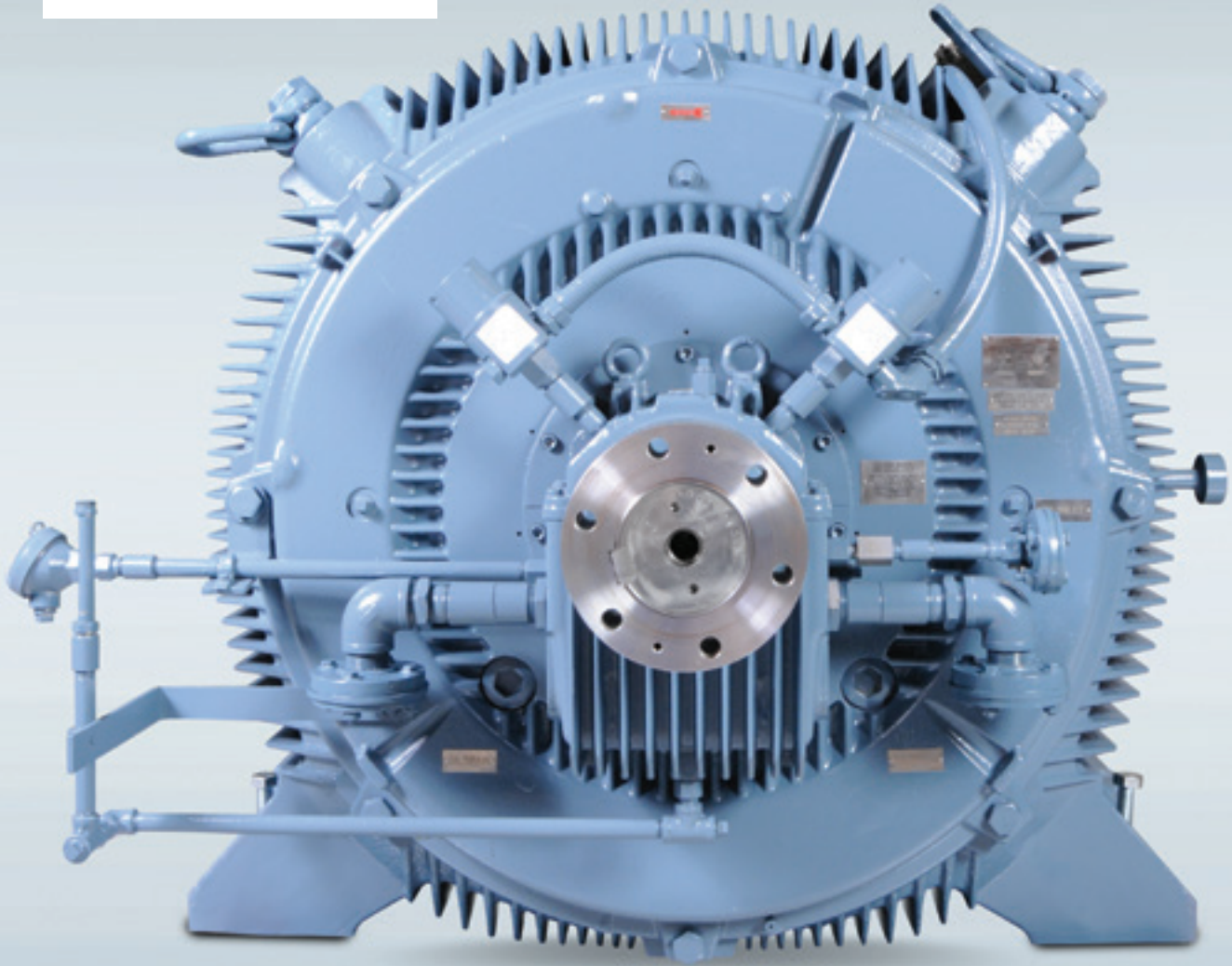


**SIEMENS**



# Over thirty-five years of two-pole motor innovation

Building solutions for the world

AboveNEMA motors

Answers for Industry.



# Satisfied customers have made our high-speed, two-pole motors the best sellers across the globe

Our timeline is a record of continuous improvement to meet the high standards today's competitive world demands not just of our manufacturing capability but in the field where our customers compete. Our investments and innovations are founded in our Certified Quality Performance Program that goes beyond our ISO 9001 certification to assure our customers of maximum quality, exceptional performance, and the results they need to succeed.

## Over 35 years of innovation

**1977:** Began manufacturing precision balanced 3,600 rpm motors, achieving 1 mil under loaded conditions for the compressor industry.



**1981:** Introduced a new design to reduce bearing temperatures and lower shaft vibration levels for improved performance.

