

SIEMENS

Ingenuity for life

Performance redefined

SIMOTICS Severe Duty Motors

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SIMOTICS SD next generation

Performance meets digitalization

SIMOTICS SD, SIMOTICS SD Add, and SIMOTICS SD Pro: With these three variants, Siemens now offers an entire series of new SIMOTICS SD next generation Severe Duty Motors.

Because the demands placed on drive technology have changed tremendously – both in technical terms as well as for economic reasons – we've implemented a brand-new motor platform for low-voltage motors. Discover a consistent answer to the challenges that arise as motors become increasingly digitalized.

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Digitalization and growing demands for efficiency, performance, and flexibility

The digital transformation is creating new challenges for motors, both in terms of its contribution to greater transparency of plants and processes and in the area of preventive, data-based service concepts. At the same time, requirements for high performance and energy efficiency are constantly growing. We developed the new series of Severe Duty Motors to meet all of these demands. In addition to a compact design and significantly faster processes, you'll also benefit from maximum flexibility regarding areas of application.

You can also rely on the strengths of our new SIMOTICS SD motors when dealing with purely technical restrictions. The carefully conceived combination of optimized performance, digital features, and flexibility is exceptional. Whether your specific application requires high starting or breakaway torque; or certain specifications or network conditions require reduced starting currents; or you need multi-voltage or converter capability across all voltage classes from 690 V: Our three motor variants offer you an extraordinary range of low-voltage motors that's unique in today's market.

SIMOTICS SD

Motors beyond standards

Reliable and powerful performance under even the toughest environmental conditions: This is where our rugged Severe Duty Motors prove their worth. The first variant of the SIMOTICS SD next generation is remarkable for its high torque characteristic. With the next SIMOTICS SD generation and a complete package of convincing advantages, we've taken our cast-iron motors to the next level – motors beyond standards.

Benefits for today, ready for tomorrow

One of the key benefits of the new SIMOTICS SD motors is that they're ready for digitalization. This means that the motor becomes part of your digital enterprise – and helps you optimize your processes.

Another benefit is their compact, future-proof design. Until now, a higher power density always meant increased space requirements. But thanks to the smaller cover size, that's a thing of the past.

And finally, our future-oriented energy efficiency concept: The SIMOTICS SD next generation motors meet all IE3 and IE4 efficiency classes, giving your competitiveness a powerful boost.

For high demands and major challenges

The higher torque characteristic of the SIMOTICS SD in comparison to the variant SIMOTICS SD Add ensures that higher starting and breakaway torque are available. Whether it's dust, shock, vibration, or harsh environments – whenever conditions are demanding, the robust SIMOTICS SD Severe Duty motors truly demonstrate their capabilities.

Technical data and details

| | |
|----------------------|--|
| Frame size | SH 315 – 355 |
| Power output | 2-pole: 250 – 500 kW 4-pole: 250 – 500 kW 6-pole: 200 – 400 kW 8-pole: 160 – 315 kW |
| Type of construction | B3, V5, V6, B5, V1, V3, B35, B6, B7, B8 |
| Efficiency class | IE3, IE4 System efficiency class IES2 with SINAMICS converter |
| Number of poles | 2-pole, 4-pole, 6-pole, 8-pole |

| | |
|------------------------------------|---|
| Voltages | Mains-fed operation: 380 – 690 V Converter operation: 380 – 480 V |
| Certificates (in final completion) | CE, EAC, CEL, UL-S, CSA-S Marine (ABS, BV, DNVGL, KR, LRS, RINA, RS) |
| Degree of protection | Standard IP55, optional: IP56 and IP65 |
| Temperature class | 155(F) according to 130(B) 155(F) according to 155(F) |
| Cooling method | IC411, IC416, IC418 |
| Main applications | Pumps, compressors, fans, cranes/hoists |

SIMOTICS SD Add

Motors beyond borders

Convincing performance and additional flexibility in the range of applications: The second variant in the next generation SIMOTICS Severe Duty Motor series is an optimal addition to this scalable series in terms of its performance characteristics and functionality. In addition to sharing identical characteristics with the SIMOTICS SD first variant in the areas of digitalization, design, energy-efficiency concepts, and processes, the SIMOTICS SD Add motors are distinguished by two essential features: their low starting currents – achieved through design adjustments – and their global certificates for fulfilling the requirements applicable in the respective region of use. These motors thus ensure additional added value across regional boundaries – motors beyond borders.

