

A man with a beard and short hair, wearing a dark blue button-down shirt, is holding a large, cylindrical, silver-colored metal motor component. He is looking directly at the camera with a slight smile. The background is a blurred industrial setting with various machinery and equipment.

SIEMENS

Ingenuity for life

A passion for motors

The specialists for
power and efficiency

SIMOTICS low-voltage motors

[siemens.com/passionformotors](https://www.siemens.com/passionformotors)

Edition
2020

Passion that's contagious!

Premium low-voltage motors

It goes without saying that our SIMOTICS motors are backed by many powerful, efficient, and smart technologies. What may not be evident at first is the passion with which we stand behind our low-voltage motors. Or maybe it is – once you've actually experienced the superior characteristics of our low-voltage motors for all applications.

Our passion – your benefit


The point is that we don't look at the purchase of a SIMOTICS motor as simply a coolly calculated investment that has to pay for itself in six months. There's much more involved, including the passion of our employees. They do everything they can to ensure that you receive our motors in optimal, high-quality condition by the agreed delivery date, so you can get started right away. And our engineers, whose continuous work on new advances guarantees that each of your SIMOTICS motors will have exactly the right set of characteristics and optimal power to meet your needs. Or our service staff, who are always ready to actively support you around the clock and around the world whenever you need them. So that our motors do what they do best: keep your plant running. There's also the support from our experts, who'll respond to your digitalization questions with skilled analyses and concepts that meet your needs and help you achieve your goals. It's all about passion – for motors and for your success.

A motor is a motor ...

... and SIMOTICS is SIMOTICS! Our passion is ultimately what makes SIMOTICS motors what they are: a part of your success. Passion is what you'll hear when you talk to our salespeople about your challenges and our solutions to them. You'll experience it as soon as you enter one of our SIMOTICS factories. And you'll see it in the eyes of the technicians when your new SIMOTICS is commissioned. It's knowing that the power, efficiency, reliability, and precision are no accident, but rather are part of a plan that will help you achieve your goals. And that's what SIMOTICS is all about.

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Identify and benefit from
potential energy savings

Greater cost-effectiveness – less CO₂

About 97 percent of an electric motor's operating costs are for energy. And according to ZVEI, the German Electrical and Electronic Manufacturers' Association, motors account for about 70 percent of all power consumption in industry. That's why the energy efficiency of your electric motors is so important – not just for the cost-effectiveness and competitiveness of your plants, but also for your environmental performance. Because the reduced power consumption of highly efficient SIMOTICS low-voltage motors also means less climate-damaging CO₂.

Built-in future

Everywhere in the world, electric motors are the number-one consumers of energy, which is why they're required to meet ever-stricter energy efficiency targets. The European Union is once again tightening its requirements for electric motors as of mid-2021, but highly efficient SIMOTICS low-voltage motors already exceed these requirements right now – while offering you dramatic savings on energy and costs and a high degree of future viability. Here are just three examples:

- According to a new EU directive, almost all applications up to 1,000 kW will have to comply with at least efficiency class IE3 as of July 2021. Today the entire range of SIMOTICS SD is already available in IE4, the highest efficiency class defined.
- For explosion-proof motors with explosion protection type Ex eb, the new EU directive will require the IE2 efficiency class as of July 1, 2023. Our explosion-proof motors, including those with explosion protection type Ex eb, already offer efficiency class IE3 as standard.
- Systems with SIMOTICS reluctance motors exceed the requirements of IES2, the highest system efficiency class defined, including for applications with a high proportion of part-load operation.



SinaSave energy efficiency tool

Enter your specific operational conditions and SinaSave determines the potential energy savings and payback time, and also allows you to compare different control modes and product combinations for pump and fan drive systems.

With its helpful diagrams – for example, of system power losses according to IEC 61800-9-2 – SinaSave assists you in making sound investment decisions.

Identify your specific savings potential now using SinaSave.

[siemens.com/sinasave](https://www.siemens.com/sinasave)

Optimization through digitalization



Digitalize faster and more flexibly right from the start

With SIMOTICS low-voltage motors, you'll reap the benefits of digitalization today – quickly, easily, and with minimum complexity. With the sensor module SIMOTICS CONNECT 400 and the SIDRIVE IQ Fleet app for cloud-based analytics, you bring transparency to your motor fleet and pave the way to the digital age of Industrie 4.0. Your path to the digital enterprise is clear, thanks to a cloud connection.

SIDRIVE IQ Fleet

Whether you're monitoring new motors or flexibly upgrading your installed base – in many use cases, the SIDRIVE IQ Fleet MindSphere app improves the reliability, availability, efficiency, performance, and productivity of your low-voltage motors. You take advantage of preventive maintenance for your motors using reliable status data and information on maintenance intervals.

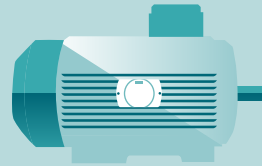
SIMOTICS CONNECT 400

Your low-voltage motors are equipped with SIMOTICS CONNECT 400, a connectivity module for measuring and preprocessing the motor-specific status data that's analyzed in SIDRIVE IQ Fleet. SIMOTICS CONNECT 400 comes with the sensors required for capturing the most important operating parameters (like vibration, temperature, or speed), a WLAN communication module for data transfer, and a battery for the power supply. As a result, your motors become part of your digital enterprise and you'll optimize your processes on the basis of solid operational data – for greater cost-efficiency, reliability, and flexibility.

siemens.com/digital-drives

SIDRIVE IQ Fleet and SIMOTICS CONNECT 400: Get started in three steps!

1. Install SIMOTICS CONNECT 400



Get your motor ready to go

Mount SIMOTICS CONNECT 400 on your low-voltage motors quickly and easily by gluing the sensor module to the motor housing. Once it's physically attached, activate SIMOTICS CONNECT 400 by connecting the battery pack in order to begin installation.

2. Commission SIMOTICS CONNECT 400



Order SIDRIVE IQ Fleet MindSphere app



Install SIDRIVE IQ Config commissioning app on smartphone



Select SIMOTICS CONNECT 400



Connect to local WLAN



Connect to personalized MindSphere account



Enter motor information and parameters



Perform onboarding for SIDRIVE IQ Fleet MindSphere app

siemens.com/digital-motor

3. Perform data analysis and fleet management



Conveniently monitor your motor remotely

Just open SIDRIVE IQ Fleet on your PC or mobile terminal to check the operating state of your motors and obtain an overview of your entire fleet.

Your benefits in ongoing operation

Increased reliability and availability

Improved performance and efficiency

Optimized serviceability and service life

With SIMOTICS CONNECT 400
and SIDRIVE IQ Fleet to the
“digital motor” in just a few steps



Install, perform onboard, done!

The combination of SIMOTICS CONNECT 400 and SIDRIVE IQ Fleet makes your introduction to the digital enterprise quite easy. All it takes is a few simple actions to enable cloud-based monitoring of all your new and old SIMOTICS motors and motors from other manufacturers in your plant. As a plug-and-play solution, the SIMOTICS CONNECT 400 connectivity module is easily mounted right on the motor housing and starts supplying data for the cloud-based monitoring of low-voltage motors with SIDRIVE IQ Fleet – with no wires.

Highlights

- Tailored to low-voltage motors with shaft heights from 132 to 450
- Captures status data, including vibration, temperature, speed, and output, and analyzes it based on current and historical data
- Continuous condition monitoring and fleet management of your low-voltage motors, worldwide and 24/7
- Simple and user-friendly mounting, installation, commissioning, and maintenance
- Higher data quality and precision for Siemens motors, thanks to the use of equivalent electrical circuit diagrams, product-specific data from production, and additional elements from the digital twin of the motor

[siemens.com/digital-drives](https://www.siemens.com/digital-drives)

Services with cloud- and expert-based data analysis

With SIDRIVE IQ Fleet, your drive systems' operating and status data becomes concrete information that supports productivity, availability, and efficiency – day in and day out. A browser-based dashboard keeps you informed on the current status of your drive system components at all times.

Thanks to automatic notifications, you can identify deviations from target values early on and respond accordingly.

