product news

Innovations for the Digital Enterprise

April 2018
Scalable motion control solutions
Portfolio expansion for Simatic S7-1500
Technology CPU

Human Machine Interface
18 Simatic HMI Option+
More transparency, increased operating security

Power Supplies
20 Innovations for the heart of automation

Drive Systems
22 Sidrive IQ – digital platform for optimized performance

Industrial Identification
29 Transparency along the entire production and supply chain

Industrial Communication
32 Consistent, powerful data networks based on proven standards

Industrial Controls
38 Innovations for switching, protecting, starting and monitoring

Totally Integrated Power
40 Power distribution in digital factories

MindSphere
47 Amplify the voice of your IoT data

Industrial Security
50 Prevent to protect your plant

Industry Services
51 Innovative archiving of process data with Simatic DCS / SCADA Infrastructure
Totally Integrated Automation

Digital Enterprise – implement now!

The digital transformation of the manufacturing industry is picking up speed. In virtually every industry, comprehensive digitalization of all processes can provide a lasting competitive advantage thanks to increased flexibility, efficiency, and quality. It offers new opportunities for added value, innovative business models, and forward-thinking forms of collaboration.

The technical requirements for implementing the Industrie 4.0 concept are met by Digital Enterprise: the link between the virtual and the real world of production along the entire value chain, based on in-depth industry knowledge and unique expertise in the areas of electrification, automation, and digitalization. The critical thing now is to take full advantage of these opportunities and to set out on the path to a successful future.

The potential of a digitalized value chain, including data acquisition for cloud services in manufacturing execution, is plainly evident in the TIA digitalization use cases based on TIA Portal. A number of new Simatic MindApps provide for more efficient plant operation. Another TIA digitalization use case looks at Industrial Edge Computing. TIA Portal makes it possible to create the digital twin of a real application by combining the simulation models of the control system and mechanical system. This allows users to simulate and validate the whole machine. This helps to avoid unplanned machine behavior that can quickly result in delays and increased costs.

> siemens.com/tia
Where digitalization becomes reality

Make the most of the benefits of TIA and digitalization

**Industrial Edge Computing: scalable data processing in automation**

Preprocess large, high-frequency data volumes on the machine and, if needed, forward them to the control system or the cloud.

Gain transparency across all important KPIs (key performance indicators) of a machine through Industrial Edge apps.

New business models for machine builders: increase the appeal of machines for the plant operator with reloadable functionalities.

Program functionalities and distribute them to any number of Edge devices worldwide. Remotely manage and monitor Edge devices.

Combine the advantages of local and cloud computing:
- Process large data volumes, platforms for new functions, such as machine learning
- Distribute new functions on machines worldwide.
Virtual commissioning

In TIA Portal, use Step 7 and Simatic S7-PLCSIM Advanced, as early as the configuration and engineering stages, to simulate and validate ...

... the controller functions – with no need for real controller hardware.

Simulate several PLC instances interacting with each other. The modules can also be know-how protected.

Use an API interface to integrate external simulation tools ...

... and test and optimize the controller in the context of a virtual machine or an entire system.

This ensures that the actual commissioning process is fault-free, cost-efficient, and runs seamlessly.

More TIA digitalization use cases can be found at siemens.com/tia
Totally Integrated Automation

A high level of efficiency is already demanded at the engineering stage, as the first step toward better production: faster, more flexible, and more intelligent. With Totally Integrated Automation Portal, Siemens has an intelligent answer to this.

Virtual control system meets virtual machine

The most efficient way to meet the need for more rapid commissioning of production plants, while simultaneously improving production quality, is to use a digital twin. Virtual testing, simulation, and optimization save time when it comes to the actual commissioning. Faults are detected at an early stage and kept out of the real plant. This avoids unplanned machine behavior that can quickly result in delays and significant costs, while also decreasing project risks.

In TIA Portal, Simatic S7-PLCSIM Advanced can be used to create a digital twin of a Simatic S7-1500 controller. As a software suite for virtual commissioning, Simatic Machine Simulator V1.0 combines the Simatic S7-PLCSIM Advanced V2.0 virtual controller with Simit V10. Together with the NX Mechatronics Concept Designer (NX MCD) simulation software for mechatronic machine concepts, the Simatic Machine Simulator forms the basis for the virtual validation of entire machines. This makes it possible to synchronize mechatronic and control models, including simple or more complex behavioral models, and thus to simulate and ultimately validate machine-level applications.

