAC	580 - SH710	450 - 14,000	2 - 16	460 - 13,200	Horizontal & Vertical	Cast Iron (SH630 and SH710 Fab. Steel)

¹Horsepower output shown is based on four-pole speeds, 4,000 V/60 Hz/1.0 SF



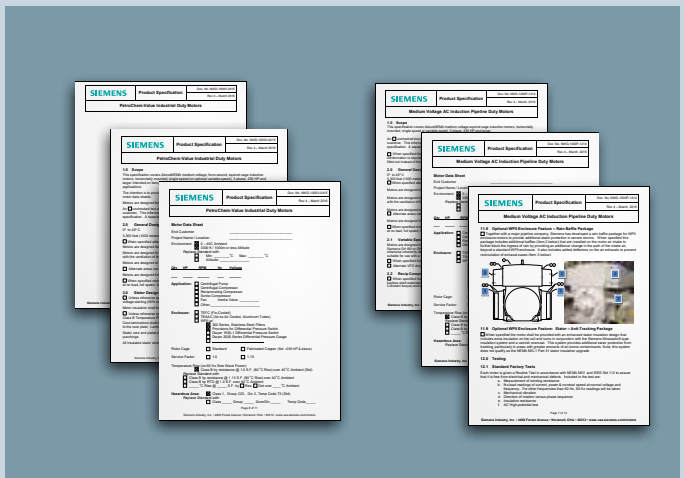
Specify with confidence

Siemens offers motors for the strictest oil and gas customer specifications and the strictest industry specifications including API®. In addition Siemens offers AboveNEMA motors built to its Pipeline Duty Motor and PetroChem-Value specifications from its Norwood, Ohio motor manufacturing facility, an ISO and API® Quality Certified, US facility.

The Siemens Pipeline Duty motors feature specific design and optional features to offer customers quality, low vibration, high reliability and assured variable-speed performance, cost-effective motor designs to enhance Siemens standard motor products.

The PetroChem-Value motors are targeted for general purpose petroleum and chemical applications. These motors provide API® type performance, but with a value-based feature and cost structure when compared to fully compliant API® motors.

Both Siemens motor specifications include concise data sheets to help make it easier to select the unique features a customer needs and maximize the value for their applications.



To review the Oil & Gas Duty Motor Specs, go to:
www.usa.siemens.com/MotorsSpecs

Siemens oil and gas duty motor features deliver superior value

The following features are typically included in Siemens oil and gas duty motors but represent only a small sample of the total value that we offer our customers. Each innovation represents an important component in our complete system of engineered solutions for higher efficiencies, optimized performance, construction quality and longevity, and lower total cost of ownership.

Stators

A complete system engineered for maximum durability

- C5 core plate electrical steel
- Indexed lamination stacking to ensure superior buildup of core
- Fully sealed insulation system with latest VPI technology (Class F)
- Heavy-duty bracing of stator coils and end-turns

Copper Rotors

For ultimate energy efficiency and low vibration

- Induction brazing of end-connectors to ensure the highest quality braze
- Full-length shims with center swaging to minimize vibration
- Stress-relieved forged-steel shafts on all two-pole motors

Aluminum Rotors

Engineered and manufactured for severe duty applications

- Compressed, stacked, high-grade steel laminations
- High-pressure injection of molten aluminum
- Stress-relieved, forged-steel shafts on all two-pole motors

Balance & Vibration

Innovative processes to ensure low vibration levels

- Precision balancing procedures to limit residual unbalance
- Dynamically balanced in high speed balancing machines
- Rotor assemblies balanced at rated speed
- Maximum vibration levels of 0.10 ips on housing / 1.5 mils on shaft

Bearings & Lubrication

Cool-running for optimum performance and long life

- Sleeve bearings feature split housings for ease of inspection
- Two solid brass oil rings per bearing for superior oil delivery
- Finely finished shaft journal and bearing babbitts to ensure optimum performance

Enclosures

Wide selection for use in any environment

- Weather-protected, totally enclosed or water-cooled enclosures are available as required
- Louvers over openings for weather-protected motors
- Mounting surface machined to 250 micro-inches
- Spot-faced mounting holes on cast iron frames
- Air gap measurement holes
- Vertical jacking screws
- Low temperature space heaters
- Grounding pads
- Critical speeds 15% removed from operating speed
- 300 Series stainless steel external hardware throughout
- Threaded and plugged drains (for enclosed motors)
- Provisions for filters and differential pressure switch (WPII enclosures)
- Oversized terminal box for cable connections
- NEMA 4X auxiliary boxes

Testing

Performance verification to assure long-term durability

- Siemens standard routine testing on all motors
- High-potential testing of stator-mounted devices
- Full compliment of optional testing including up to 10,000HP direct load testing