Motor monitoring for maintenance/ service optimization or for implementing new business models

Visualization of and access to motor operating condition via a browser-based application

Data analytics based on actual operational data and the digital twin of the motor in SIDRIVE IQ Fleet



Secure and direct data transmission from a customer's WLAN to MindSphere via the Internet



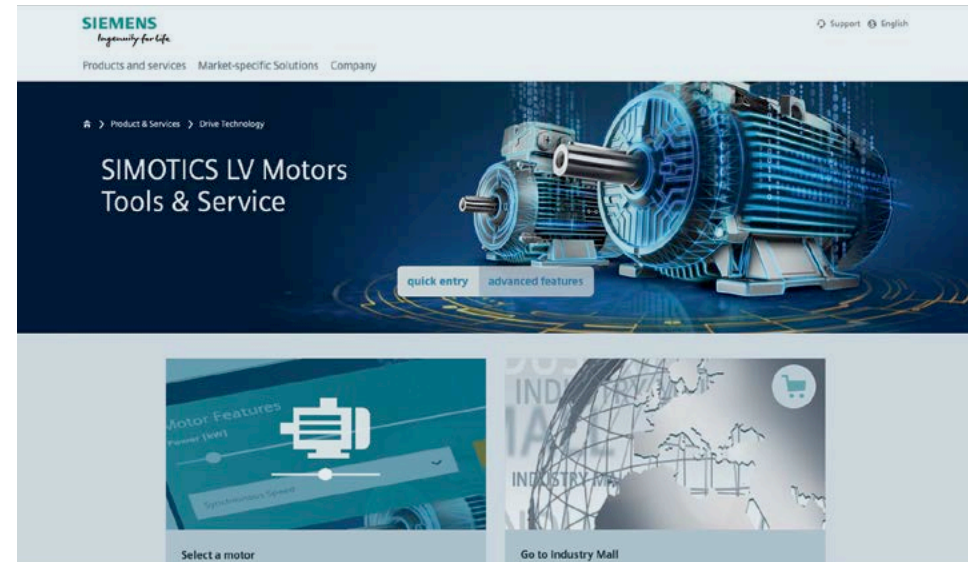
Simple mounting by affixing the SIMOTICS CONNECT 400 to the motor housing and intuitive commissioning of the sensor module via smartphone and Bluetooth



Everything from user-friendly to future-proof – the tools for your success

We help you select the right drive solution by providing qualified consulting and software solutions that let you directly compare your alternatives.

You'll also benefit from continuous access to and transparency of the electrical and mechanical data from your motor.



MyMotor: Your gateway to the world of SIMOTICS

This Website offers you direct access to all the digital tools and services relating to SIMOTICS. With just a few clicks, you can select your motors, calculate their energy efficiency, and identify the best path to digitalization. You also have the option to order selected products and then track your orders. You'll find the right spare parts for your motors as well as their certificates, data sheets, and drawings for download. Finally, you're provided with a contact for technical and sales support.

[siemens.com/mymotor](https://www.siemens.com/mymotor)



Easy Selection SIMOTICS LV Motors

Simply enter a power and speed to access a preselection of motors that includes size, efficiency class, and list price and a direct connection to the Drive Technology Configurator and the Industry Mall.

[siemens.com/lv-easy](https://www.siemens.com/lv-easy)



Drive Technology Configurator

From gearboxes and motors to converters and controls, this tool guides you to the optimal drive products and components for your applications, including documentation like data sheets, startup characteristics, and CAD drawings and enables direct ordering through the Industry Mall.

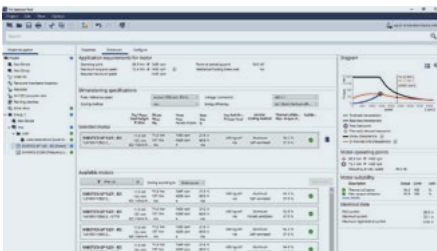
[siemens.com/dt-configurator](https://www.siemens.com/dt-configurator)



SinaSave energy efficiency tool

With the Web-based SinaSave tool, you'll determine the potential energy savings and payback time for your motors. You can also compare different control modes and product combinations for pump and fan drive systems.

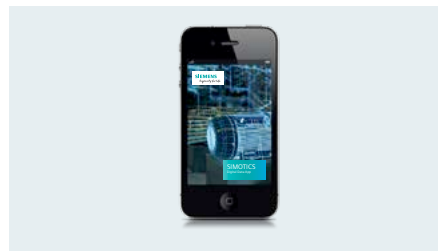
[siemens.com/sinasave](https://www.siemens.com/sinasave)



SIZER: Drive dimensioning in the TIA Selection Tool

In the TIA Selection Tool, you can model, dimension, and configure Siemens drive systems and quickly and transparently identify the right integrated drive solution for your task from the core portfolio elements: motor, gearbox, and frequency converter.

[siemens.com/tst](https://www.siemens.com/tst)



SIMOTICS Digital Data app

Easily access important information about your SIMOTICS motor using the motor's data matrix code or serial number.

[siemens.com/digitaldataapp](https://www.siemens.com/digitaldataapp)



SIMOTICS: The right motor solution for every application

Whether you have a standard or a special application, the extensive range of SIMOTICS low-voltage motors includes exactly the right motor for every drive task.

With power extending from 90 watts to the megawatt range, rated speeds from 200 to 3,600 min^{-1} , degrees of protection from IP55 to IP66, and torques of up to 42,000 Nm, SIMOTICS low-voltage motors meet all the requirements of standard to harsh environments in the process industries. Their consistent technological foundation simplifies project processing and the handling and digitalization of the various processes linked to your drive systems – worldwide, thanks to uniform components, international certificates, and standardized interfaces.

Low-voltage motors for line and converter operation



General Purpose: SIMOTICS GP

Asynchronous/synchronous-reluctance motors with aluminum enclosure: lightweight, reliable, compact.

Versions optimized for converter operation: VSD10 asynchronous motors, VSD4000 reluctance motors; Eagle Line and APAC motors for use in the NAFTA area and ASEAN markets



Severe Duty: SIMOTICS SD

Asynchronous/synchronous-reluctance motors with cast-iron enclosure: robust, reliable, compact.

Versions optimized for converter operation: VSD10 asynchronous motors, VSD4000 reluctance motors; Eagle Line and APAC motors for use in the NAFTA area and ASEAN markets; pole-changing motors



Explosion Proof: SIMOTICS XP

Explosion-proof asynchronous motors for reliable operation in Ex Zones 1, 2, 21, and 22



Definite Purpose: SIMOTICS DP

Marine motors, roller-table and steel-plant motors, crane motors, and customized motors in asynchronous technology



High Torque: SIMOTICS HT

Multi-pole torque motor for gearless use in applications requiring high torque



Transnorm: SIMOTICS TN/HV

Transnorm motors are low-voltage asynchronous motors for applications with a higher power rating up to 5.3 MW

[siemens.com/lowvoltagegators](https://www.siemens.com/lowvoltagegators)

Additional product groups for drive technology can be found on the Internet at:

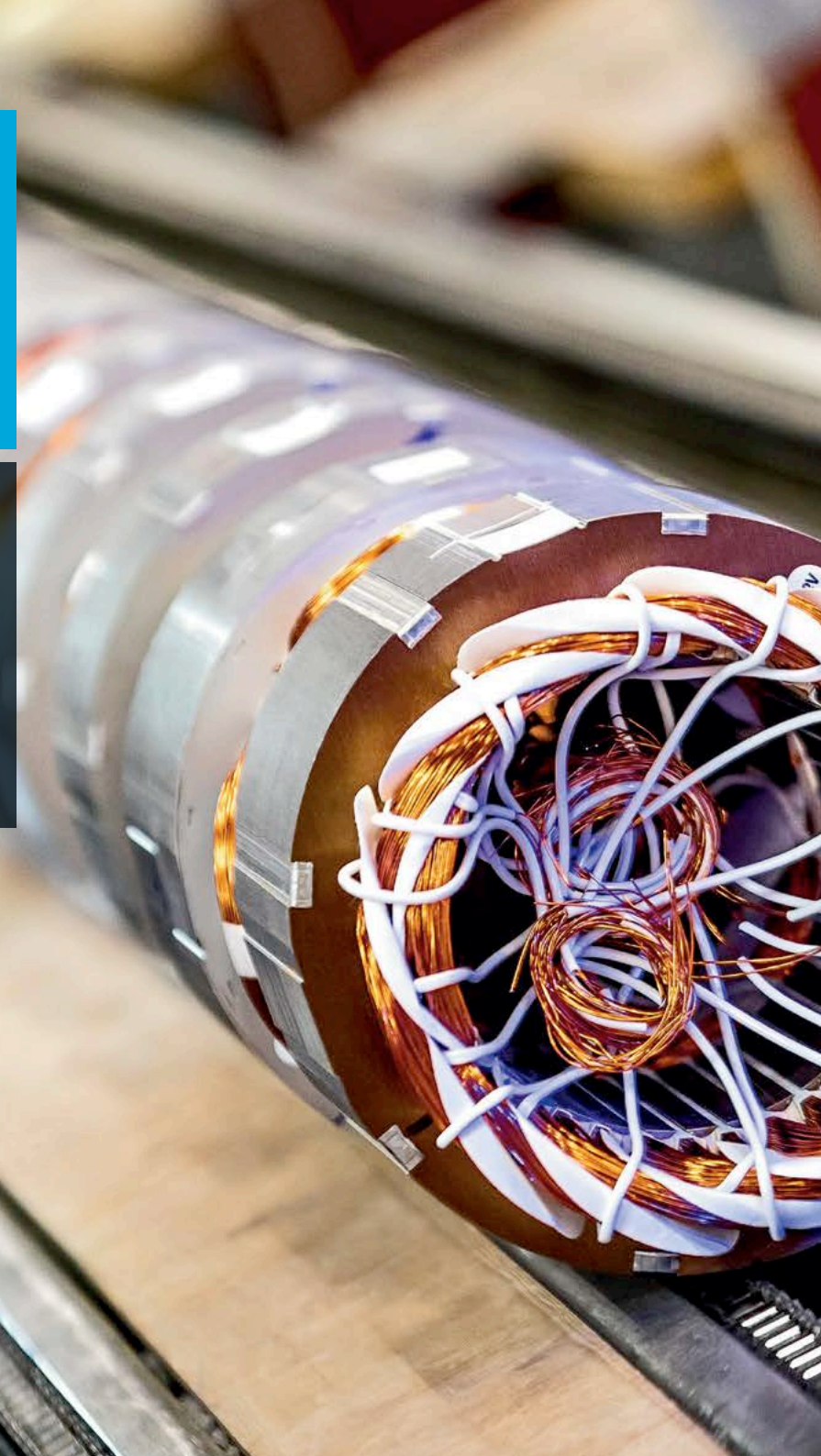
[siemens.com/motion-control-motors](https://www.siemens.com/motion-control-motors)

[siemens.com/sinamics](https://www.siemens.com/sinamics)

SIMOTICS GP: The lightweight all-around solution

Power	0.09 to 45 kW
Voltage	230 – 690 V
Shaft height	63 to 200 mm
No. of poles	2/4/6/8
Degree of protection	IP55, IP56, IP65
Efficiency classes	IE1 to IE4

Recommended converters	SINAMICS G-series and S-series devices
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SIMOTICS GP (General Purpose) motors: Lightweight for standard applications

General Purpose motors with an aluminum enclosure are suitable for a wide range of standard drive tasks in the industrial environment. The motors' design and architecture ensure maximum flexibility and minimal installation costs. Users benefit from integral lifting eyes, screw-on feet, reinforced bearing end-shields with optimal mechanical properties, and easily accessible terminal boxes. Encoders, brakes, and separately driven fans are also simple to add. Thanks to their especially low weight, they're ideal for applications in pumps, fans, and compressors, but they can also be reliably deployed in conveyor systems and lifting gear.

In addition to converter-capable line motors, two converter-optimized motor lines are available for variable-speed converter operation. You can quickly commission your SIMOTICS GP motors using a motor code for predefined converter parameters.

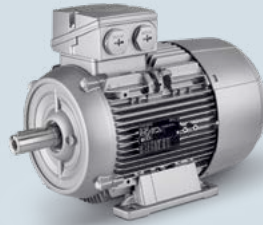
Highlights

- Easy to use and extremely compact
- Special motor versions for special applications
- Cost-effective, lightweight aluminum design
- Simple and flexible to install, thanks to sophisticated construction

Applications

- Pumps, fans, and compressors with special demands for low weight

[siemens.com/simotics-gp](https://www.siemens.com/simotics-gp)



Converter-capable asynchronous motor optimized for line operation

The proven SIMOTICS GP motors optimized for line operation are available in efficiency classes up to IE4. Because they have the same power-shaft height assignment across all efficiency classes, migration to more efficient motors is extremely simple.



Asynchronous motors and reluctance motors optimized for converter operation

SIMOTICS GP converter motors in the VSD10 line and motors with reluctance technology in the VSD4000 line (also see pages 20–21) were designed exclusively for converter operation and optimized specifically for SINAMICS converters. SIMOTICS converter motors and SINAMICS converters can be deployed worldwide, because they comply with local legislation and MEPS standards.

SIMOTICS SD with shaft heights up to 315: The reliable workhorse

Power	0.09 to 200 kW
Voltage	230 – 690 V
Shaft height	71 to 315 mm
No. of poles	2/4/6/8
Degree of protection	IP55, IP56, IP65
Efficiency classes	IE1 to IE4
Recommended converters	SINAMICS G-series and S-series devices

SIMOTICS SD (Severe Duty) motors: Uncompromising power

Severe Duty motors with a cast-iron enclosure live up to their name. They do an outstanding job under harsh environmental conditions, including locations where there are extreme amounts of dust and high vibration levels, as well as in aggressive atmospheres like those found in the petrochemical industry or generally throughout the process industries. Their design supports optimal motor cooling and, thanks to the modular platform concept, their handling is identical to that of the General Purpose series.

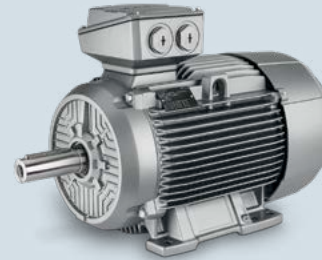
Highlights

- The optimal Severe Duty motor for meeting every demand: Basic Line (machine building), Performance Line (process industry), APAC Line for the Asian-Pacific region, and Eagle Line for export to NAFTA countries
- Compact design saves space and simplifies installation
- Highly efficient operation: Starting at 2.2 kW, all are available in energy efficiency class IE4

Applications

- Pumps, fans, compressors, material handling, mixers, mills, extruders, rollers, winders, shredders, shears, and cranes/lifting equipment with special requirements for sturdiness like those used in the chemical and petrochemical industries

[siemens.com/simotics-sd](https://www.siemens.com/simotics-sd)



Highest efficiency at a fixed speed: Converter-capable asynchronous motors optimized for line operation

The well-proven SIMOTICS SD motors up to motor efficiency class IE4 are available for line operation. By using motors in efficiency class IE4, you'll reduce your energy usage by up to three percent compared with motors in an IE3 efficiency class. If you opt for this platform, you can also switch over to IE4 motors at a later point in time, because all efficiency classes from IE1 up to IE4 have the same power-shaft height assignment. The SD motors with increased power offer the same power rating in the next-lower shaft height.

Optimized solutions for variable-speed operation

SD motors in the VSD10 and VSD4000 lines for variable-speed operation have been optimized for operation with SINAMICS converters and comply with global MEPS requirements. The investment-optimized system comprising a SIMOTICS VSD10 motor and a SINAMICS converter can be easily selected from the catalog or engineering tool and commissioned using a motor code with predefined converter parameters.

The system comprising a SIMOTICS synchronous-reluctance motor (see separate section on reluctance motors, page 20) and a SINAMICS converter is the best choice for highly energy-efficient operation.

SIMOTICS SD next generation up to 1,000 kW: The cosmopolitan heavyweight

	SD	SD Add	SD Pro
Power	55 kW to 500 kW	55 kW to 1,000 kW	160 kW to 980 kW
Voltage	380 – 690 V		
Shaft height	315 to 355 mm	315 to 450 mm	315 to 450 mm
No. of poles	2/4/6/8		
Degree of protection	IP55, IP56, IP65		
Efficiency classes	IE3, IE4		IE3

Recommended converters
SINAMICS G-series and S-series devices

SIMOTICS SD (Severe Duty) motors: Performance redefined

Thanks to optimized performance and numerous digital features, the rugged standard SIMOTICS Severe Duty IEC motors starting with a shaft height of 315 (next generation) can be seamlessly integrated into your digital enterprise. They're just as capable of handling dust and vibration as they are dealing with the aggressive environmental conditions present in the process industries. Their new design combines smaller dimensions with a high power density, resulting in the highest efficiency classes for all three versions.

