



SIEMENS

Ingenuity for life



The background image shows a large industrial drive system, possibly a motor or generator, in a factory setting. The drive is a large, cylindrical unit with a white top and a grey body. It is surrounded by various electrical components and control panels. Overlaid on the image are numerous digital elements, including glowing blue and yellow lines, circles, and text labels. These labels include 'Local operation', 'User comments', 'global comments', and various alphanumeric codes like 'FCMT2', 'LFF12', 'AKR16', 'AKR17', 'AKR18', 'AKR19', 'AKR20', 'AKR21', 'AKR22', 'AKR23', 'AKR24', 'AKR25', 'AKR26', 'AKR27', 'AKR28', 'AKR29', 'AKR30', 'AKR31', 'AKR32', 'AKR33', 'AKR34', 'AKR35', 'AKR36', 'AKR37', 'AKR38', 'AKR39', 'AKR40', 'AKR41', 'AKR42', 'AKR43', 'AKR44', 'AKR45', 'AKR46', 'AKR47', 'AKR48', 'AKR49', 'AKR50', 'AKR51', 'AKR52', 'AKR53', 'AKR54', 'AKR55', 'AKR56', 'AKR57', 'AKR58', 'AKR59', 'AKR60', 'AKR61', 'AKR62', 'AKR63', 'AKR64', 'AKR65', 'AKR66', 'AKR67', 'AKR68', 'AKR69', 'AKR70', 'AKR71', 'AKR72', 'AKR73', 'AKR74', 'AKR75', 'AKR76', 'AKR77', 'AKR78', 'AKR79', 'AKR80', 'AKR81', 'AKR82', 'AKR83', 'AKR84', 'AKR85', 'AKR86', 'AKR87', 'AKR88', 'AKR89', 'AKR90', 'AKR91', 'AKR92', 'AKR93', 'AKR94', 'AKR95', 'AKR96', 'AKR97', 'AKR98', 'AKR99', 'AKR100'. There are also labels like 'REAC2' and 'REAC1' at the bottom left. The overall aesthetic is futuristic and high-tech, emphasizing digital integration in industrial environments.

Integration at its best

Integrated Drive Systems from Siemens for shorter
time to market and accelerated time to profit

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

The next level of innovation in drive technology

Experts agree that future production facilities will be much smarter than today's factories. And it is also sure that drive technology will become ever more complex and demanding. Offering consistent integration into the entire environment of the production process, Integrated Drive Systems from Siemens provide an answer to the challenges posed by today's – and even more so, tomorrow's – industrial production.

Today, plants and machines must reach increasingly higher rates of productivity and efficiency at the lowest possible cost. At the same time, the next stage of industrial manufacturing is already looming on the horizon: Industry 4.0, characterized by smart factories and self-organizing communities of machines driven by information generated in the virtual world.

Drive technology alone will hardly be able to tackle all the new challenges. What is needed is consistent integration of drive technology into the entire environment of the production process. With Siemens Integrated Drive Systems, this has become reality for the first time ever.

Based on the world's most consistent and comprehensive product range in the field of drive systems, Siemens Integrated Drive Systems are the only true one-stop solution for entire drive trains on the market. They turn drives into success factors that pave the way to the future of manufacturing. They help improve the productivity, efficiency, and international competitiveness of industrial production and reduce time to market and time to profit considerably.

All this becomes possible thanks to the three axes of integration at the core of the Integrated Drive Systems concept. On the horizontal, drive portfolio level, all frequency converters, motors, couplings, and gear units are guaranteed to interact and integrate seamlessly. On the vertical level, the integration into automation, Integrated Drive Systems are part of Totally Integrated Automation (TIA), and, as such, perfectly integrated into the entire automation environment – from the field level all the way to the MES.

The third level, lifecycle integration, comprises software and services for all project steps from planning, design, and engineering to operation, maintenance, and all the way to modernization measures.

The unique concept of threefold integration creates quantifiable value added, as the examples on the following pages show. Discover what's more to a drive system with Integrated Drive Systems!