The mechatronic model of a machine is created on the basis of the 3D data, which are kinematized in NX MCD and thus represent the physical and kinematic properties of the machine. This virtual machine model is then automated using the control-system software. To perform the validation, the real controller hardware can be used and linked to the NX MCD model by a Simit unit, or the Simatic S7-PLCSIM Advanced virtual controller can be used. Combining the simulation models of the control system and the mechanical system results in the digital twin of the real application. This allows the machine to be simulated and validated, and preliminary optimization options to be verified, doing away with the need for real prototypes. Configuration errors are identified at an early stage and can be remedied, or even completely avoided, before the actual commissioning. During ongoing operation, comparison of the digital twin and the real plant makes it possible to respond to changes rapidly and to automatically include adjustments in upstream and downstream stages of development.

siemens.com/tia-portal

NEW FEATURES

- Simatic Machine Simulator, combined with NX MCD, connects control and mechanical systems, creating the digital twin of a machine
- Support for redundant and high-availability applications with S7-1500R/H CPUs
- Software units for faster, more flexible commissioning of an S7-1500 controller as part of a team
- Open, standardized communication with OPC UA thanks to support for the OPC UA server/client
- Fault-tolerant software import and CPU upload via TIA Portal Openness
- Drive integration with Sinamics S210 in Startdrive, safety acceptance test for Sinamics S120
With even more versatile and modular products and systems, the Simatic energy management software portfolio helps users to make energy flows and consumption transparent and comprehensible throughout their companies.

Simatic Energy Manager Basic provides an easy introduction to energy management. It can be configured with ease and for each application using web engineering – both in combination with automation and for manual data entry. Reporting is supported by predefined report templates and configurable dashboards.

Simatic Energy Manager PRO offers additional functions for comprehensive, ISO-compliant energy management. The software features an extensive reporting system that supports the user with the acquisition and representation of performance figures and consumption data, as well as tools that provide support for the determination of performance figures for complex interrelationships. Energy Manager PRO also allows batch-based or material-based consumption analysis, as well as energy consumption forecasts. A range of different automation level systems, such as Simatic S7 Energy Efficiency Monitor, can be integrated via various interfaces. Comprehensive functions for dashboards and advanced widgets support the definition, implementation, and analysis of energy efficiency measures (baseline management). The advanced functions can be configured in the full client.

The Simatic Energy Manager V1.0 App for iOS and Android complements the portfolio with a simple and intuitive solution for mobile consumption data acquisition from devices that are not or cannot be linked to the energy management system. The user can easily identify the meter by scanning the QR code or barcode, and can then enter the meter reading (even offline).

siemens.com/energymanager

NEW FEATURES

Simatic Energy Manager Basic
- Simple introduction to energy management with web engineering
- Attractive reporting system, also for WinCC and Simatic Energy Suite
- Scalable, easy to upgrade

Simatic Energy Manager PRO
- Comprehensive machine efficiency analysis thanks to easy data transfer from the Simatic S7 EE monitor’s communication module
- Connectivity to MindSphere permits further analysis

Simatic Energy Manager V1.0 App for iOS und Android
- Simple and intuitive solution for mobile acquisition of consumption data
Three new Simatic MindApps combine data from MindSphere and Simatic automation components. After analysis, these data can be used to generate information and notifications that are available via tablet or smartphone locally, at multiple locations, or anywhere in the world.

**Simatic Performance Insight MindApp** uses dashboards to provide users with a clear display of the performance potential of each plant, as well as the actual performance. For this, the app records the machine and plant data that are used to calculate the key performance indicators (KPIs). The cockpit can be customized to the specific requirements, thus allowing the user to make fast decisions on the basis of the relevant, current performance figures to optimize the system.

**Simatic Machine Monitor MindApp** provides current information on the machine status and performance. Operation and service benefit from information on productivity and availability, wear, product quantities, and alarms. These data help machine and plant manufacturers to optimize their service and provide their customers with innovative services.

**Simatic Notifier MindApp** informs users directly via their mobile devices or via the Internet, sending notifications of events and plant malfunctions. For this purpose, the app captures alarms from the automation systems using data points that are available in MindSphere, as well as from other Simatic MindApps if the readings fall below the KPIs, for example. It is also possible to acquire alarm data from SCADA systems. All data are filtered and displayed to service technicians, plant operators, and line managers in user-specific customized views.