Highlights

- Best-in-class design:
 - Compact dimensions, future-proof, higher power density, also ideal for retrofits
 - New terminal box design for greater flexibility in assembly
 - Better operational quality for high starting/breakaway torque and low starting currents
- Future-oriented energy-efficiency concepts IE3 and IE4 up to 1,000 kW are available for all motors in this line, meaning that they already exceed future legal requirements – reduced total cost of ownership and CO₂ emissions
- Quick and easy processes:
 - Extremely short delivery time facilitates your planning
 - A wider range of standardized options accelerates bid and response time – with more configuration options

Applications

- Pumps, compressors, fans, cranes/lifting equipment, conveyers, chippers, coilers, grinders, shears, rolling stands with special requirements for sturdiness

[siemens.com/simotics-sd-nextgeneration](https://www.siemens.com/simotics-sd-nextgeneration)



Version 1

- Converter-capable up to 480 V (IVIC-C advanced insulation system)
- High starting and breakaway torque (M_A/M_N)

Version 2

- Global certificates
- UL Safety and CSA Safety material as standard
- Converter-capable up to 480 V (IVIC-C advanced insulation system)
- Low starting currents (I_A/I_N): lower thermal loading, lower network load, reduced torque shock

Version 3

- Multi-voltage capability at AH 315 – 355
- Stable efficiency levels at 50 Hz/60 Hz
- Global certificates
- UL Safety and CSA Safety material as standard
- Converter-capable up to 690 V (IVIC-C premium insulation system)
- High starting and breakaway torque (M_A/M_N) at AH 315 – 355, low starting current (I_A/I_N) at AH 400 – 450

SIMOTICS SD
Motors beyond standards

SIMOTICS SD Add
Motors beyond borders

SIMOTICS SD Pro
Motors beyond horizons

SIMOTICS reluctance motor: The efficient shooting star

	Based on SIMOTICS GP	Based on SIMOTICS SD
Power	0.55 – 30 kW	0.55 – 45 kW
Voltage	400 – 460 V	
Shaft height	80 – 200 mm	80 – 225 mm
No. of poles	4	
Degree of protection	IP55, IP56, IP65	
Efficiency classes	IE4; system efficiency in conjunction with SINAMICS converter better than IES2	
Recommended converters	SINAMICS G-series and S-series devices	

SIMOTICS reluctance motors: For optimized system efficiency

A drive system with a SIMOTICS reluctance motor achieves maximum energy efficiency at the rated operating point (at the IE4 level) and significantly higher efficiency in the part-load range than comparable converter-based asynchronous motors.

The combination of a SIMOTICS reluctance motor and SINAMICS converter is more than just a drive. As an integrated drive system, both are specifically synchronized to work together and deliver extremely cost-effective operation. The seamless integration of these systems into automation and, among other things, efficient engineering and service concepts across the entire life-cycle result in significant efficiency benefits.

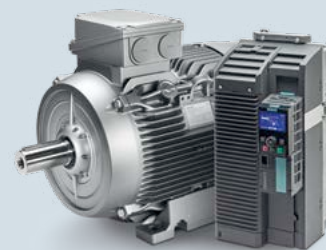
Highlights

- Extremely efficient even in the part-load range
- Low operating costs and high cost-efficiency
- Dynamic and robust sensorless control
- High overload capability (robust and reliable)
- High power density

Applications

- Pumps, fans, and compressors

[siemens.com/reluctancedrivesystem](https://www.siemens.com/reluctancedrivesystem)



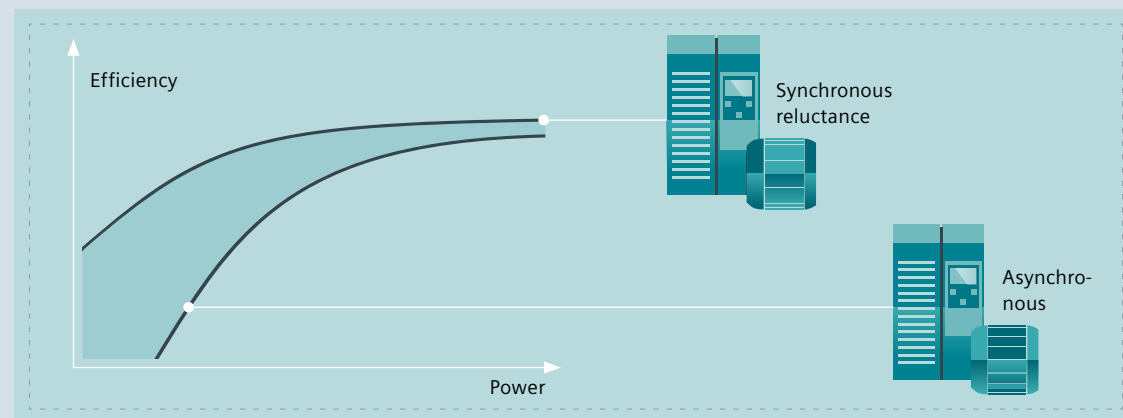
Unbeatable efficiency in the system

The system efficiency of a coordinated synchronous-reluctance drive system comprising a SIMOTICS reluctance motor and a SINAMICS converter is significantly higher than the minimum requirements of IES2, the highest system efficiency class defined. The optimization of complete drive systems as required by the European energy-related product standard EN 50598 increases energy efficiency. The synchronous-reluctance drive system already comes close to achieving its highest efficiency value in IES2 under loads starting at about 25 percent of nominal torque.

Drive technology that quickly pays off

Benefits of the synchronous-reluctance drive system include investment security, reduced operating costs, and rapid amortization. Compared with standard asynchronous motors in IE2, the higher initial investment is paid off in less than 12 months. Compared with a drive system with an IE3 motor, it pays for itself after just five months with a pump load cycle in accordance with the standardized profile "Blue Angel" in two-shift operation and energy costs of eight ct/kWh.

Synchronous reluctance technology ensures substantially lower energy consumption, especially in the part-load range.



SIMOTICS XP: The safety-conscious EXpert

Ex Zone	1	1	2	21	22
Explosion	Ex db	Ex eb	Ex ec	Ex tb	Ex tc
Power	0.25 – 460 kW	0.12 – 165 kW	0.09 – 1,000 kW	0.09 – 1,000 kW	0.09 – 1,000 kW
Voltage	50/60 Hz: 230 to 690 V				
Shaft height	71 – 355 mm	63 – 315 mm	63 – 450 mm		
No. of poles	2 – 8	2 – 6	2 – 8		
Degree of protection	IP55; IP56; IP65			IP65*	IP55*
Efficiency classes	IE3		IE2, IE3, IE4 (1MB5 only)		

Recommended converters SINAMICS G-series and S-series devices

* Note: Other degrees of protection aren't allowed in this case.

SIMOTICS XP (Explosion Protected): Proven trustworthy

You're certainly on the safe side with SIMOTICS XP explosion-protected motors, because they operate for a very long time without interruption, even under the most extreme conditions and at the highest risk of explosion. This applies to both line and converter operation.

Highlights

- Complete range from a single source
- One platform for all hazardous zones, seamlessly covering all standard explosion-protection types
- Standardized tools and processes – from planning to operation and maintenance
- Reduced expenditures in all phases
- Customized industry solutions (CHEMSTAR version)
- Short project execution time
- Energy-efficient: efficiency class IE3 as standard
- Also certified for use on ships

Applications

SIMOTICS XP was specifically developed for general industrial applications (with emphasis on the process industries) with special requirements and is classified for use in areas where explosive gases (Zone 1 or 2) or explosive dust (Zone 21 and 22) occur. The main areas of application are pumps, fans, compressors, extruders, separators, and agitators in industries like chemical/ petrochemical, oil and gas, plastics, food and beverage, and woodworking.

[siemens.com/simotics-xp](https://www.siemens.com/simotics-xp)



SIMOTICS XP CHEMSTAR

SIMOTICS XP is also available in the sector-specific SIMOTICS XP CHEMSTAR version, which combines the traditional CHEMSTAR technology that's been proven for decades in the process industries with the SIMOTICS low-voltage motor platform. SIMOTICS XP CHEMSTAR sets pioneering standards with customized solutions for the chemical, petrochemical, and oil and gas industries.