ISO 9001 Quality Assurance

- Quality designed and manufactured into each motor

Application-matched modifications to meet any requirement and every environment

We offer a host of modifications to address the specific needs of our oil and gas customers. Because of our extensive experience and global usage, many application specific modifications have been in common use for many years. We are additionally fully capable of developing any further modification that a new application challenge might present. The following represent a sampling of modifications most commonly incorporated into our motor designs:



Rotors

- Special shaft steel for low temperature applications
- Epoxy coating for additional corrosion protection
- Ultrasonic inspection of welds
- Material certification of shaft

Stators

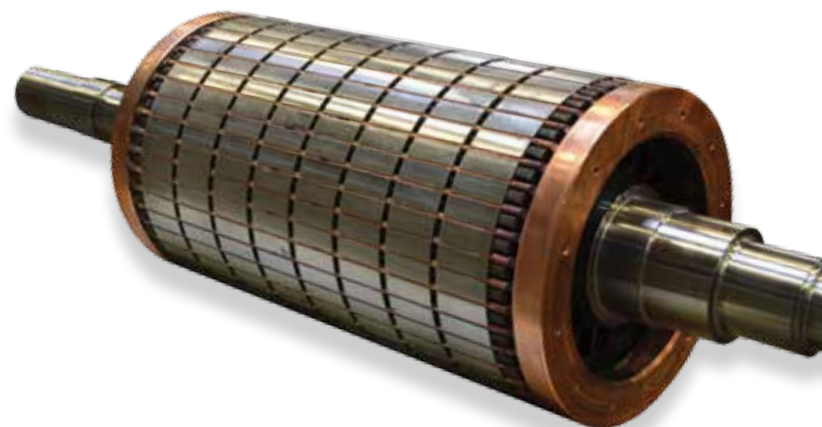
- Thermal protection, 100 Ω platinum stator RTDs
- Anti-abrasion protection
- Anti-fungal (tropicalization protection)

Balance & Vibration

- Non-contacting probes for measuring shaft vibration
- Key phasor
- Bearing Housing Vibration Detectors

Bearings & Lubrication

- Thermal protection, 100 Ω platinum bearing RTDs
- Oil sump heaters
- Provisions for flood lubrication
- Constant level oilers



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Enclosures & Terminal Boxes

- Differential pressure switch on WPII motors
- Filters (stainless or galvanized steel) for WPII motors
- Low noise options
- Harsh and extreme duty paint systems
- Surge protection equipment
- Current transformers for differential protection

Testing & Inspections

- Shop inspection
- Residual unbalance
- Vibration recording
- Noise testing
- Complete (temperature rise) testing

Application-Matched Modifications

- Blowers
- Booster Pumps
- API Process Pumps
- Cooling Pumps
- Pipeline Pumps
- Transfer Pumps
- Water Injection Pumps
- Centrifugal Compressors
- Axial Compressors
- Reciprocating Compressors
- Screw Compressors
- Extruders
- And other Oil and Gas Applications

For AboveNEMA motor orders:
anemamotororders.industry@siemens.com

Quality Manufacturing

From design to materials to workmanship, quality is built into every Siemens motor, the result of more than 100 years of experience capped with today's advanced quality control procedures used in our Certified Quality Performance Program.

Comprehensive Service and Support

Siemens warranty, parts and service request call center is available 24/7, providing customers a single point of contact with efficient service and fast response times. Siemens service technicians take pride in finding the right solution, the first time, every time.

Contact Siemens Services

Telephone: 800-333-7421 (Toll Free)
423-262-5710 (Outside U.S.)
Online: www.siemens.com/automation/support-request

Siemens Motors and Drives – Performance-Matched Systems

Performance-matched variable-speed motors and drives from Siemens make perfect sense. They are designed to work in harmony for ease of selection and start up, as well as long-term reliability and exceptional performance. Whether your application requires variable torque or constant torque capability in general purpose or severe duty environments, there is a Siemens motor / drive system ready to go to work for you.

Siemens IEC Motors – Worldwide Production for Global Applications

Siemens produces a complete line of IEC motors built in our European factories. The H-compact line of motors utilizes torsionally rigid, robust frame design, manufactured from cast iron with external and internal cooling ribs. The H-compact line has output up to 3,000 kW.

The H-compact PLUS is available in shaft heights 450mm, 500mm, 560mm, 630mm and 710mm. It utilizes a modular cooling concept and is built using a cast iron frame with fabricated steel heat-exchangers. The H-compact Plus is available with outputs up to 13,000 kW.

The H-modyn, built in Berlin, Germany, features a high-density and compact design that provides a smaller overall package with an optimized cooling design for exceptional efficiencies. It is available as induction and synchronous and has an output capability beyond 50,000 kW.

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