![image](image-url)

**NEW FEATURES**

- **Performance Insight MindApp:** For improved availability and productivity
- **Machine Monitor MindApp:** Transparency on machine status and performance for optimized services
- **Notifier MindApp:** Notification on mobile devices and location-independent access to alarm data

[siemens.com/simatic-mindapps](siemens.com/simatic-mindapps)
Digitalization is leading to ever-increasing requirements regarding communication and networking. Constantly increasing numbers of participants and exploding data volumes pose major challenges for advanced networks. Industrial communication with integrated networking across all automation levels increases transparency and provides the basis for digitalization.

The open communication standard OPC UA (Open Platform Communications Unified Architecture) supplements Profinet by providing the cornerstone of advanced automation networks in the age of digitalization. The standard is vendor and platform independent, supports numerous security mechanisms, and can be optimally combined with Profinet in a shared network. While OPC UA demonstrates its advantages on the control and operator levels, Profinet offers benefits on the field level. OPC UA facilitates reliable communication between machines (M2M communication) and protected data exchange with higher-level systems, such as SCADA or MES, and with a cloud. Standardized interfaces (known as companion specifications) allow straightforward machine integration into a system and can easily be imported with TIA Portal V15, while Siemens OPC UA Modeling Editor (SiOME) supports automation engineers with the interconnection of variables and simplifies data import to the Simatic S7-1500 controller via TIA Portal.

Industrial Ethernet networks with Profinet (known as Profinet networks) satisfy all requirements with regard to performance, flexibility, efficiency, and openness on the field level. Standardized profiles (Profisafe, Profidrive, and Profienergy) facilitate communication between devices from various manufacturers. Based 100% on the Ethernet standard, Profinet forms a future-proof network with sufficient resources to shape TCP traffic without a negative impact on automation.

siemens.com/opc-ua

NEW FEATURES

• Easy connection between machines (M2M communication)
• Protected connection to SCADA, MES, or the cloud
• Easy import to Simatic S7-1500 via TIA Portal and SiOME
Simatic automation systems offer the right product for every application: Basic, Advanced, Distributed, and Software Controllers. The Simatic controllers are also available in a fail-safe version, the S7-1500 Advanced Controller, with advanced motion control functionality, a multifunctional platform, and redundancy in its design.

Simatic S7-1500 Technology CPUs: portfolio expansion and new software functions

Scalable motion control solutions

The range of Simatic S7-1500 T-CPUs has been expanded with the CPU 1515SP PC2 T and CPU 1515SP PC2 TF Open Controllers. These are based on the new hardware of the CPU 1515SP PC2 Open Controller, and thus combine the advantages of advanced motion control functionality with an integrated Windows environment.

Previous motion control functions, such as absolute gearing and camming, are now joined by kinematics control with up to four interpolating axes as required, for example, for pick-and-place tasks. The system offers predefined kinematics, such as cartesian portals, roller pickers, SCARA robots, and delta pickers. A free transformation interface allows seamless integration into the user’s kinematics. Users parameterize the kinematics with a graphically supported and intuitively operable configuration editor, and program the movements in space in the usual Simatic Step 7 programming environment via standardized function modules in accordance with PLCopen. TIA Portal features an integrated kinematic trace with trace marking to visualize and diagnose the movements. It also has a kinematics control panel for commissioning. The Simatic Safe Kinematics software library for the fail-safe technology CPU (CPU 1517TF-3PN/DP), combined with Sinamics S120 (FW5.1), makes it possible to safely monitor specified kinematic motions in space. Speed monitoring for selected points (e.g., tool centerpoints) and freely configurable zones (e.g., working and protection zones) protect machine tool operators during their work.

Sophisticated motion control tasks can be accomplished efficiently and easily in TIA Portal V15 with the help of Simatic S7-1500 T-CPUs and the Sinamics V90 (with Profinet), Sinamics S210, and Sinamics S120 servodrive systems.