In this series, extremely rugged motors with a cast-iron enclosure that always have a steel fan cover are equipped with preconfigured option packages for each industry, including sector-specific paint finishes with C4 corrosion protection, non-rusting steel screws and bolts, and a sector-specific extended warranty period. These features are supplemented by freely selectable options like reduced starting currents, motor monitoring, reinforced bearings, a tropical climate version for extreme humidity, special paint finishes, and an offshore C5M-M classification. Documentation that can be flexibly adapted to simple or extremely complex projects is also typically available.

SIMOTICS DP:
The adaptable specialist



SIMOTICS DP (Definite Purpose): Individual-sector motors

Every sector has its own requirements when it comes to drive technology. Beyond the standard portfolio, SIMOTICS DP sector motors offer precisely tailored solutions that fulfill specific requirements for power and cost-efficiency. As a full-line supplier and based on our many years of experience, we have precise knowledge of diverse requirements. When all's said and done, motors from Siemens power almost every industrial sector around the globe – with maximum efficiency and reliability.

Highlights

- Beyond the standard portfolio, sector motors offer a precise and optimal solution that meets specific requirements.
- Additional expansion according to specific standards and provisions
- Application-specific electrical designs
- Design modifications for required degrees of protection, mounted components, materials, dimensions, stress levels, and more

Applications

- Marine and offshore applications, transport and working roller tables, steel and metal, port cranes, and customized motors adapted to a specific application.

[siemens.com/simotics-dp](https://www.siemens.com/simotics-dp)



SIMOTICS DP crane motors: Maximum power, even when things get stormy

SIMOTICS DP crane motors are especially suitable for use in ports where they're frequently subject to extreme weather conditions. They must be able to stand up to high humidity levels, salt-laden air, and high wind speeds while continuing to guarantee a high overload capability and a wide speed control range. Reliable operation has top priority.

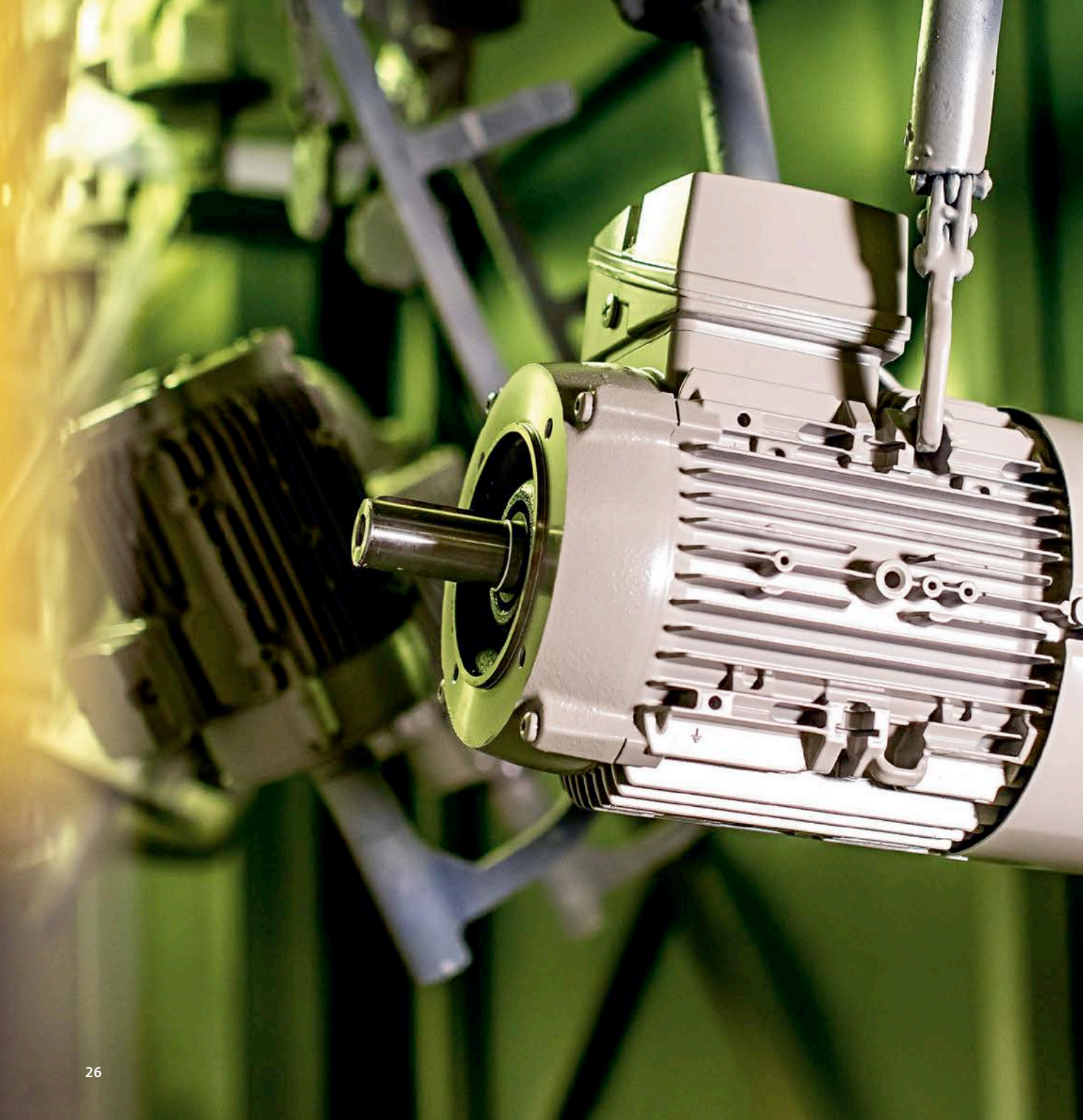
Highlights

- **Higher efficiency**
The use of special active parts for high efficiency also helps save energy when operated in the part-load range. For ambient temperatures up to 50° Celsius – and optionally, even higher – the crane motors are protected from a salt-laden atmosphere and up to 100 percent humidity.
- **More power**
As accelerating drives, our crane motors can always cope with any situation, thanks to torque reserves for high surge loads and an overload capability up to 230 percent. The high power density allows for compact dimensions.
- **Greater flexibility**
With a generously dimensioned terminal box, corrosion protection inside the motor, and optionally available rugged mounting feet and flanges made of torsionally stiff spheroidal cast iron, our crane motors are ready to take on any task. Rugged, high-quality mounted components like brakes and pulse generators complete our crane motors.

Applications

These rugged cast-iron motors have been specifically developed for operation in harsh environments under adverse conditions typical of crane applications in salt-laden air with high humidity and wind. Typically used in various crane applications in ports, including gantry drives, trolley drives, boom drives, and hoist drives.

Power	4.4 to 310 kW
Voltage	230 – 690 V
Shaft height	132 to 315 mm
No. of poles	4/6/8
Speed	727 – 1,726 min ⁻¹
Torque	11 – 3,980 Nm
Degree of protection	IP55, IP56, IP65
Recommended converters	SINAMICS G-series and S-series devices



**SIMOTICS DP roller-table motors:
Powerful drive, extremely rugged**

Today transport and working roller tables with reversing operation in rolling mills are almost exclusively equipped with directly driven rolls. The mechanical and electrical demands placed on the drive version differ in scale. To comply with these diverse requirements, our new SIMOTICS DP roller-table motors and SIMOTICS DP steel plant motors have been developed for converter operation.

Power
Voltage
Shaft height
No. of poles
Speed
Torque
Degree of protection
Efficiency classes
Recommended converters

Non-ventilated roller-table motors are ideal for very rugged operating conditions in rolling mills, which are characterized by high ambient temperatures, scale dust, and constant vibration and impacts.

Highlights

- Torsionally rigid ring-rib enclosure in spheroidal cast iron; extremely rugged to withstand mechanical stress; no scale-dust deposits
- Torque reserves allow high surge torques of up to 400 percent.

Steel plant motors for less pollution and stress

Steel plant motors with longitudinal-ribbed enclosures are available for areas of material conveyor systems and transport roller tables where there's less pollution and mechanical loads are low, as well as for pure line operation. These motors have been designed for the medium vibration/impact and polluted areas of transport roller tables. Like the roller-table motors, the steel plant motors are also available in a fully-enclosed version and a self-ventilated version. The torque reserves allow high surge torques of up to 400 percent.



SIMOTICS DP marine motors: Full speed ahead

Salt-laden air and high humidity place enormous stress on electrical equipment installed on ships and in coastal areas. That's why renowned marine classification societies formulate strict regulations for the supplementary qualifications of electric motors. SIMOTICS DP marine motors satisfy all the specifications of leading marine classification societies (BV, DNV, GL, LR, RS, KR, ABS, RINA).