Drive technology based on Integrated Drive Systems ensures maximum productivity, energy efficiency, and reliability in any automation environment and throughout the entire lifecycle.



Digital platform for optimized performance

Sidrive IQ offers customers a digital platform for the evaluation and utilization of drive data. This platform increases productivity by optimizing maintenance and boosting reliability and serviceability over the entire lifecycle.

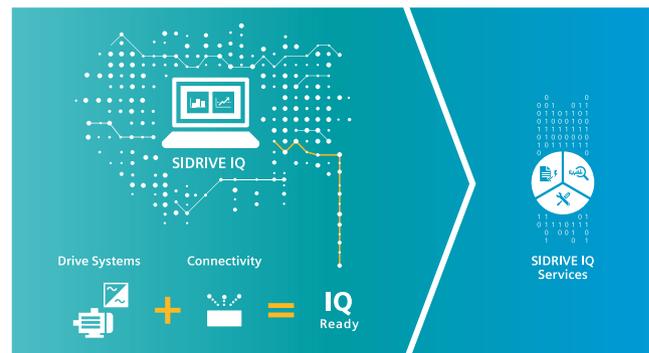
The new Sidrive IQ digital platform enables automated operation monitoring, using system parameters to create greater transparency. This in turn affords plant and machine operators a valuable insight into what is happening in their installed low-voltage drive systems. Connectivity solutions, such as Simotics Connect for low-voltage motors, acquire relevant operating data that can be used to determine the system's current status. This enables users to evaluate and remedy operational malfunctions, identify preventive measures to avoid unscheduled downtime, and generally improve their maintenance planning and implementation. In the future, the functions of Sidrive IQ will also be available for medium- and high-voltage drive systems.

Improved efficiency and productivity

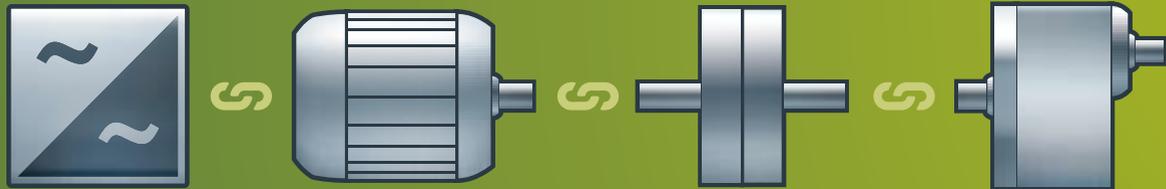
The interaction between measured data and digital twins using Sidrive IQ can make measured values, status and operational KPIs, service messages, and technical product data as well as spare-part information available. This not only saves time and effort spent on data acquisition, but also simplifies visual analysis and speeds up qualified intervention during both production and maintenance – for a single drive system or an entire installed fleet. A comparison of operating, status, and maintenance information across several locations forms a solid foundation for the optimization of customer processes. This makes Sidrive IQ the ideal platform on which to achieve improved drive-technology efficiency and productivity throughout the lifecycle. Sidrive IQ can be used to support a wide range of applications in different industries.

Completing the digitalization portfolio

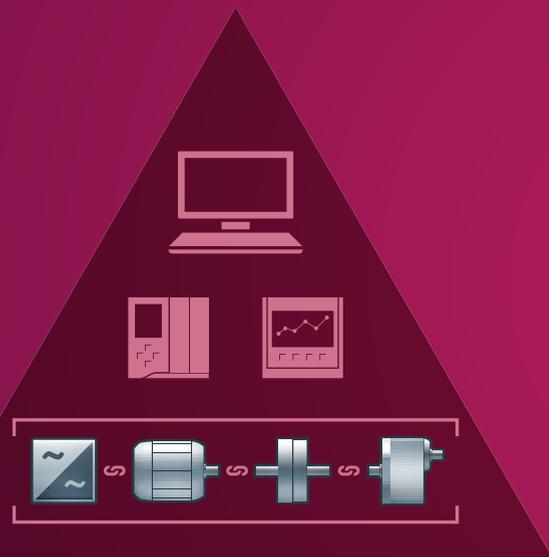
The Sidrive IQ digitalization portfolio also includes a range of predefined service packages, such as Digital Check, Connect Package, Expert Assistance, and Expert Diagnostics. These allow operators to digitally link the drive train, identify weak points at an early stage, remedy system faults, and optimize their service and maintenance planning.