NEW FEATURES

- Combination of advanced motion control functionality and Windows applications thanks to the CPU 1515SP PC2 T and CPU 1515SP PC2 TF Open Controllers
- Control of kinematics with up to four interpolating axes, for example cartesian portals, roller pickers, SCARA robots, articulated arms, and delta pickers
- Reliable monitoring of kinematic motion in space (supported kinematics: cartesian portals, roller pickers, SCARA robots, articulated arms)

siemens.com/t-cpu
siemens.com/simatic-technology
With the Simatic S7-1500 CPU 1518(F)-4 PN/DP MFP multifunctional platform, OEMs can meet requirements in a flexible and application-oriented way using a trusted S7 platform. This makes the Advanced Controller even more flexible, without compromising its time-tested maintainability and ruggedness. Up to now, Simatic controllers usually carried out the control functions, while rugged industrial PCs implemented typical PC applications that required high-level language programming or solutions with databases. The controllers and PCs used different program development tools, which entailed an additional exchange of data that required programming. This resulted in overly complex automation solutions.

The necessary control functions are now combined with an open solution for C/C++ routines. The first delivery stage includes the concept that was already used in ODK CPUs, consisting of a PLC with accessible C/C++ functions, supplemented by call-independent, that is, stand-alone C/C++ applications that previously required user-provided PC hardware.

For example, users can program the CPU 1518(F)-4 PN/DP MFP multifunctional platform using TIA Portal (V15 and up) with Eclipse for C/C++.

NEW FEATURES

- Closed, embedded operating system that provides stability and long-term availability
- Plug-and-play memory card that reduces plant downtime
- Ability to create controller-independent applications in C/C++
- Ability to call up complex functions directly in the PLC program
- Ability to create reusable high-level language applications with integrated API or Matlab/Simulink

HIGHLIGHTS

- Simatic ProDiag diagnostics software
- OPC UA license (see also page 9)

Simatic S7-1500 starter kit

60 years of Simatic: anniversary giveaway

Starter kits offer everything you need to configure, install, wire, and use a Simatic controller in only a few fast and easy steps.

In 2018, Siemens is celebrating 60 years of Simatic. On the occasion of this anniversary, every S7-1500 starter kit will include two additional TIA Portal options. In addition to Step 7 Professional V15, there will also be bonus licenses for the Simatic ProDiag option package and OPC UA. This gives users the opportunity to gain early experience with the various TIA Portal options using the starter kit.

siemens.com/s7-1500-starterkits
Redundant CPUs for Simatic S7-1500 controllers

Redundant and highly available

HIGHLIGHTS

- Engineered like a standard CPU
- Link field devices using a Profinet ring

Redundant CPUs complete the range of Simatic S7-1500 controllers. They are engineered like a standard CPU, with program and data synchronization being handled by TIA Portal and the redundant CPUs. There is no additional work for the user.

CPU1513R and CPU1515R are suitable for small and medium-sized projects, and will be available in the fourth quarter of 2018. The strength of these CPUs lies in their redundancy. If one CPU fails, the backup CPU will automatically assume control of the process. This prevents data loss and allows the process to resume quickly. The field devices are linked to the CPUs in order to increase the devices' availability for communication. This way, none of the devices are disconnected even if the fieldbus is interrupted, provided the devices support Profinet's S2 redundancy (e.g., ET 200SP).

CPU1517H has the same features but is more powerful in order to handle larger-scale applications. This CPU uses a dedicated synchronization module that allows for a faster, more fluid switchover. Support for redundant Profinet networks is planned in the next development steps.

siemens.com/s7-1500

NEW FEATURES

- Interface to TIA Portal and Eplan to transfer projects and to manage symbolic addresses and signal names
- Plan drawings of the possible setup within the control cabinet, for calls for bids, for example
- Library to store configurations for reuse
Simatic ET 200SP Open Controller / S7-1500 Software Controller

Automation for distributed and PC-based applications

Siemens is expanding its range of Simatic controllers for PC-based applications. The new Simatic ET 200SP Open Controller CPU 1515SP PC 2 is now even more powerful and, as a Distributed Controller, complements the range of standard and fail-safe applications up to level E. It combines the functions of a PC-based software controller with visualization functions, Windows applications, and centralized I/Os in one compact device. This makes it especially suitable for series machine manufacturing. The new fail-safe CPU1516pro-2 PN for the Simatic ET 200pro Distributed Controller is also an all-in-one solution for standard and fail-safe automation tasks up to performance level E.