Highlights

- Available with either an aluminum or cast-iron enclosure
- Available both in a standard version and versions for hazardous zones
- For on-deck applications, these motors can also be designed so that they function reliably even when briefly moistened with water.

Applications

Our type-tested marine motors are specifically designed for deployment on ships – either on- or below-deck, depending on the version – and for the offshore industry, for example, on drilling rigs.

Examples of auxiliary drives on ships:

- Pumps, fans, compressors (applications like HVAC systems, water for firefighting and cooling, fuels, oils)
- Winches (anchor and mooring winches, lifting gear)
- Bow-thruster drives

Roller-table motor	Steel plant motors
3.5 – 120 kW	2.2 – 90 kW
230 – 690 V	
112 – 400 mm	112 – 280 mm
4/6/8	4/6
730 – 1,800 min ⁻¹	1,000 – 2,610 min ⁻¹
23 – 1,650 Nm	22 – 579 Nm
Up to IP66	IP55, IP56, IP65
Highly efficient in converter and line operation	
SINAMICS G-series and S-series devices	

Power	0.09 bis 1,000 kW
Voltage	230 – 690 V
Shaft height	63 to 450 mm
No. of poles	2/4/6
Degree of protection	IP55, IP56, IP65
Efficiency classes	IE2, IE3, IE4
Recommended converters	SINAMICS G-series and S-series devices



SIMOTICS HT-direct: The supreme torque-master

Torque	6,000 – 42,000 kNm
Power	150 – 2,100 kW
Shaft height	400 mm, 450 mm, 500 mm
Degree of protection	IP55
Rated speed	200 – 800 min ⁻¹
Rated voltage	400, 460, 690 V
Cooling method	IC71W (water jacket-cooled) IC416 (rib-cooled with forced ventilation)
Recommended converters	SINAMICS G-series and S-series devices

SIMOTICS HT-direct (High-Torque): Maximum effect in the smallest space

SIMOTICS HT-direct motors are most effective wherever efficiency, low space requirements, and low lifecycle costs are required.

Highlights

- Approximately two to three percent higher efficiency (without gearbox) saves about €15,000/year with 1,000 kW motor and eight hours of operation per day
- Compact, thanks to high pole design and permanent magnet technology
- No gearbox = lower costs for engineering, investment, installation, maintenance, and operation
- Optimally matched to SINAMICS converter for operation with or without encoders
- Nominal bearing life > 60,000 hours
- Environmentally-friendly and energy-saving drive system
- Special customizations

Applications

- Paper industry (roller and press drives)
- Marine industry (propeller main and auxiliary drives)
- Mining industry
- Mill drives
- Steel industry (for example, for shears)
- Plastics industry (extruder worms, foil-drawing machines)
- Crane industry (various areas of application)
- Sugar industry (sugar centrifuge)
- Chemical, oil and gas (pumps, compressors)
- Water/wastewater (pumps, blowers)

[siemens.com/simotics-ht](https://www.siemens.com/simotics-ht)



SIMOTICS HT Series HT-direct: Lower operating costs, higher availability

The SIMOTICS HT Series HT-direct high-torque motors are permanent-magnet synchronous motors that provide high torques at low speeds directly at the driven machine. High efficiency and excellent power factors can also be achieved at low speeds, thanks to the permanent magnet rotors.

The SIMOTICS HT Series HT-direct high-torque motors are offered as a harmonized system along with SINAMICS frequency converters. The HT-direct motor/SINAMICS converter system is a drive solution with a long service life and low lifecycle costs and high efficiency for applications with low operating speeds.

The high pole design in conjunction with permanent-magnet technology ensures that the motors' space requirements and mass are lower than that of comparable asynchronous machines.

The slow-running motors in the HT-direct series eliminate the need for a gearbox in many cases (reduction in engineering, assembly, and maintenance outlay, lower investment, and lower operating costs).

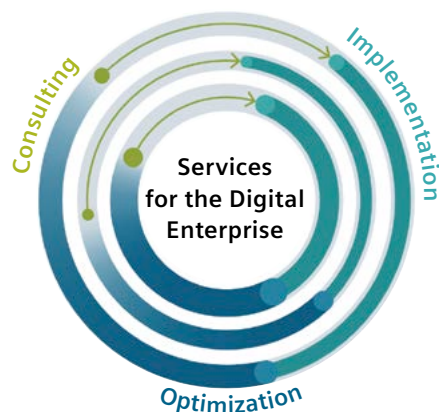
Our Drive System Services: Analog and digital support for achieving your goals



Drive System Services: The foundation for continuous improvement

Predicting your drive system's outages and faults and therefore avoiding costly production outages is only part of our Drive System Services. At least as important for your success are our consulting services for the digitalization of your drive technology – laying the groundwork for consistently reliable operation that constantly improves.

Take advantage of our expertise with analog and digital Drive System Services. Our three-stage offering extends from consulting to implementation and optimization.



[siemens.com/drivesystemservices](https://www.siemens.com/drivesystemservices)

Digitalization Check

Digitalization? Is that even possible in my plant, with my motors?

As a partner to industry, we offer you customized digitalization services. With the Digitalization Check, you'll instantly learn whether your plant is ready to begin its digital transformation and exactly what that will require.

Our digitalization experts also present you with a variety of scenarios for a progression of digitalization steps in your enterprise and offer you a solid foundation for your investment decisions.

Predictive Services

Within the framework of a service agreement, the MindSphere app "Predictive Service Assistance" simplifies planning by providing reliable information on when and where to take service measures.

Users can also access detailed information on maintenance activities (such as scope, necessary spare parts) and are directly supported in their work based on current and historical status and product data. This helps you to optimize service, reduce downtime, and increase the availability of your plants.

Digitalization implementation

In order to benefit from a cloud-based option for analyzing motor data, you need the data from your installed base to be comprehensively recorded and evaluated by a Digitalization Check.

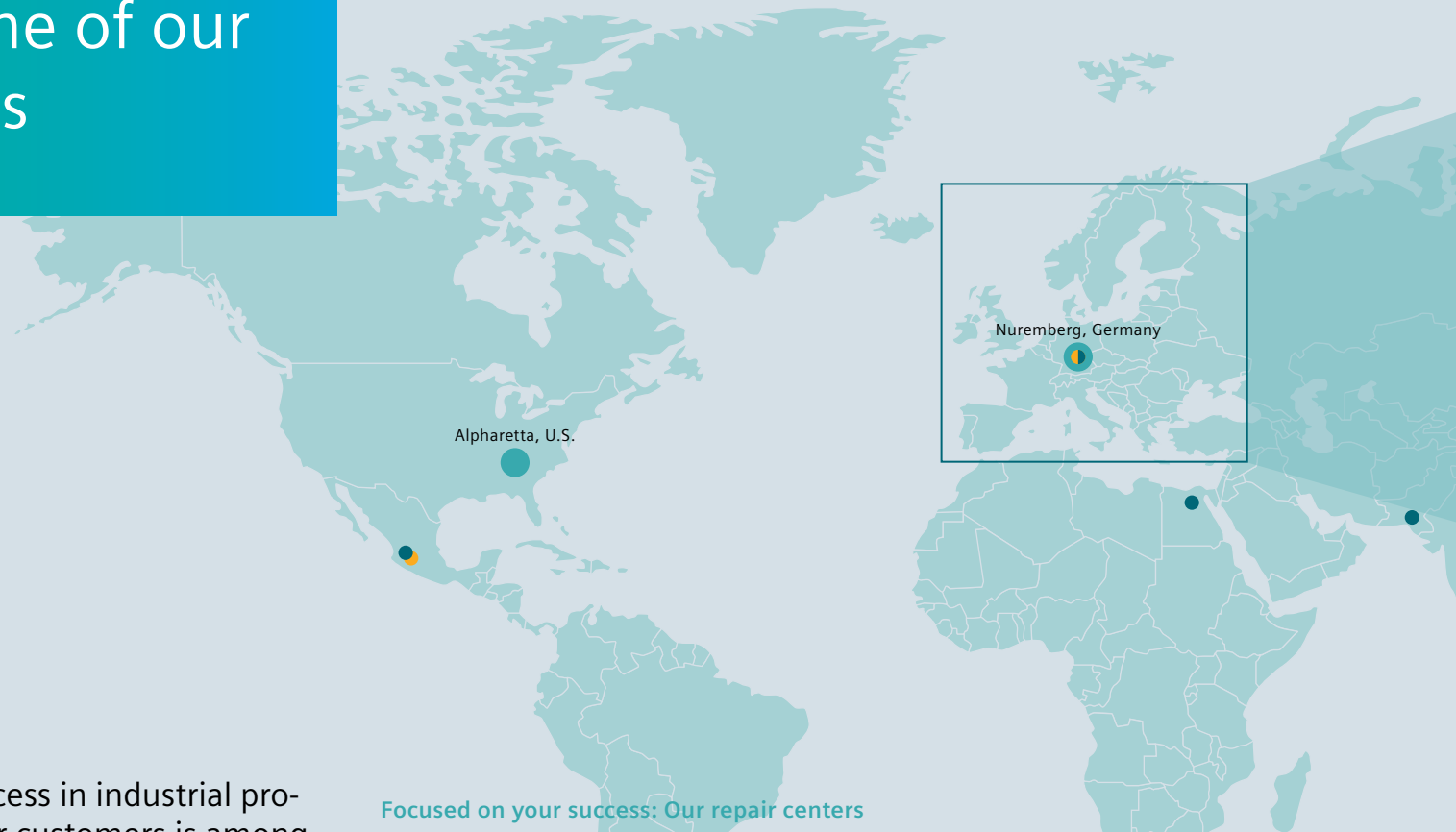
Simply select the correct connection scenario and an experienced Siemens technician will install and commission the necessary connectivity modules, generally without downtime. Your motors are then connected to MindSphere, and you can access the relevant drive data at any time for visualization and optimization purposes.