**1983:** Invested in additional equipment to provide advanced mode shape information.



**1987:** Began inspection of all two-pole motors for electrical and mechanical run-out at the balancing operation for comparison to assembled motor performance. Precision manufacturing of rotor and stator cores to reduce electrical and mechanical vibration.

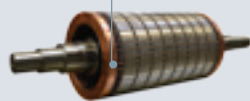
**1991:** Began full-length shimming of copper-bar rotors to reduce vibration and prevent rotor bar failure due to thermal stresses associated with severe starting requirements.

**1993:** Redesigned stator connections to reduce two times frequency vibration component.

Norwood, Ohio, manufacturing facility achieves ISO 9001 certification.

**1976:** Created the concept, and began designing precision balanced two-pole motors specifically for high-speed applications.

**1979:** Certified Quality Performance Program implemented to ensure optimum motor quality.



**1982:** Copper rotor refined for exceptional operating efficiencies.

Specially designed dynamic balancing machine installed to precisely balance rotors for large two-pole motors at operating speed to minimize vibration and harmonics for long bearing service life.

**1985:** Induction brazing machinery installed to enable full ring brazing of copper rotor bars to shorting ring (end connector); a significant step for maintaining consistent quality.

**1988:** Increased vibration monitoring inspection capabilities.

**1990:** Equipped field service engineers with upgraded portable vibration testing equipment.

**1995:** Norwood, Ohio, facility upgraded ISO certification to ISO 9001-1994.

Custom vibration measurement system added to our test facility to provide instant vibration diagnostic data.

**The quality our customers want most ... is quality**

From our earliest days in the late 1890s, Siemens has made it our unwavering commitment to deliver motors of exceptional quality and performance so our customers can meet or exceed their production and performance goals.

In 1976, we renewed that commitment by redesigning our motors and revolutionizing how they are made. We embraced change in order to remain constant in our commitment to providing customers with the absolute highest quality, most reliable, two-pole motors in the world.

Today, our customers benefit from advanced two-pole motors that enable more flow and pressure output from centrifugal pumps and compressors for substantially increased system output. They also enjoy exceptional operating efficiency that reduces their ongoing energy costs compared to slower speed motors. Additionally, advanced motor rotors that are high-speed dynamically balanced for reduced vibration and harmonics provide our customers with exceptionally long motor service life to reduce costs even further – year after year.

**Partners in performance**

Our story of innovation is complemented by our customers' stories. When they have needed enhancements or options, our designers and engineers have met the challenge. Every application has its own set of performance criteria and, by listening to customer requirements, we have built solutions that are tailored to specific industries, unique circumstances, unusual environments, and precise specifications. Our staff of highly trained and experienced motor engineers can help solve the toughest application problems with intelligent solutions.

- Severe operating conditions and loads.
- Variable frequency drive solutions.
- Lower motor acquisition and operating costs.
- High efficiencies.
- Extended maintenance intervals.
- Increased service life expectancy.

**1996:** 680 frame motors introduced.

Installed bar press to more effectively and accurately insert copper rotor bars into slots, reducing any electrical and mechanical contributions to vibration.

New coil spreader installed to improve the accuracy of the coil shape and improve motor reliability.



**1999:** C5 core plate introduced as standard to facilitate repairability of stators without damaging insulation between laminations.

**2002:** High-speed, antifriction bearing motors are balanced to ensure the highest level of quality and reliability.

Oversized ball bearings introduced to extend lubrication intervals and reduce maintenance costs.

**2003:** Norwood, Ohio, facility upgraded to ISO 9001 – 2000 certification.

**2006:** Continuing a history of embracing compliance with industry-specific performance standards, motors meeting the new API 547 1st Edition / API 541 4th Edition standards are shipped and installed for petroleum and chemical applications.

**2008:** Norwood facilities upgrade completed – including our comprehensive test facility that allows Siemens to evaluate motors with extraordinary precision and meet the most exacting customer test requirements.

**2012:** Officially launched the SH560, further increasing the horsepower capabilities of two pole TEFC motors.



**1997:** Simplified one-piece, cast iron yoke assembly. Stiffer cast iron bearing brackets. Improved ventilation and reduced magnetic noise.

**2000:** New techniques introduced to enable tighter manufacturing tolerances for large motor housings.

TEFC frames redesigned and stiffened to reduce two times line frequency vibrations.



**2004:** State-of-the-art induction brazing system installed.

**2005:** A \$35 million project was begun to expand the Norwood, Ohio, facility, as well as install new machinery, equipment, and technologies including \$13 million worth of equipment for an upgraded, state-of-the-art test facility.

**2009:** Norwood, Ohio, facility awarded Plant Engineering's Top Plant Award.

Norwood, Ohio, facility upgraded to ISO 9001-2008 certification.



**2010:** Awarded the API 547 official monogram to mount on conforming motors.

## 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](http://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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Printed in USA  
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