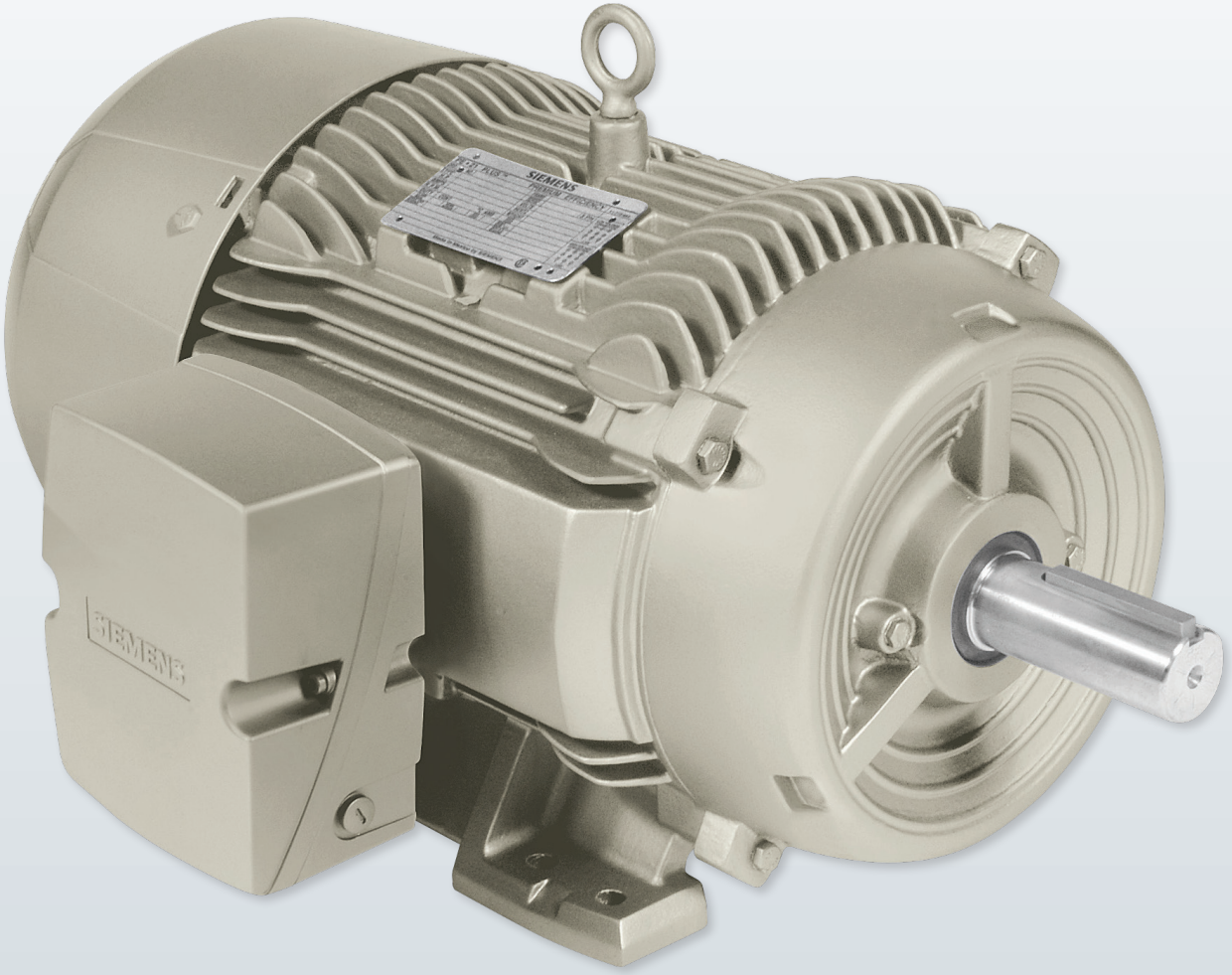
SIEMENS



General purpose cast iron frame motors

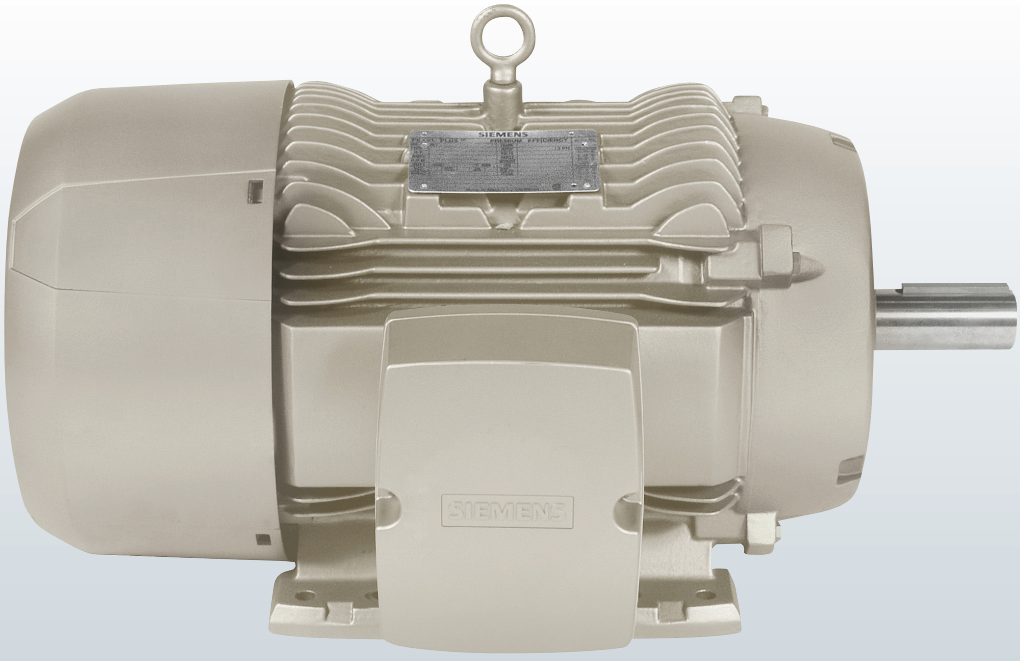
The right choice for optimal durability, efficiency and performance

SIMOTICS NEMA Low Voltage Motors

www.usa.siemens.com/motors

Siemens SIMOTICS low voltage cast iron frame motors

More value for your investment



Innovation is why

The line of Siemens GP100 cast iron frame motors is not an evolution in motor design, but a total revolution. This distinctive line of SIMOTICS NEMA frame motors is based on Siemens' 14 decades of motor design leadership, manufacturing expertise and application knowledge combined with innovative and elegant new technologies to provide maximum value.

Rugged construction for longer service life

Siemens GP100 motors have a cast iron frame and bearing housings that utilize the same design philosophy that goes into the design of our renowned severe duty line of motors... ruggedness, reliability, performance and efficiency. The design provides high structural strength through the use of finite element analysis to strategically place material within each component to resist the effects of stress and vibration. Materials for resistance to corrosion are liberally used throughout for long life in a wide variety of industrial applications.

Mechanical design

When you look at the sleek design of these motors, you know at a glance they are more than standard NEMA motors. Siemens engineers started with a clean sheet of paper when designing these motors. They used decades of design experience backed by the latest computer-aided design tools to engineer a line of motors like no other. They offer the ultimate in rugged construction, cool operation, high performance and application flexibility.