Field service and retrofits

With our on-site service, we're always nearby to offer you comprehensive support for the commissioning and servicing of your motors – anywhere in the world. We follow a comprehensive service approach that assesses plant efficiency on the basis of technical and operational requirements while taking into account your strategic business goals.

Retrofits of your motors play a key role and ensure maximum efficiency as well as the reliable and cost-effective operation of your plants for many years.

Proximity is one of our success factors



There are many reasons for success in industrial production. For us, proximity to our customers is among the most important. That's why we've established our low-voltage motor business with production facilities and service centers worldwide – and with consistent, end-to-end support from our experts at headquarters.

You'll both from the speed of our service-call support and from the extraordinary technical depth of our consulting, which includes helping you make the most of your SIMOTICS motors, get into shape with retrofits, or plan economical and targeted maintenance.

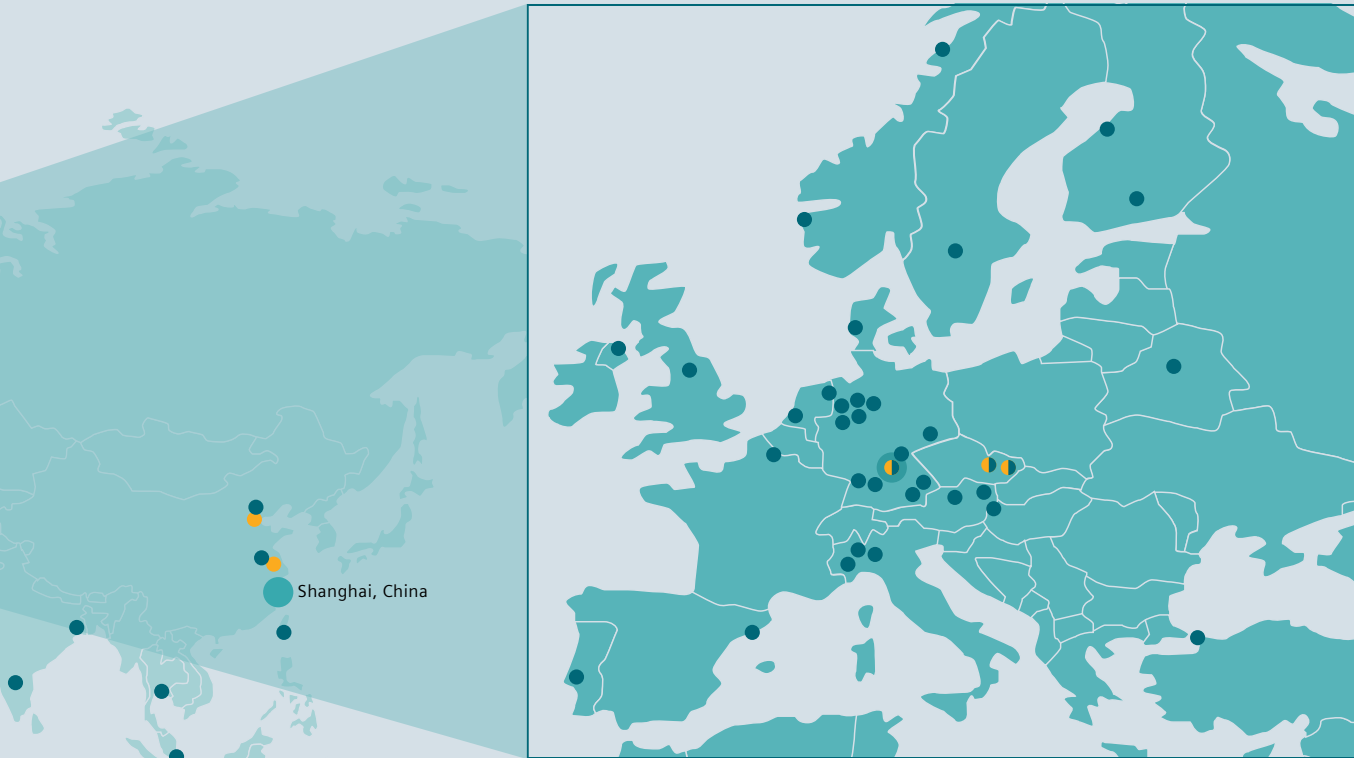
Focused on your success: Our repair centers

You'll find everything you need for the optimized operation of your SIMOTICS motors – from repairs, retrofits, and new materials to customized service packages that can include complete service processing on request.

Your benefits

- Repairs on the manufacturer level
- Global network of certified service facilities
- Includes manufacturer-independent repair of motors and gearboxes
- Optimized service costs when a service transaction is accepted
- Improved power and energy efficiency with retrofits as part of a general overhaul
- Reduced lifecycle costs

[siemens.com/repair-services](https://www.siemens.com/repair-services)



- Headquarters of SIMOTICS low-voltage motor business for Asia, the Americas, and Europe
- Repair centers for SIMOTICS low-voltage motors
- Manufacturing plants for SIMOTICS low-voltage motors



