



## Siemens. Number One in the World in Large, High-Speed, Two-Pole Motors.

### Innovation and Commitment are Why

We are proud to share our 30-year history of two-pole motor innovation, reliability and performance. In the late 1890s, we began our commitment to offer the industry's highest quality motors. In 1976, we refined that commitment by redesigning our motors and changing how they are made. Our goal? To produce the world's absolute highest quality two-pole motors.

As you review the enclosed timeline, you will see the investments and innovations Siemens has made, and continues to make, in our never-ending quest to provide users around the globe motor quality and performance second to none. These 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.

### Two-Pole Motors that Meet Exacting Needs

In addition to uncompromising quality, what sets Siemens apart from others are the many motor enhancements we offer customers to meet their specific application requirements. Our staff of highly trained and experienced motor engineers can help solve the toughest application problems with intelligent solutions. Look to them for:

- Severe operating condition and load solutions
- Variable frequency drive solutions
- Reducing motor acquisition and operating costs
- Extending maintenance intervals
- Methods to extend service life

Siemens stands alone in innovation, reliability and performance. We invite you to see firsthand the total value offered by Siemens motors.



**Service Around the Corner or Around the World**  
Professional technical assistance is readily available through your local Siemens sales office. In addition to providing a complete line of spare parts, Siemens can provide troubleshooting support, preventive maintenance services and repair and upgrades at our highly qualified Norwood, Ohio, service center. Contact your local Siemens sales office for details.

### 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 450 mm, 500 mm, 560 mm, and 630 mm. 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 7,500 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.

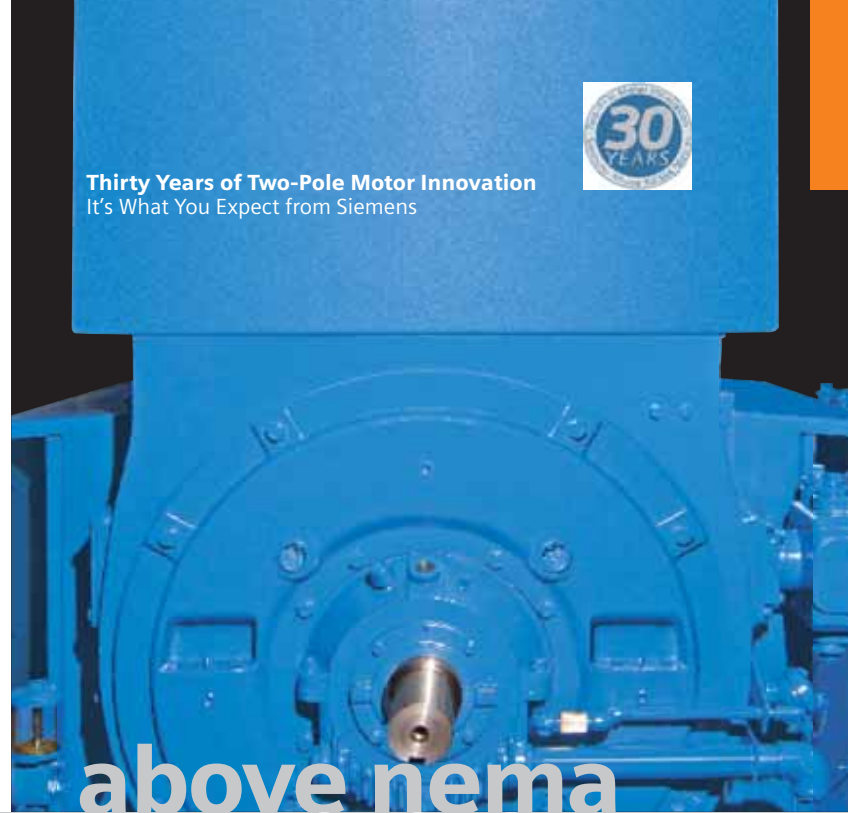
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Alpharetta, GA 30005

For details about typical performance data, technical information or dimensional information, contact your local Siemens sales representative, call **1-800-964-4114**, or go to our web site **[www.sea.siemens.com/motors](http://www.sea.siemens.com/motors)**

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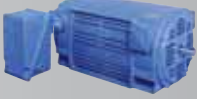