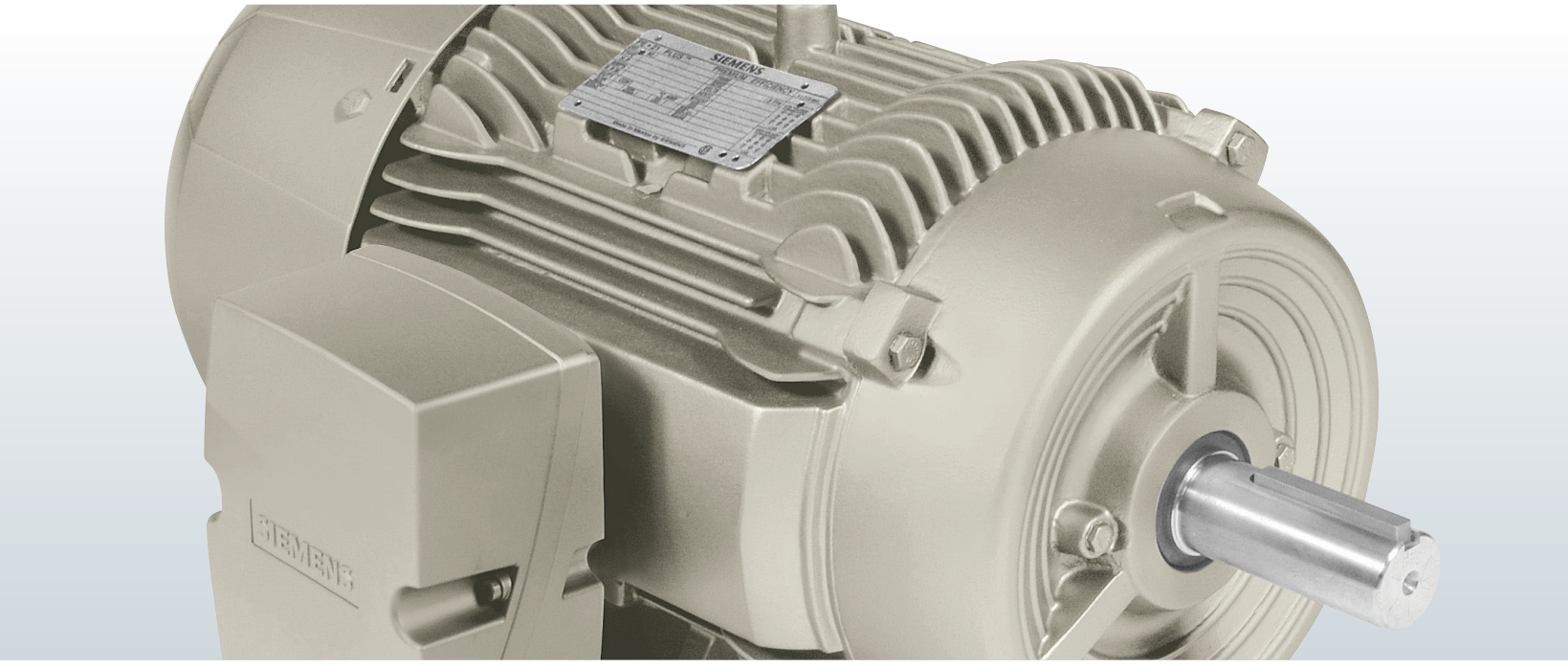
Optimized electrical design

These motors are designed to provide superior operating performance and energy efficiency. Their advanced electromagnetic design meets and often exceeds the requirements of the Energy Independence & Security Act of 2007 (NEMA MG1– table 12-12). Our available die cast copper rotor design provides efficiencies that are even higher for lower operating costs.

Advanced materials

Though you probably will never see them, the materials within these motors have been specially selected to provide high performance and long service life. For example, the insulation materials used for the windings result in an anti-corona system. This system is designed to withstand voltage spikes caused by fast switching IGBTs from adjustable speed drives.

A systems approach to extended service life



Siemens engineers evaluated each component that affects motor service life and developed individual systems within Siemens GP100 motors that form a complete system to maximize service life.