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Repair centers

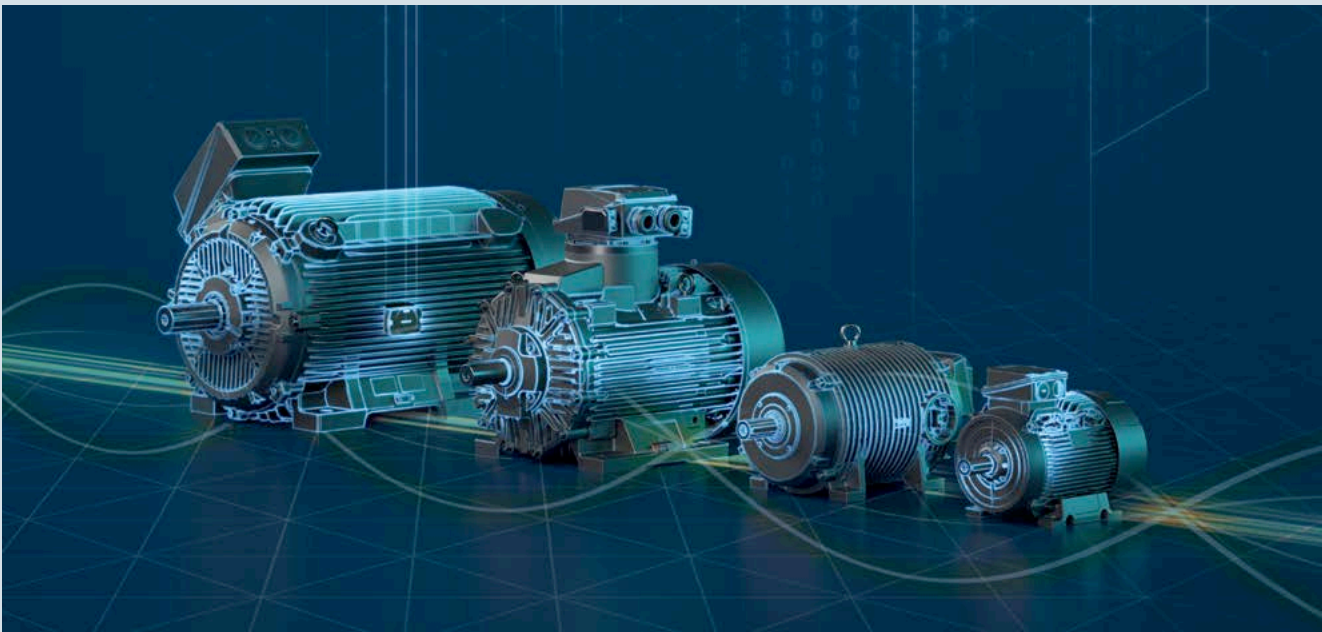
- Austria**
 - Linz, Voestalpine Stahl GmbH
 - Stockerau, MOLL MOTOR
- Belarus**
 - Minsk, ZAO Volna
- China**
 - Beijing, Beijing (SFAE)
 - Yizheng, Yizheng (SSML)
- Czech Republic**
 - Frenstat pod Radhostem, Frenstat
 - Mohelnice, Mohelnice
 - Mohelnice, Rastr Electro
- Denmark**
 - Esbjerg 0, El-firmaet Olesen & Jensen A/S
- Egypt**
 - 6th of October City, Biraf Electric
- Finland**
 - Kokkola, Jukkola Systems Oy
 - Lahti, LSK Technology Oy
- France**
 - Tilly-Lez-Cambrai, Devos Vandenhove
- Germany**
 - Bayreuth, Heidenreich GmbH & Co. KG
 - Bielefeld, Bielefeld
 - Burgkirchen a. d. Alz, InfraServ Technik GmbH
 - Chemnitz, EMB
 - Hannover, Behncke
 - Nuremberg, Siemens Repair Center Nuremberg
 - Recklinghausen, EMZ
 - Rheine, Clemens Lammers
 - Ruhstorf a. d. Rott, Ruhstorf
 - Siegen-Feuerbach, Erich Schäfer
 - Stuttgart, Stuttgart
 - Warendorf, Radike
- Great Britain**
 - Ballymena, Grants Electrical Services (GES)
 - Bradford, Southern & Redfern
- Hungary**
 - Fertőszentmiklós, HBB szerviz Kft.
- India**
 - Bangalore, Rajamane & Hegde Services PVT Ltd.
 - Kolkata, West Bengal, ADAK ELECTRICALS PRIVATE LIMITED
- Italy**
 - Abbiategrasso (MI), Elettromeccanica Rognoni
 - Gorgonzola, ELETTROMECCANICA BONATO srl
 - Leini, TG. Emme Service S.r.l.
- Mexico**
 - Tlajomulco de Zúñiga – Jalisco, Guadalajara
- Netherlands**
 - Bergen, De Bruijn Industrial Services B.V.
 - VV Emmen, Elektromotoren Emmen
- Norway**
 - Bergen, Karsten Morholt
 - Harstad, Tenkor
- Pakistan**
 - Karachi, Karachi
- Portugal**
 - Seixal, Lehmus Lda.
- Singapore**
 - Singapore, Singapore
- Spain**
 - 08030 Barcelona, CastelOmega, s.l./Bobinados Castel, SA
- Sweden**
 - Örebro, Assemblin EL AB
- Taiwan**
 - Kaohsiung City, Chan Chang Electric Co. Ltd.
- Thailand**
 - Rayong, Rayong
- Turkey**
 - Istanbul, Istanbul

Manufacturing plants

- China**
 - Tianjin
 - Yizheng
- Czech Republic**
 - Frenstat pod Radhostem
 - Mohelnice
- Germany**
 - Nuremberg
- Mexico**
 - Guadalajara

Low-voltage motors for line and converter operation

The right motor for every application



Rated power

Rated voltage

IEC (shaft height)
NEMA (frame size)

Rated torque M_N
Feed force F_N

Maximum torque M_{max}
Maximum torque F_{Max}

Rated speed n_N
Speed at rated force

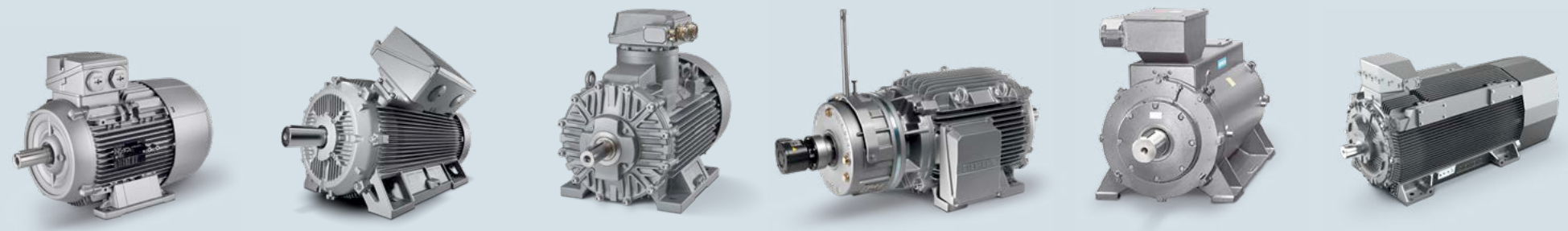
Maximum speed n_{Max}
Maximum speed

Type of protection (rating)

Efficiency class

System efficiency class

General Purpose – SIMOTICS GP	Severe Duty – SIMOTICS SD	Explosion Proof – SIMOTICS XP	Definite Purpose – SIMOTICS DP	High Torque – SIMOTICS HT	Transnorm – SIMOTICS TN/HV
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IEC: 0.09 to 45 kW Reluctance: 0.55 to 30 kW NEMA: 0.5 to 50 HP	IEC: 0.09 to 1,000 kW Reluctance: 0.55 to 45 kW NEMA: 0.12 to 250 HP	0.09 to 1,000 kW	0.09 to 1,000 kW	150 to 2,100 kW	150 to 5,300 kW
IEC: 230 to 690 V Reluctance: 400/460 V at converter input NEMA: 220 to 575 V	IEC: 230 to 690 V Reluctance: 400/460 V at converter input NEMA: 220 to 575 V	230 to 690 V	230 to 690 V	400 to 690 V	380 to 690 V
IEC: 63 to 200 Reluctance: 80 to 200	IEC: 71 to 450 Reluctance: 80 to 225	63 to 450	63 to 450	400 to 500	315 to 710
IEC: 0.61 to 293.8 Nm Reluctance: 3.5 to 191 Nm	IEC: 1.3 to 8,100 Nm Reluctance: 3.5 to 191 Nm	0.61 to 8,090 Nm	2.5 to 3,142 Nm	6,000 to 42,000 Nm	800 to 77,166 Nm
–	–	–	–	42,000 Nm	–
IEC: 750 to 3,000 min ⁻¹ (at 50 Hz) Reluctance: 1,500/1,800/2,610 min ⁻¹	IEC: 750 to 3,000 min ⁻¹ (at 50 Hz) Reluctance: 1,500/1,800/2,610/3,000/ 3,600 min ⁻¹	750 to 3,000 min ⁻¹ (at 50 Hz)	750 to 3,000 min ⁻¹ (at 50 Hz)	200 to 800 min ⁻¹ (at 50 Hz)	750 to 3,600 min ⁻¹ (at 50 Hz)
Asynchronous: up to 6,000 min ⁻¹ Reluctance: up to 4,500 min ⁻¹	Asynchronous: up to 6,000 min ⁻¹ Reluctance: up to 4,500 min ⁻¹	Up to 6,000 min ⁻¹	Up to 6,000 min ⁻¹	Up to 1,000 min ⁻¹	Up to 5,000 min ⁻¹
IP55, IP56, IP65	IP55, IP56, IP65	IP55, IP56, IP65	IP55, IP56, IP65	IP55	IP23, IP55, IP56, IP65, IP66
IE1 to IE4	IE1 to IE4	IE2 to IE4 (IE4 only 1MB5)	IE2 to IE4	–	–
IES1/IES2	IES1/IES2	IES1/IES2	IES1/IES2	–	–

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