

Severe duty cast iron frame motors

When the going gets tough, these motors keep going



NEMA Low Voltage Motors

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SIEMENS

Siemens low voltage severe duty motors

Built to survive the toughest conditions



SD100 Severe Duty Motors

These industry workhorses are ideal for use in the chemical processing, mining, foundry, pulp and paper, waste management and petroleum/chemical applications. They are available with a wide selection of application-matched modifications to meet specific needs, ambient conditions and installation requirements. They are available with NEMA Premium® operational efficiencies as standard or NEMA Premium PLUS efficiencies. For rugged and efficient operating performance – you can depend on Siemens.

SD100 IEEE841 Maximum Service Motors

The SD100 IEEE841 motor is the ultimate NEMA design motor. It is designed and manufactured to meet or exceed IEEE Standard 841-2009 requirements for efficiency, performance, construction, adjustable-speed operation and long service life in the most demanding applications. Its highly engineered design and rugged construction are backed by a five-year warranty by Siemens.



Rugged construction for longer service life

Siemens SD100 severe duty motor has a cast iron frame and bearing housings that offer 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 motor design experience backed by the latest computer-aided design tools to engineer a line of motors like no other. It is a line of motors that offers the ultimate in rugged construction, cool operation, high performance and application flexibility.

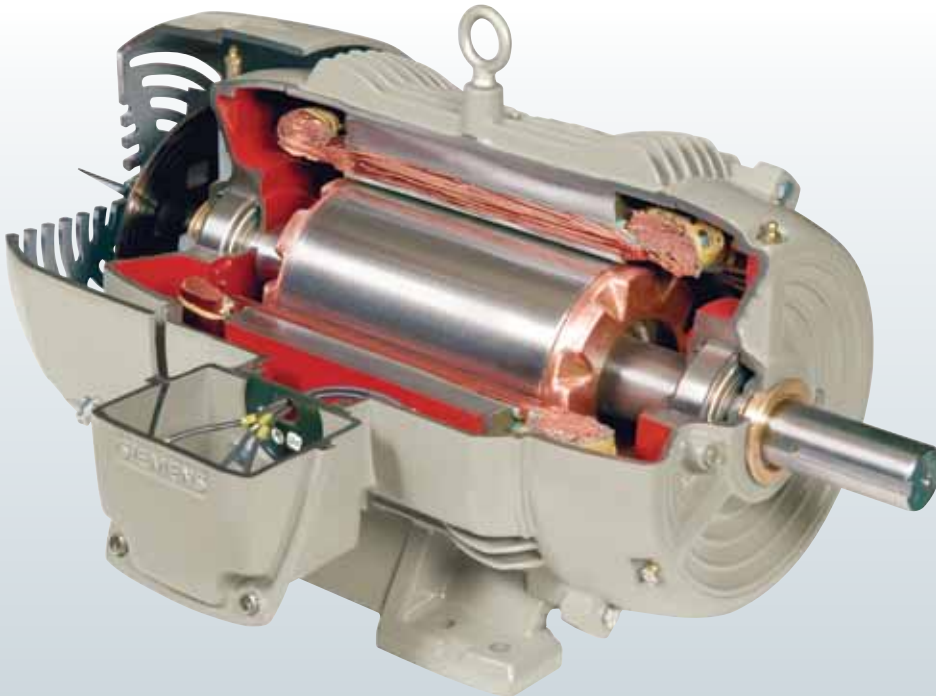
Optimized electrical design

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). The 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 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 SD100 motors feature:

- Oversized, and identical bearings on both ends of the motor to meet Siemens engineering standards.
- Bearings can be relubricated. SD100 motors offer a plugged grease relief port while SD100 IEEE841 motors include an automatic grease relief fitting to prevent over-greasing.
- Precision machined cast iron bearing inner-caps are included.
- A V-ring slinger on both ends of the motor is included in SD100 motors.
- Inpro/Seal® bearing isolators are included on both ends of SD100 IEEE841 motors.
- 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. The design and integrity of the system is critical to ensure long motor service life and optimal performance, especially in demanding conditions. When you choose a Siemens you get:

- A proprietary, inverter-rated, Class F non-hygroscopic 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 CIV (corona inception voltage) test to insure resistance to voltage spikes induced by adjustable speed drives.

Contaminant protection system

To protect Siemens SD100 severe duty motors from the effects of moisture and industrial contaminants, they feature:

- Cast iron frame, conduit box, bearing housings and fan cover.
- Epoxy enamel paint system.
- Polycarbonate cooling fan.
- Non-hygroscopic insulation system.
- All internal surfaces are painted.
- Corrosion resistant hardware.
- Stainless steel nameplate. SD100 IEEE841 motors include embossed nameplate data.
- Condensation drain holes with “T” fittings are positioned in the lowest point on the motor frame. They are included on both ends of the motor.
- SD100 IEEE841 motors incorporate Inpro/Seal bearing isolators on both ends of the motor as standard.