Cooling system

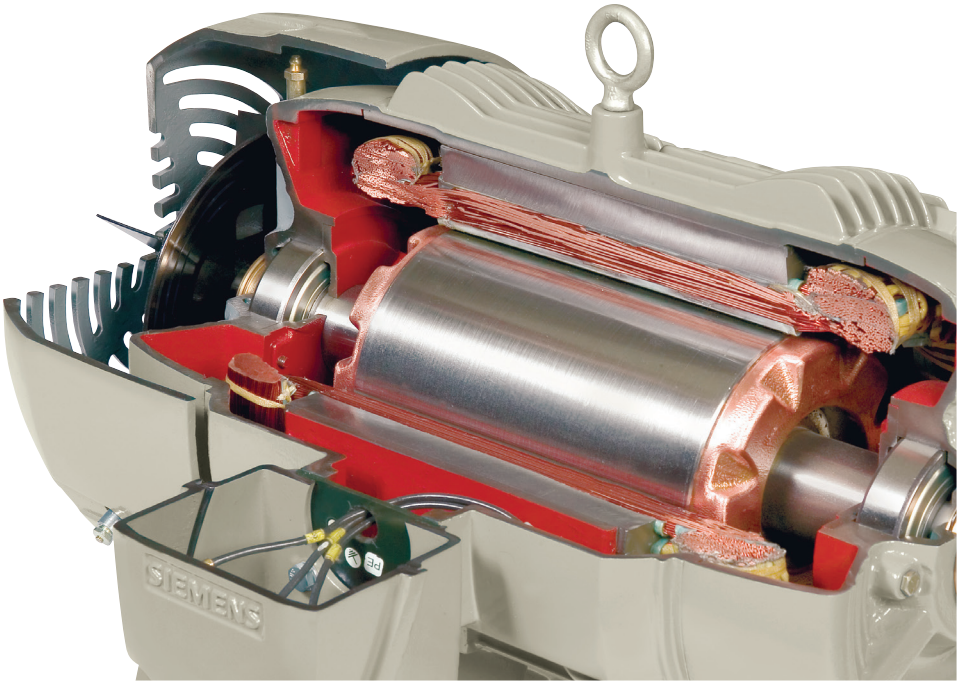
The advanced cooling system developed for these motors is based on minimizing heat sources within the motor and then quickly dissipating any remaining heat. This highly refined system includes:

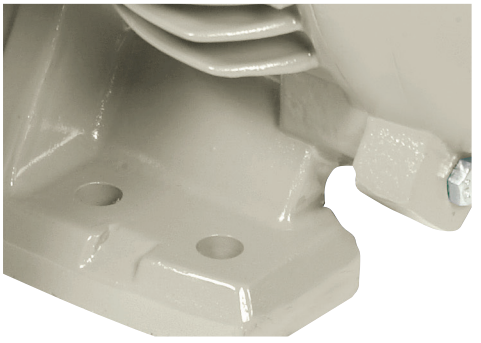
- An engineered finned cast iron frame design that provides optimum heat dissipation.
- High flow volume cooling fan and special contour fan cover work together to provide superior air flow over frame and bearing housings.
- A low-loss stator and rotor designed to work together to minimize heat generation.

Bearing system

Studies have shown that the motor bearing system is one of the most important elements for long service life. Siemens features:

- Oversized shielded bearings to meet demanding Siemens engineering standards.
- Bearings in 143T-256T frames are lubricated for life. Larger frame sizes feature provisions for lubrication and a removable grease relief plug.
- Bearing housings and frame mating surfaces are precision machined for accurate alignment.
- Dynamically balanced rotor assembly meets or exceeds NEMA MG1 requirements.





Insulation system

The "heart" of a motor design is the winding insulation system. Siemens GP100 motors feature:

- A proprietary, inverter-rated, Class F insulation system with a Class B temperature rise @ 1.0 service factor.
- Only the finest materials and varnish system are used in the manufacture of the stator.
- The system meets or exceeds NEMA MG1, Part 30 and 31 for adjustable speed drive operation.
- All windings must pass a CIV (corona inception voltage) test to insure resistance to voltage spikes induced by adjustable speed drives.