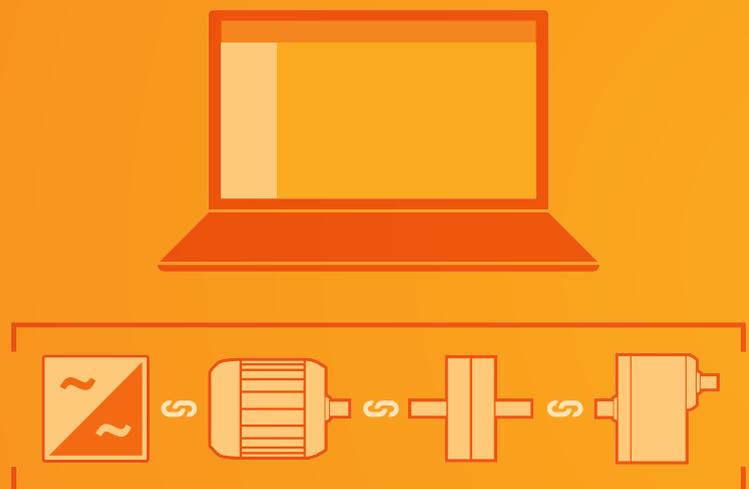
Perfectly matching components



Seamless integration into automation



Covering every step of the lifecycle





Vertical mill applications are a prime example for successful horizontal integration.

An eye for the big picture helps make the most of every component

Horizontal integration on the drive train level provides the tangible benefits of one-stop sourcing for motor, gear unit, coupling, frequency converter, and controls.

For the customer, this also translates into single-vendor responsibility, which facilitates purchasing and helps reduce the warranty costs that are often not considered.

Even more important, it provides a single point of contact for the entire drive train, eliminating the finger-pointing often prevalent in multivendor solutions. This ensures a rapid resolution of problems in the field, and it also provides a higher degree of reliability: Only a single



The TIA Portal makes top-notch vertical integration tangible.

A consistent view on drives unlocks untapped potential

Vertical integration, integration of the drive train into the system architectures of the industrial production processes, is an essential precondition for production with maximum value added. That's why all components of Integrated Drive Systems are integrated into the TIA architecture of Siemens Industry.

All TIA components, from the sensor level to the manufacturing execution system, are attuned to one another and enable maximum communication and control – and with Integrated Drive Systems, drive technology becomes part of this universe. This ensures a high level of



Siemens PLM software helps create more value added throughout the entire lifecycle.

Consideration of the entire lifecycle creates value in daily operation

Lifecycle integration means taking into account every aspect of an application in a holistic manner – from the earliest design steps all the way to maintenance and upgrades. Siemens provides a seamlessly integrated range of software that enables optimized planning and engineering, comprehensive and reliable simulations, and even data-based services for all Integrated Drive Systems. Moreover, qualified Siemens drive experts are available wherever and whenever needed to provide hands-on support and specialist knowledge when it comes to fully exploiting the potential that Integrated Drive Systems offer.

vendor can consistently reduce interface losses, resonances, and wear by means of design, engineering, and optimally matched components. This translates into reduced operational and maintenance costs during operation, less downtime, and outstanding availability of up to 99 percent.

You can boost
the availability
of your application
or plant to up to

99%

For example, with conveyor applications

monitoring, precise control, and the efficient use of energy, resources, and raw materials.

The integration of Integrated Drive Systems into the TIA Portal drastically simplifies engineering, commissioning, and diagnostics work. Configuration during the planning phase, the associated simulation, and drive train dimensioning enter a whole new dimension in efficiency, which results in the substantial reduction of engineering time by up to 30 percent.