With its integrated safety functions, the Simatic S7-1500 CPU 1507S F Software Controller is the world’s only PC-based fail-safe controller that can operate independently from the operating system. Besides high system availability and fast control start-up, new benefits include the installation of Windows updates and the ability to reboot the system while the controller is running. In addition, there is an opportunity to save space, costs, and engineering effort, because the hardware controller that would otherwise be necessary is not needed here. The combination of PC-based controller and high-level language programs makes the Simatic S7-1500 Software Controller highly attractive for the field of special-purpose machine manufacturing.

TIA Selection Tool

The interface to TIA Portal and Eplan

TIA Selection Tool is a user-friendly application that guides users quickly through every automation project, helping them select and configure devices correctly. They can then import the selected devices into the hardware configuration of TIA Portal. Interfaces to electrical planning tools such as Eplan help ensure integrated engineering without multiple entries. Users who need suitable products for a retrofit or who want to change over from non-Siemens systems to Siemens systems can use the migrators in TIA Selection Tool to find matching components. By displaying device limits, TIA Selection Tool allows users to be assured that their plants are dimensioned correctly with the desired capacity reserves.
LOGO! 8 Web Editor

Easy steps to a user-defined website

Switch on the heat on your way home, activate the alarm system while on vacation, or switch off all the lights in the house with one click – interconnected components and access to devices via the Web are the new trend.

Thanks to an integrated web server, LOGO! 8 covers several applications with one device and one solution. Users can map, monitor, and control their machines, devices, or building functions related to the application. Standard software enables self-configured alarm texts to be created and function buttons are used to trigger switching functions. Users can design websites themselves with no HTML knowledge required – and create their own background images and self-defined switching elements. Various display resolutions can also be set for the desired end devices, such as smartphones, tablets, and PCs.

The LOGO! Web Editor is free of charge and available online to download. For a quick start, simple control and display elements are provided in a library, to which users can add their custom-designed elements. Programming experts can process the generated source codes in HTML 5. On a standard micro SD card, the data can be stored in the LOGO! basic device.

⇒ siemens.com/logo

Stay in touch with us!

The distribution of GO! as a print edition will end soon. Register for the online newsletter for Basic Automation and stay informed on our homepage. In addition, the current issue is available for download as a PDF and you can access previous editions in our archive.

Sign up for the new digital newsletter via the GO! home page and this newsletter will continue to conveniently provide you with information – on a PC, tablet, or smartphone – regarding new products as well as application examples relating to Basic Automation.

Subscribe to our newsletter now:
⇒ siemens.com/go

Discover how you can automate building cost-efficiently:
⇒ siemens.com/logo-at-home
Always up-to-date with the TIA Newsletter

The Totally Integrated Automation (TIA) newsletter presents innovative automation systems and refers to specific TIA digitalization use cases to show the benefits that can be achieved using the Digital Enterprise.

Subscribe for free now at siemens.com/tia

Totally Integrated Automation
Where digitalization becomes reality

Register now

To meet increasingly individualized customer requests, plant operators need to accelerate their time to market and become more efficient and flexible. At the same time, it is key to maintain or even improve quality. Consistent digitalization along the entire value chain offers great potential for achieving this.

The TIA Newsletter Team looks forward to provide you with tips and support your implementation of the Digital Enterprise.

Virtual control meets virtual machine
TIA Portal can be used to create a digital twin of a Simatic controller. Combined with simulation software for mechatronic machine concepts, this forms the basis for virtual validation of entire machines.

Digital twins at Hannover Messe
Detailed virtual images of products, machines, and plants help you make your processes more flexible and efficient. Experience the successful digital transformation in different industries at this year’s Hannover Messe trade fair.

siemens.com/hannovermesse>
Distributed I/O Systems

With Simatic ET 200, Siemens offers a modular and precisely scalable system for distributed automation in the control cabinet or directly on the machine.

NEW FEATURES

- Four fail-safe analog inputs
- Measuring range of 0/4 to 20 mA
- 16-bit resolution (incl. sign)
- Option to select 2v2 evaluation on board
- Channel-selective diagnostics and passivation
- Compatible with up to PL e/Cat. 4/SIL 3

ET 200SP F-AI

Fail-safe current metering

The new ET 200SP F-AI fail-safe analog module is as compact as a standard module and expands the range of fail-safe modules for ET 200SP. It has four fail-safe analog inputs that can capture signals from 0 or 4 to 20 mA. Operators can use the inputs either as single-channel inputs (up to PL d/Cat. 3/SIL 2) or in pairs using the integrated 2v2 evaluation (up to PL e/Cat. 4/SIL 3). The integrated, short-circuit-proof power supply or an external encoder supply powers the two- or four-wire measuring transducers. Integrated LEDs help localize errors faster. It is also possible to have channel-selective, detailed diagnostic information displayed in plain text without additional configuration, for example on a Simatic HMI Panel. If possible, only the affected channel is passivated if there is an error.