Mounting and installation system

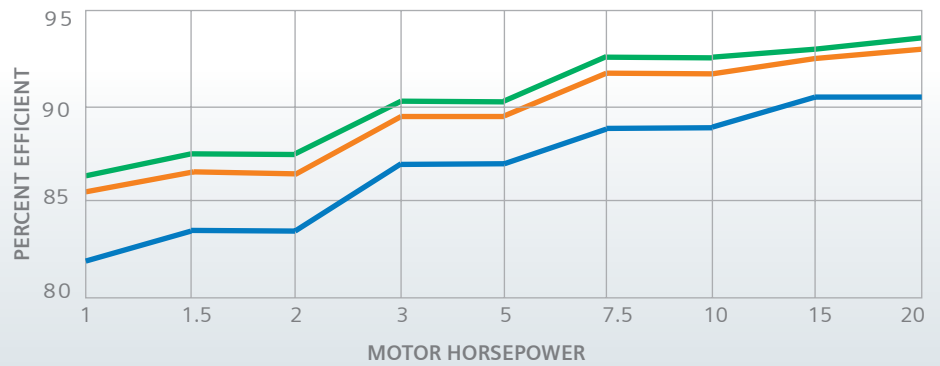
- The 8-hole mounting design of the frame makes locating the motor fast, easy and flexible.
- An oversized, diagonally-split, conduit box provides easy access and includes a grounding lug. It includes gaskets between the box and the frame, and also between the diagonally-split halves to protect from contamination. For versatile mounting, the conduit box is centered on the frame for easy conversion from F1 to F2 mounting. The conduit box can be easily rotated in 90° increments.
- Siemens SD100 and SD100 IEEE841 severe duty motors are available with C-face or D-flange mounting construction.
- A fan end drip cover is available for vertical applications.

Motor efficiency

Reducing your cost of operation in severe environments



Siemens severe duty 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 CU Motor efficiencies ● NEMA Premium® efficiencies ● EPAct efficiencies

Siemens GP100 motors from 1 to 20 horsepower are available with an optional CU 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.

Data, facts and details

A new generation of motors

Innovation is why

The line of SD100 and SD100 IEEE841 severe duty motors are not just another motor design. They are based on 14 decades of Siemens motor design leadership, manufacturing expertise and application knowledge. This experience, combined with innovative and elegant new technologies, ensure maximum value to significantly reduce operating costs especially in chemical processing, mining, foundry, pulp and paper, waste management and petro/chemical applications.

In addition to durability, these motors are designed to provide superior operating performance and energy efficiency. Their advanced electromagnetic design features a highly-engineered die cast aluminum rotor that helps these motors to meet the stringent requirements of the Energy Independence & Security Act of 2007 (NEMA MG1– table 12-12). For optimal energy efficiency, these motors are available with a leading edge die cast copper rotor.

| SD100 Severe Duty and SD100 IEEE841 Motors – Technical Overview | | | | |
|---|---|---|----------------|---------------|
| HP Range | 1 – 400 | | | |
| Frame Size (FS) | 140 – S440 | | | |
| Efficiency | NEMA Premium® (MG1 Table 12-12) NEMA Premium® Plus with CU copper rotor (Exceeds MG1 Table 12-12) | | | |
| Voltage | 208-230/460V, 230/460V, 460V, 575V | | | |
| Service Factor | 1.15 sine wave | | | |
| Electrical Design | NEMA Design B | | | |
| Hazardous Classification | Class I Group D Division 2 | | | |
| Insulation | Class F NEMA, MG1 Part 31 | | | |
| Temperature Rise | Class B @ 1.0 SF, Class F @ 1.15, SF Sine Wave | | | |
| Conduit Box (oversized) | Cast iron | | | |
| Fan Cover | Cast iron | | | |
| Cooling Fan | Bi-directional Polypropylene: FS 140 – 440 Bronze: FS S440 | Uni-directional Polypropylene: 300 HP 4P 350 – 400HP 2P/4P | | |
| Shaft | High strength C1045 carbon steel | | | |
| Bearing Housing | Cast iron | | | |
| Bearings | Double shielded: FS 140 – 250, S440 Regreaseable inlet & outlet: FS 280 – 440 | | | |
| Lubrication | Polyurea-based grease | | | |
| Lube Inlet Fittings | Alemite | | | |
| Lube Relief Fittings | SD100: Plug SD100 IEEE841: Automatic pressure relief | | | |
| Vibration | SD100: 0.08 IPS SD100 IEEE841: 0.06 IPS | | | |
| Nameplate | SD100: Engraved SD100 IEEE841: Embossed | | | |
| Condensation Drain | T-Drains: Lowest point (2) | | | |
| Hardware | Rust resistant | | | |
| Inverter Duty | | VT 20:1 | CT 10:1 | CT 4:1 |
| | Alum. Rotor | FS 140 – 440 | | FS 140 – 440 |
| | CU Rotor | FS 140 – 250 | FS 140 – 250 | |

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