Expanded use, unlimited benefits

The characteristic product feature of SIMOTICS SD Add motors is their low starting currents, which not only meet industry-specific requirements and process industry specifications, but also have a positive impact on operational quality. Torque shocks, for example, from high inrush currents at startup cause stress loading of the motor windings both thermally as well as through electrodynamic forces. Reducing these inrush currents can extend the motor's service lifetime thanks to the lower loads.

Lowering the starting currents also leads to reduced loading of the grid from disruptive voltage dips, thus enhancing grid stability. This is of notable benefit in regions with weak power grids and inadequate grid infrastructure. And thanks to the availability of country-specific certificates, these motors can be used in all major global regions and markets.

Scalability reduces costs

The benefits from low starting currents aren't just technical, but also financial. The lower current levels cause less thermal loading (reduced $i^2 \times t$ fraction), which has a direct effect on the dimensioning of the used components (such as switching devices, cables and cabinets), all of which translates directly into cost savings.

Technical data and details

| | |
|----------------------|---|
| Frame size | SH 315 – 450 |
| Power output | 2-pole: 250 – 1,000 kW 4-pole: 250 – 1,000 kW 6-pole: 200 – 800 kW 8-pole: 160 – 630 kW |
| Type of construction | SH 315 – 355: B3, V5, V6, B5, V1, V3, B35, B6, B7, B8 SH 400 – 450: B3, V5, V6, B5 (with support point), V1, B35 |
| Efficiency class | IE3, IE4 NEMA Premium Efficient System efficiency class IES2 with SINAMICS converter |
| Number of poles | SH 315 – 355: 2-pole, 4-pole, 6-pole SH 400 – 450: 2-pole, 4-pole, 6-pole, 8-pole |

| | |
|------------------------------------|---|
| Voltages | Mains-fed operation: 380 – 690 V Converter operation: 380 – 480 V |
| Certificates (in final completion) | CE, UL-S, CSA-S, CCno., CSA EEV, EAC, CEL, KEMCO, Marine (ABS, BV, DNVGL, KR, LRS, RINA, RS) |
| Degree of protection | Standard IP55, optional: IP56 and IP65 |
| Temperature class | 155(F) according to 130(B), 155(F) according to 155(F) |
| Cooling method | IC411, IC416, IC418a |
| Main applications | Pumps, compressors, fans, cranes/hoists, conveyers, chippers, coilers, grinders, shears, rolling stands |

SIMOTICS SD Pro

Motors beyond horizons

Maximum flexibility and scalability:

The SIMOTICS SD Pro is the third member of the new low-voltage motor generation and completes the series as a genuine all-rounder. There's no other comparable motor available on the market today that offers such a comprehensive functionality in the standard configuration. The SIMOTICS SD Pro can be used for mains-fed or converter operation up to 690 V anywhere in the world and in any plant configuration – motors beyond horizons.

Perfect for series production and project business

A motor that you can use anytime and anywhere: It's this extraordinary flexibility that makes the SIMOTICS SD Pro a universal motor and sets entirely new standards in drive technology.

The SIMOTICS SD Pro is designed for supply voltages up to 690 V in both mains-fed and converter operation. There's generally no need for special filters at the converter output. Furthermore SIMOTICS SD Pro is characterized by a unique combination of important global certificates, multi-voltage capability, and stable efficiency levels based on IE3, regardless of whether the network frequency is 50 Hz or 60 Hz. The end result is unlimited application scenarios anywhere in the world – always perfectly tailored to the specific plant configuration.

Multi-voltage capability as a highlight

Especially when it comes to the OEM series business, the SIMOTICS SD Pro scores with its multi-voltage capability. These motors can be operated using any standard supply voltage in the world and maintain their stability, while meeting the requirements of the specific efficiency class in each operating point.