siemens.com/et200sp

Simatic ET 200eco PN

Quick error localization

The fail-safe F-DI 8/F-DQ 3 module is the latest addition to the ET 200eco distributed I/O system product range in protection class IP65/67. The compact fully sealed zinc die-cast housing encloses eight fail-safe digital inputs and three fail-safe digital outputs. The M12 connection system makes it possible to connect either two individual sensors or a two-channel sensor, such as a position switch or light curtain, on the input side using a Y adapter. The two-channel outputs are PNP/NPN switching. Errors can be localized quickly thanks to the channel-selective diagnostics of both the inputs and the outputs. As with all modules from the ET 200eco PN series, this module also has an integrated Profinet connection with a 2-port switch. The Profisafe address is saved on a plug-in F-coding element which, in the event of a module change, only has to be plugged into the new module – with no need to reset DIL switches.

siemens.com/et200eco

NEW FEATURES

- Eight fail-safe DC 24 V digital inputs (M12)
- Three fail-safe DC 24 V/2 A digital outputs, PNP/NPN switching (M12)
- Integrated encoder supply
- Channel-selective diagnostics and passivation
- Quick module exchange thanks to F-coding element instead of DIL switches
- Compatible with up to PL e/Cat. 4/SIL 3

siemens.com/et200eco
Siplus HCS4300

Quick control of heating elements

Siplus HCS4300, the most powerful heating control system, now has a third operating mode to control 400 V / 480 V heating elements. In addition to the zero switching and soft start control modes, it now also has a permanent phase shift mode. The permanent phase shift ensures that infrared radiators remain steady even at low set values. This ensures uniform heating even for fast processes, for example when drying textile fibers or printing. It is also much more pleasant for the operator if the radiators do not flicker during visible heating applications, which can happen when operating in the zero switching mode.

NEW FEATURES
- Permanent phase shift control mode for fast processes
- Combinable control modes
- Power output for each power output module with 9 outputs: 69.1 kW at 480 V, 57.6 kW at 400 V
- Easy engineering and user-friendly commissioning

Siplus CMS1200

New analysis options

With the Siplus CMS1200 Condition Monitoring System, status monitoring and analysis of mechanical components can be easily integrated into Simatic S7-1200. This allows mechanical damage to be identified quickly and maintenance work to be planned early on. Three new analysis options have been added to the existing portfolio. To monitor variable-speed drives and to analyze gear tooth wear-and-tear, for instance, vibration data can be streamed online to the CMS X-Tools analysis software. Additionally, the diagnostics parameter is available for bearing monitoring. It is calculated and monitored independently. For a more precise diagnosis, utilization categories can be created for the same speed ranges, where the raw data is stored and sent to a PC for further data analysis.

Working together, Siplus CMS and MindSphere create entirely new prospects. For example, operators can monitor globally distributed machine fleets to reduce downtime.
Simatic HMI – Taking efficiency to a new level: that is the motto of the seamless, consistent human-machine interface product range that allows the most diverse applications to be implemented efficiently and economically.

Simatic HMI Option+

More transparency, increased operating security

With the new Simatic HMI Option+ application, Simatic HMI Comfort Panels can now be even more easily diagnosed, secured, and supplemented with new functions thanks to quick access to information about the system and networks. Interface configuration and secure and transparent user identification ensure increased security and intelligent tools for service and communication are also included.

Simatic HMI Option+ acts as a gateway between Simatic HMI Panel runtime and the operating system. The application can be easily installed on the panel and then configured directly. In runtime, the user can display the system information, configure interfaces and user identification, and use other functions for machine monitoring.