Contaminant protection system

To protect GP100 motors from the effects of moisture and industrial contaminants, they feature:

- Cast iron frame and bearing housings.
- Epoxy enamel paint system.
- Polycarbonate cooling fan.
- Non-hygroscopic insulation system.
- Corrosion resistant hardware and nameplate.
- Condensation drain holes in the lowest point on the motor frame on both ends of the motor.
- V-ring slinger on drive end shaft extension.

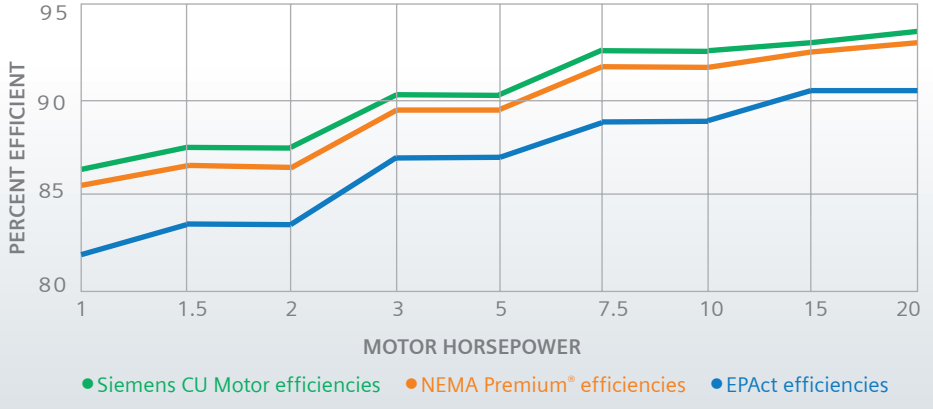
Mounting and installation system

- The multiple-hole design of the frame makes locating the motor on a base fast, easy and flexible.
- An oversized, diagonally-split, conduit box includes a grounding lug and provides for mounting on 90˚ increments.
- Siemens GP100 motors are available with C-face or D-flange construction.

Motor efficiency

Reducing your total cost of operation

Siemens cast iron frame motors have been developed to provide the rugged performance and long service life you have come to depend on – plus exceptional operating efficiencies to further reduce your company's cost of ownership.



Siemens GP100 motors from 1 to 20 horsepower are available with an optional die cast copper rotor that delivers operating efficiencies above NEMA Premium® (NEMA MG1, table 12-12) specifications.

NEMA Premium® is a certification mark of the National Electrical Manufacturers Association.

How important is motor efficiency? Just one percent efficiency gain on a 20 horsepower motor can lead to over $2,500 of energy savings throughout the 20-year normal life of a motor. When you multiply that by the number of motors in your facility, it is easy to see that choosing motor efficiency wisely can produce significant savings. Helping our environment is another good reason to choose the best motor efficiencies possible.

According to the U.S. Department of Energy, industrial electric motors use approximately one half of the nation's total power from fossil fuel-powered electrical generation plants. Reducing industrial electric motor energy usage through more efficient designs has the potential to reduce greenhouse gas emissions from these plants.

Motors that deliver optimal energy efficiency – plus

As a manufacturer participating in the NEMA Premium® license agreement, Siemens has designed the line of GP100 motors to meet or exceed NEMA Premium (NEMA MG1, table 12-12) efficiency requirements.

But, Siemens gives you more for your motor dollars

All Siemens GP100 motors from 1 to 20 horsepower (NEMA 143T to 256T frame sizes) are available with an optional advanced copper rotor technology. They provide efficiencies above NEMA Premium (NEMA MG1, table 12-12) standards. Compared to aluminum rotors, these die cast copper rotors have inherently less resistance, run cooler, last longer and consume less energy.

More energy-saving solutions from Siemens

GP100 motors are available with a wide selection of Siemens variable-speed drives to increase energy efficiency. These motor and drive combinations match energy consumption with the load requirement to significantly reduce energy costs.

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