Technical data and details

| | | | |
|----------------------|---|------------------------------------|---|
| Frame size | SH 315 – 450 | Voltages | Mains-fed operation: 380 – 690 V Converter operation: 380 – 690 V |
| Power output | 2-pole: 250 – 970 kW 4-pole: 250 – 980 kW 6-pole: 200 – 780 kW 8-pole: 160 – 600 kW | Multi-voltage capability | SH 315 – 355: 50 Hz: 380 – 400 – 415 V (Δ)/660 – 690 V (Y) 60 Hz: 440 – 460 V (Δ) |
| Type of construction | SH 315 – 355: B3, V5, V6, B5, V1, V3, B35, B6, B7, B8 SH 400 – 450: B3, V5, V6, B5 (with support point), V1, B35 | Certificates (in final completion) | CE, UL-S, CSA-S, CCno., CSA EEV, EAC, CEL, KEMCO, Marine (ABS, BV, DNVGL, KR, LRS, RINA, RS) |
| Efficiency class | IE3 NEMA Premium Efficient System efficiency class IES2 with SINAMICS converter | Degree of protection | Standard IP55, optional: IP56 and IP65 |
| Number of poles | SH 315 – 355: 2-pole, 4-pole, 6-pole SH 400 – 450: 2-pole, 4-pole, 6-pole, 8-pole | Temperature class | 155(F) according to 130(B), 155(F) according to 155(F) |
| | | Cooling method | IC411, IC416, IC418 |
| | | Main applications | Pumps, compressors, fans, cranes/hoists, conveyers, chippers, coilers, grinders, shears, rolling stands |

SIMOTICS SD next generation

Differentiating features of the motor variants

The SIMOTICS SD next generation motor series was designed specifically for digitalization. Each of these motors also has its own special characteristic feature: Whereas the basic SIMOTICS SD version delivers a high starting and breakaway torque, the SIMOTICS SD Add features low starting currents, and the SIMOTICS SD Pro motor offers converter capability up to 690 V.

Variant 1:

- Cloud-based data analysis with SIDRIVE IQ
- Converter-capable up to 480 V (IVIC-C advanced insulation system)
- High starting and breakaway torque (M_A/M_N)

Variant 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 shocks

Variant 3:

- Multi-voltage capability at SH 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 SH 315 – 355
- Low starting currents (I_A/I_N) at SH 400 – 450