With TIA Portal
you can cut your
engineering time
by up to

30%

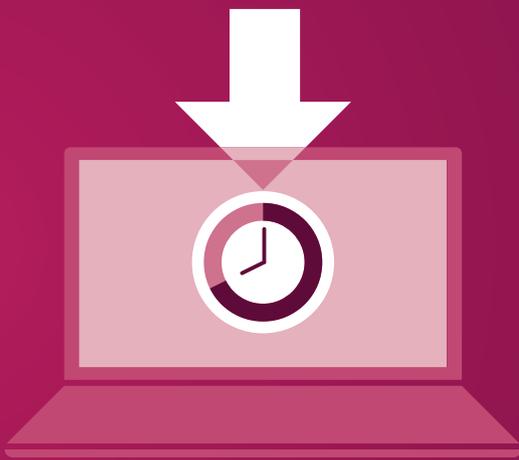
In practice, preventive maintenance measures, which become possible through consistent use of available data, can significantly simplify maintenance efforts and spare parts management. This helps reduce costs by up to 15 percent. At the same time, software and services help increase productivity, reduce energy consumption by up to 40 percent, and ensure the highest possible degrees of availability in daily operation.

With Integrated
Drive Systems you
can reduce your
maintenance costs
by up to

15%



**Seamless
interaction
of all drive
components**



**Consistent drive
and automation
solutions**



**Optimum
maintenance
and service**

Siemens supplied an innovative gearless drive system for a 6.5-kilometer conveyor system that ThyssenKrupp Robins as OEM delivered for Xstrata Copper's new Antapaccay copper mine in the Peruvian Andes. The implementation of an Integrated Drive System with air-cooled SINAMICS SL 150 cycloconverters including drive control and a low-speed motor was optimally suited for the solution. It is significantly more economical in terms of energy consumption, and boosts the efficiency of the system as a whole by three to four percent, a substantial amount in such applications. Thanks to Integrated Drive Systems, the end customer, Xstrata Copper, benefits from high availability, low power consumption, and low maintenance costs.



At the Antapaccay copper mine in Peru, the perfectly matched components of Integrated Drive Systems made possible an outstandingly energy-efficient solution that boasts excellent availability and low maintenance costs.

EVT Eiberger Verfahrenstechnik in Sternenfels, Germany, is a leading specialist for degreasing plants. The medium-sized company relies on Siemens for all drive and automation components in their degreasing systems – from motors to frequency converters all the way to CPUs. Together with Siemens the company developed a universal system kit for all drives that ensures efficient engineering, perfect integration of the drive systems into the automation system, and complete data networking. Everything that takes place on the field level can be mapped in the controller, the visualization concept, and even the remote service. Because of this trendsetting remote maintenance system, EVT can provide a full three-year warranty for its systems, which is anything but ordinary in the mechanical engineering sector.



The Integrated Drive Systems concept was exactly what EVT, a manufacturer of special-purpose degreasing systems for a wide range of industries, had been looking for.

Siemens performed the modernization of three press lines including drive technology and automation components for the Volkswagen factory in Wolfsburg, Germany. The integrated drive system with SINAMICS S120 and SIMOTION D had been tested through virtual simulation before installation.

During operation, the condition monitoring system SIPLUS CMZ ensures preventive maintenance. The solution based on Integrated Drive Systems improved productivity, reduced maintenance effort, lowered energy consumption by 40 percent, and increased availability to at least 96 percent.



Volkswagen plant in Wolfsburg, Germany: The modernization of three press lines based on Integrated Drive Systems had a positive impact on maintenance costs, energy efficiency, and productivity.

Horizontal integration

The core elements of Siemens' fully integrated drive portfolio are frequency converters, motors, couplings, and gear units – all available from a single source. Perfectly integrated, perfectly interacting. For all power and performance classes. As standard solutions or fully customized. No other player in the market can offer a comparable portfolio.