**Thirty Years of Two-Pole Motor Innovation**  
It's What You Expect from Siemens









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MOTORS

**SIEMENS**

# OPTIMIZING ELECTRIC POWER

<p>1976 – Created the concept, and began designing precision-balanced two-pole motors for high-speed applications.</p>	<p>1979 – Certified Quality Performance Program implemented to ensure optimum motor quality.</p> 	<p>1982 – 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.</p>  <p>1982 – Copper rotor refined for added operating efficiencies.</p>	<p>1985 – Induction brazing machinery installed to enable full ring brazing of copper rotor bars to shorting ring (end connector); a significant step for consistent quality.</p>	<p>1988 – Increased vibration monitoring inspection capabilities.</p> 	<p>1991 – Began full-length shimming of copper-bar rotors to reduce vibration and eliminate rotor bar failure due to thermal stresses associated with severe starting requirements.</p>	<p>1993 – Norwood, Ohio, manufacturing facility achieves ISO 9001 certification.</p> <p>1995 – Norwood, Ohio, facility upgraded ISO certification to ISO 9001–1994.</p>	<p>1996 – Open motor frames redesigned and stiffened to reduce by two times line frequency vibrations.</p> <p>1996 – Installed bar press to more effectively and accurately insert copper rotor bars into slots to reduce any electrical and mechanical contributions to vibration. New coil spreader installed to improve the accuracy of the coil shape to improve motor reliability.</p>	<p>1999 – C5 core plate introduced as standard to allow for reparability of stators without damaging insulation between laminations.</p> <p>2000 – TFC frames redesigned and stiffened to reduce by two times line frequency vibrations.</p> 	<p>2002 – Replace oversized bearings to extend lubrication cycles with high-speed, anti-friction bearing motors redesigned to extend lubrication cycles.</p> <p>2003 – Norwood, Ohio, facility upgraded to ISO 9001 – 2000 certification.</p>	<p>2004 – State-of-the-art induction brazing system installed.</p>	<p>2006 – Motors meeting new API 547 1st Edition API 541 4th Edition standards shipped and installed for petroleum and chemical applications.</p>
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	<p>1977 – Began manufacturing precision-balanced 3600 rpm motors, achieving 1 mil under loaded conditions for the compressor industry.</p> 		<p>1981 – Introduced a new design to reduce bearing temperatures and lower shaft vibration levels.</p>		<p>1983 – Invested in additional equipment to provide mode shape information.</p> 		<p>1987 – Inspection of all two-pole motors for electrical and mechanical run-out at the balancing operation for comparison to assembled motor performance begun. Precision manufacturing of rotor and stator cores to reduce electrical and mechanical vibration.</p>		<p>1990 – Equipped field service engineers with upgraded portable vibration equipment.</p> 		<p>1993 – Redesigned stator connections to reduce by two times frequency vibration component.</p> <p>1995 – Custom vibration measurement system added to our test facility provides instant vibration diagnostic data.</p>		<p>1996 – 680 frame motors introduced.</p> 		<p>1997 – Simplified one-piece, cast iron yoke assembly. Stiffer cast iron bearing brackets. Improved ventilation and reduced magnetic noise.</p> <p>2000 – New techniques introduced to enable tighter manufacturing tolerances for large motor housings.</p> 		<p>2002 – Oversized ball bearings introduced to extend lubrication intervals.</p> 		<p>2005 – A \$30 million project was begun to expand the Norwood, Ohio, facility, as well as install new machinery, equipment, and technologies including \$8.5 million worth of equipment for the upgraded test facility. This investment will contribute to enhancements in Siemens motors sold throughout the world.</p>											



Siemens two-pole, 3600 RPM, motors enable more flow or pressure output from centrifugal pumps and compressors for substantially increased system output. They also provide exceptional operating efficiency to reduce energy costs compared to slower speed motors. To ensure long service life, all two-pole motor rotors are specially designed and high-speed dynamically balanced for reduced vibration and harmonics.

## 30 YEARS OF INNOVATION

Ground was broken in December 2005 to begin the \$30 million expansion in Norwood, Ohio.



Siemens  
AboveNEMA Motors:  
Designed, Built &  
Tested in the USA