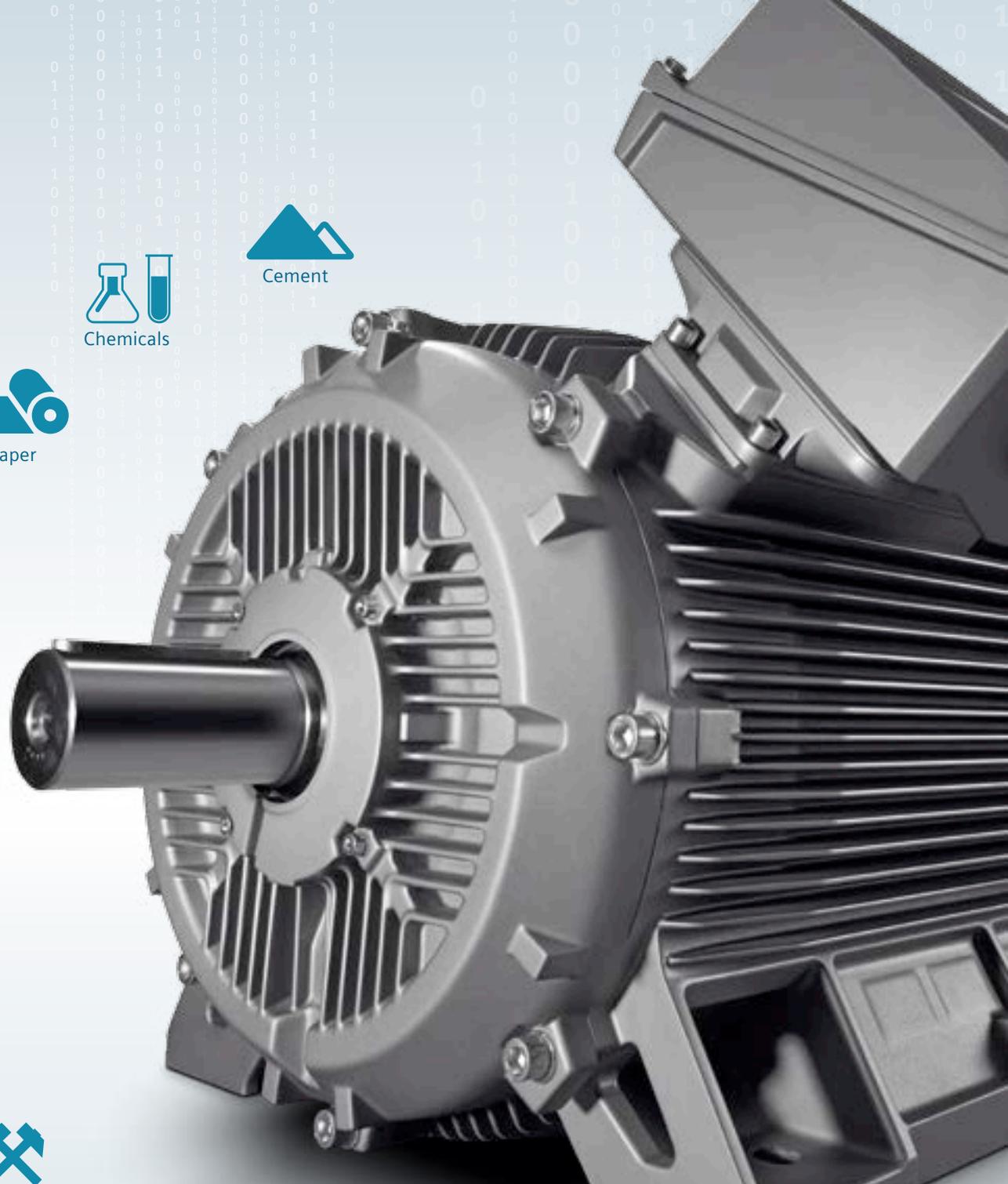
SIMOTICS SD
Motors beyond standards

SIMOTICS SD Add
Motors beyond borders

SIMOTICS SD Pro
Motors beyond horizons

SIMOTICS SD next generation





Chemicals



Cement



Paper



HVAC



Marine



Metals



Mining



Oil and gas



Water and wastewater

Your benefits at a glance

Optimization through digitalization:

Increase process transparency and optimize serviceability with our digital pioneer.

Best-in-class design:

Gain more efficiency and flexibility in assembly.

Future-oriented energy-efficiency concepts:

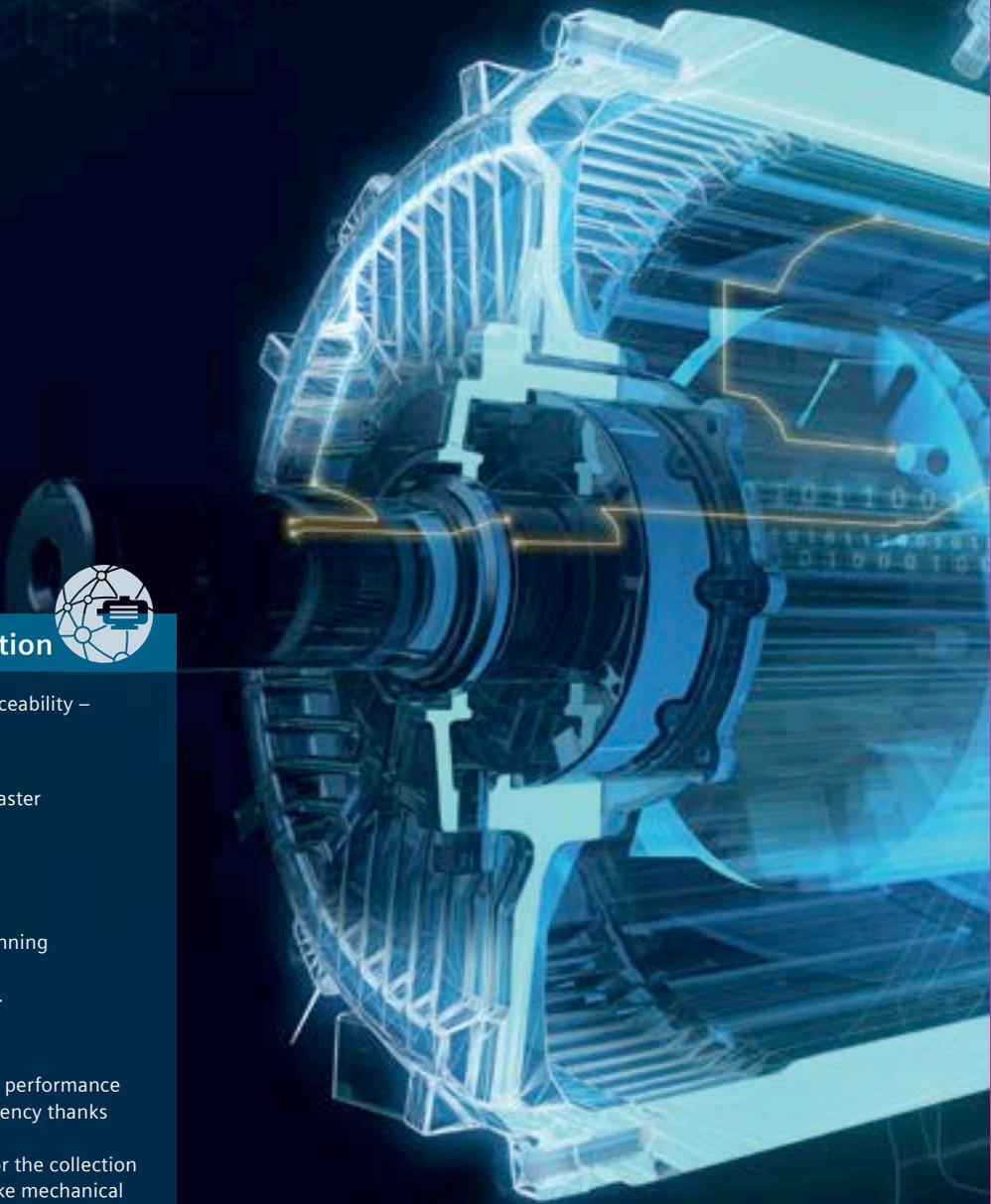
Boost your competitiveness thanks to energy savings.

Easy business, fast delivery:

Take your own performance to the next level along the entire value chain.

SIMOTICS Severe Duty Motors

Motors go digital



Optimization through digitalization

Increase process transparency and optimize serviceability – with the digital pioneer.

- **Digital twin:***
Make your design and engineering processes faster and more flexible.
- **SIMOTICS Digital Data App:***
 - Access technical data, spare parts, and operating instructions.
 - Obtain electrical and mechanical data by scanning the data matrix code on the motor.
 - Boost transparency, facilitate commissioning. [siemens.com/digitaldataapp](https://www.siemens.com/digitaldataapp)
- **SIDRIVE IQ:***
 - Digital, cross-lifecycle platform for automatic performance monitoring and significantly greater transparency thanks to system parameters.
 - Motor-side SIMOTICS CONNECT sensor box for the collection and cloud-based analysis of condition data like mechanical condition, temperature, rotational speed, and operating state.
 - Increase of productivity, reliability, optimization of process efficiency, and serviceability. [siemens.com/sidrive-iq](https://www.siemens.com/sidrive-iq)



Best-in-class design

Gain more efficiency and flexibility in assembly.

- **Compact and future-proof design:**
For higher power density at a comparable power output.
- **Smaller cover size:**
For easy replacement and less space required.
- **New terminal box concept:**
For greater flexibility in assembly.
- **Higher quality of operation:***
High starting and breakaway torque (M_A/M_N)
or low starting currents (I_A/I_N), depending on the application.
- **Flexible range of applications:***
Mains-fed and converter operation up to 690 V.



Future-oriented energy-efficiency concepts

Boost your competitiveness thanks to energy savings.

- **Fulfills efficiency classes IE3 and IE4:**
Maximize energy savings and significantly reduce your total cost of ownership.
- **Compliance with IES2 according to EN 50598 for Siemens drive systems:**
Obtain precise knowledge about how low system losses are for SIMOTICS SD motors in combination with SINAMICS converters.
- **Stable efficiency level:***
Consistently high efficiency level independent of 50 Hz/60 Hz network frequency.