Your benefits

- Unrivaled portfolio from a single source
- Ensured drive train compatibility
- Reliable system performance
- Optimized components and ideally tuned drive train for productivity and efficiency gains
- Energy efficiency along the drive train

Vertical integration

Thanks to vertical integration with Totally Integrated Automation (TIA), the whole drive train is seamlessly integrated in the entire automation environment – from the field level to controller level and up to MES. This is an important prerequisite for production with maximal value added. Integrated Drive Systems are part of TIA, which means that they are perfectly embedded into the system architecture of the entire industrial production process. This enables optimal processes through maximum communication and control.

Your benefits

- Drive train as an integrated part of Totally Integrated Automation (TIA)
- Highest possible engineering efficiency thanks to integration into Totally Integrated Automation Portal (TIA Portal)
- Intelligent monitoring and control
- Perfectly interacting automation system components including control, sensors, HMI, and communication

Lifecycle integration

Comprehensive software tools from Siemens PLM software are available for all lifecycle phases of an Integrated Drive System – complemented by individual service packages based on the entire technical product information, such as condition monitoring, preventive maintenance, spare parts management, and retrofits. That way, important optimization potential for maximum productivity, increased efficiency, and highest availability can be leveraged throughout the lifecycle – from planning, design, and engineering to operation, maintenance, and all the way to modernization.

Your benefits

- Optimization through product and process simulation
- Configuration software from coupling to control to optimize efficiency
- Process driven end-to-end enterprise solutions for shorter time to market
- Ensured machine and plant availability
- Worldwide service network with Siemens experts available locally everywhere around the globe
- Reduced lifecycle costs

Components from a single source for smooth interaction

Frequency converters

The comprehensive range of Siemens frequency converters comprises suitable products for any drive solution and ensures seamless integration with all other components of Integrated Drive Systems.



www.siemens.com/SINAMICS

Whether low- or medium-voltage, AC or DC, fixed speed or variable speed drives: With SINAMICS Siemens provides the right frequency converter for every application. And all drives are guaranteed to interact seamlessly with the motors, gear units, and couplings Siemens offers.

Drives

From low-voltage motors and servomotors for motion control applications to high-voltage, DC, and customized electric motors: Within Integrated Drive Systems, there always is a Siemens motor that ensures outstanding performance, quality, efficiency, and compactness.



www.siemens.com/SIMOTICS

The range of electric motors from Siemens provides highest efficiency levels and covers the entire range of synchronous and asynchronous technology: SIMOTICS electric motors and SIMOGEAR geared motors boast unparalleled reliability, robustness, compactness, and performance – and as parts of Integrated Drive Systems, they also put you in the vanguard of efficient machine and plant engineering.

SIMOGEAR: Harmoniously coordinated

SIMOGEAR geared motors are generally distinguished by their high energy efficiency. They deliver performance in the range of 0.09 to 30 kW and can achieve a gear unit torque of up to 5,000 Nm with helical, bevel helical, parallel shaft, and helical worm geared motors. Due to accordance with common current measures, SIMOGEAR motors are compatible with many other geared motors.

www.siemens.com/simogear



Couplings

High-quality FLENDER couplings are particularly reliable and low-maintenance and require low investment and operating costs.



Gear units

FLENDER gear units excel with an excellent price-performance ratio, first-class quality, short delivery times, and perfect interaction with other elements of Integrated Drive Systems.



FLENDER couplings, designed with the greatest care for safety and reliability, are available for virtually all industries. They come in a wide range of flexible, highly flexible, torsionally rigid, and hydrodynamic models and in numerous sizes and versions. The product range covers the entire torque range between 10 and 10,000,000 Nm.

FLENDER gear units stand for more than 120 years of expertise and for technology proven in service around the world hundreds of thousands of times. The product range covers all conceivable applications from powerful standard gear units that can be universally used in many fields of application to highly specialized designs for particular industry sectors and all the way to custom-made units for special purposes.

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The advantages
of Integrated
Drive Systems
at a glance