Comprehensive and, to the extent possible, easy-to-configure access protection for plants and devices plays a key role here. To this end, access to Option+ can be restricted and password-protected. Simatic HMI Option+ has an integrated RFID login for local user identification. The application includes PM Logon Basic, which allows the local user identification system to be configured in just a few clicks via a connected RFID reader – including creating and adding new employees or RFID cards in runtime. Another security feature is a simple menu that allows operators to determine whether or not they can mount media via the USB port or SD card without leaving runtime.

siemens.com/hmi-option-plus

NEW FEATURES

• Available from WinCC V15
• Parameterization directly on the operator device
• Gateway between runtime and operating system
• User identification with RFID
• Compatible on 7” to 22” as well as on PRO, Outdoor, and INOX versions
Simatic WinCC Open Architecture V3.15

More flexible design and advanced security

The new, state-of-the-art trend feature now provides innovative options to adapt the trend view to individual customer requirements. Layout management and an integrated bird’s-eye view, which simplifies the selection of the displayed time range, make it possible to work with trends in a modern, convenient way. The graphic display of legends, trend axes, and data point comments can be adapted to make important information easy to recognize. The trend now includes storage of alarm areas and event zones, which greatly simplifies the process of evaluating value changes and associated events. New gesture functionalities also provide for ease of navigation through the plant hierarchy. In addition to the extensions for advanced displays, greater flexibility has also been achieved in the area of security. Starting now, users can integrate third-party user authentication systems, making WinCC Open Architecture even more advanced and secure.

> siemens.com/wincc-open-architecture

Simatic HMI Thin Client Ex OG

Extremely rugged, flexible installation

Simatic HMI Thin Client Ex OG is the latest addition to the range of explosion-proof operator panels. Just like Simatic HMI Panel PC Ex OG, Thin Client Ex OG has all-round IP66 protection and can be used in zones 1/21 and 2/22 without requiring special measures, such as complex enclosures, or additional certifications. The Ex OG operator panels were designed for applications in the chemical, oil and gas, and shipbuilding industries and can withstand extreme temperatures from –40°C to +65°C. Four different installation variants can be ordered using the configurator. Additional options are also available, such as a camera, Bluetooth, wireless, and an internal RFID reader.

> siemens.com/simatic-hmi-ex
Power Supplies

A reliable DC power supply is essential for efficient plant operation. The portfolio of Sitop power supply units and add-on modules can protect companies in any industry in the world from plant downtime and production losses.

Sitop Manager Suite

Operation software

Sitop Manager Suite is a standardized user interface for the communication-capable Sitop power supply units (PSUs). It is used whenever Simatic Step 7 in TIA Portal and Simatic PCS 7 are not being used. In the engineering phase, Sitop Manager is used to configure and parameterize the power supply units. During operation, the software handles the control and diagnostics of the PSUs. If PCs are protected with uninterruptible power supply units, the shutdown service takes over the secure shutdown of one or more computers in the event of a power failure. This prevents the loss of valuable production data. Sitop Manager Suite can operate both the Sitop PSU8600 power supply system (optionally with the UPS8600 uninterruptible expansion module) and the UPS1600 uninterruptible power supply unit with Ethernet/Profinet interface or USB interface.

NEW FEATURES

- Operation via mobile devices as well
- Reusable configuration files
- Parameterization changes during operation
- Secure communication through the use of OPC UA
- Free download via the Siemens Service Portal

Sitop UPS8600 and BAT8600

Buffer in case of power failure

Sitop PSU8600 is the first power supply system with full TIA integration and multi-vendor communication via OPC UA. A DC UPS module and up to five connectable lead- or lithium-based battery modules now provide a buffer for the system for up to several hours in the event of a power failure. This means that operation of all outputs (up to 36) of the PSU8600, each adjustable between 4 V and 28 V, can continue. To maximize the buffer time for important loads, it is also possible to switch off non-critical outputs selectively. System Clip Link can be used to easily integrate the DC UPS module into the Sitop PSU8600 system network.

The BAT8600 battery modules are mounted directly on the wall outside the network. The Energy Storage Link with its two lines enables automatic battery detection, gentle and temperature-guided charging, and battery diagnostics. Information about the operating and charging states, buffer standby, or required battery replacement can be passed on via the network connection of the PSU8600, which can also be used to shut down several PCs safely with Sitop UPS8600.

siemens.com/sitop
For 25 years, Sitop has been at the heart of automation, supplying industries worldwide with the correct direct voltage. To mark this anniversary, customers will receive exclusive anniversary packages with a onetime discount of 25% on the regular price of the individual components. The offer is available until December 31, 2018, in the Siemens Industry Mall. The anniversary packages can be easily and quickly integrated into the existing automation system.