Easy business, fast delivery

Take your own performance to the next level along the entire value chain.

- **Extremely short delivery time:**
Gain time and flexibility in your planning process.
- **More configuration possibilities:**
Employ a wider range of standardized options, resulting in faster quotations and shorter response times.
- **Global usability:***
Compliance with the most important global certification and regional requirements.
- **Multi-voltage capability:***
Flexible use with all standard supply voltages worldwide.

* Depending on variant

SIDRIVE IQ

Digital platform for entire drive systems

SIDRIVE IQ is an integrated, digital, total concept that ensures optimization throughout the entire lifecycle – for the motor itself and for the associated converter. Using our new digital platform, you'll be able to reduce unscheduled downtime, accelerate troubleshooting, improve performance, and therefore achieve an altogether higher level of productivity.

[siemens.com/sidrive-iq](https://www.siemens.com/sidrive-iq)



SIDRIVE IQ – the recipe for success for digitalizing your drive systems



The SIMOTICS CONNECT sensor box gets your motor IQ-ready

Greater transparency, greater reliability, greater ease of maintenance

The SIDRIVE IQ digital platform will allow you to consistently improve your entire drive system into the future – through the benefits of digitalization.

Measure and transmit: IQ-ready with SIMOTICS CONNECT

The formula for success is as consistent as it is compelling: A precise and seamless generation and analysis of condition data from motors and associated converters guarantees a more transparent drive system. With this in mind, we've equipped our basic version of the SIMOTICS SD next generation motors with a connectivity element: the SIMOTICS CONNECT sensor box. Integrated sensors measure important operating parameters, such as mechanical condition, temperature, rotational speed, and operating state, and forward them via WLAN for analysis in SIDRIVE IQ. SIMOTICS CONNECT makes your motors IQ-ready. Or in other words, your motors tell you how they feel. You can then quickly and reliably detect anomalies in the operating data and thus also deviant performance. Based on this highly valuable information, maintenance schedules can be updated or problem-solving measures derived and implemented much faster than before.

Optimize processes, maximize availability, increase productivity

The benefits of SIDRIVE IQ are directly apparent in factors like plant availability and productivity: for example, fewer unscheduled downtimes and a significantly shorter time-to-market. You can also positively influence these factors by choosing our predefined service packages, which are tailored to your specific needs.

Performance meets practice

References, sample applications, and strong KPIs

The new SIMOTICS SD next generation low-voltage motor series keeps its promises – and precisely meets the requirements of numerous customers and their demanding applications. Well over 1,000 motors were sold in the first year following market launch. They are now being deployed in more than 30 countries worldwide with an output comparable to the total of a conventional heating power plant – and companies are already profiting from the advantages of digitalization today.

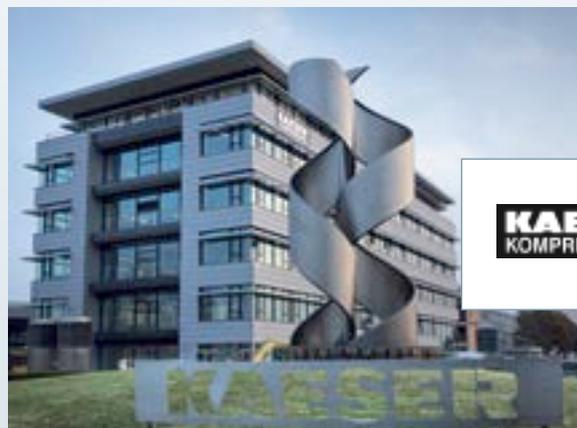


“We’re glad that our bevel-helical gear units, in combination with the new SIMOTICS SD motors from Siemens, are part of the Albvorland Tunnel project. With its heavy-duty housing and high torque capacity, his drive solution is excellent for harsh conditions on building sites.”

*J. Niermann, Head of the Marketing Division
NORD DRIVESYSTEMS Gruppe*

“SIMOTICS SD next generation is ideal for our new HBS screw blower, mainly because of its energy efficiency, compact design, and low service costs.”

*W. Hartmann, Head of Marketing
Kaeser Kompressoren SE*



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