The Sitop PSE200U selectivity module with single-channel signaling (anniversary package 1) divides the load current of the 24 V power supply into up to four 24 V load circuits and monitors them for overloads or short circuits. Information about the state of the individual load circuits is read in via a digital PLC input; the evaluation is completed by a function block in Simatic S7.

The BUF8600 buffer module can be connected to the basic device of the Sitop PSU8600 power supply system (anniversary package 2) to temporarily bridge power failures without any wiring efforts. Comprehensive diagnostics and maintenance information is available via Profinet and can be analyzed directly in Simatic S7 and visualized in Simatic WinCC.

NEW FEATURES

- Sitop UPS8600 DC UPS module (40 A) and BAT8600 battery modules with lead batteries (PB, 48 V, 380 Wh) or lithium-iron-phosphate batteries (LiFePO4, 48 V, 264 Wh)
- Battery modules with long-life lithium technology, even at higher ambient temperatures
- User-friendly engineering in TIA Portal or with the new Sitop Manager for open systems
- Universally deployable in the manufacturing and process industries
- Ability to shut down multiple PCs on one power supply system

NEW FEATURES

Power supply with selective fusing

- Function blocks for Simatic S7-300/400/1200/1500 for Step 7 and TIA Portal
- Description of the application

Power supply system for Industrie 4.0

- Function blocks for Simatic S7-1200/300/400/1500 for Step 7 and TIA Portal
- Faceplates for Simatic WinCC
- Description of the application
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 and Connect Package. 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.

siemens.com/sidrive-iq
Drive Systems

Siemens offers all-in-one solutions for the entire drive technology that can be seamlessly integrated into any automation environment and throughout the entire lifecycle - for more efficiency, reliability, and productivity.

Digital Drive Train Services

Digital Services for the entire drive train

With Digital Drive Train Services, Siemens is offering not just hardware, connectivity, and a platform, but also appropriate Digital Services covering the entire drive train. Remote Services allow customers to react quickly to downtime by directly connecting a service expert to the plant. Condition Monitoring Services minimize scheduled and unscheduled downtimes with optimized maintenance activities. Service experts can perform mobile measurements on site as well as set up permanently installed measuring equipment in the plant. In addition, Improvement and Optimization Services provide the opportunity to optimize asset performance based on efficiency analyses.

Siemens Drive Train Analytics (DTA) offers a cloud-based service solution for medium-voltage and high-voltage applications, based on an approach combining Remote Services and Condition Monitoring Services. DTA can transfer the condition data of drive train components to the cloud via an encrypted connection. All the data merge within a single system without requiring local data storage. Continuous monitoring ensures constant transparency about the condition of the components. Before it comes to critical changes, certified service experts contact the user immediately, identify the fault, and provide support with troubleshooting.

Users also benefit from automated status reports and notifications that allow them to detect faults at an early stage. Connected devices can be checked on the customer dashboard at any time. This allows users to consult with Siemens experts to obtain service recommendations. Early planning and optimization of maintenance and service measures save a significant amount of time and costs.

Siemens.com/ddts

NEW FEATURES

- Early error identification with continuous monitoring including automated reports for minimized unscheduled downtimes
- Automated alarm notification to prevent failures
- Cloud-based analytics for real-time error transparency and improved data analysis

Remote Services

- Shorten unplanned downtime by enhancing troubleshooting activities

Condition Monitoring Services

- Minimize planned and unplanned downtimes by optimizing maintenance activities

Drive Train Analytics/SIDRIVE IQ Services

- Remote Support (incl. On-Cell Service)
- Remote Diagnostics
- Mobile Diagnostics

Improve and Optimization Services

- Optimize the asset performance by managing assets based on performance KPIs

Energy Performance Contracting

(Energy Analytics as option)
Simotics XP

Optimizing explosion protection quickly and easily

With a platform concept that offers consistency in terms of design and technology, the new generation of Simotics XP explosion-proof motors covers every type of explosion protection from 0.25 up to 1,000 kW. The explosion-protected motors adhere to the same design principles as standard safe-area low-voltage motors from Siemens, allowing users to save time and effort in planning, integration, spare parts management, and servicing, while simultaneously using motors with and without explosion protection. The consistent use of standard tools and standard processes also significantly simplifies planning, engineering, procurement, integration, and commissioning, as well as the servicing and operation of the motors. Key global, country-specific, and industry-specific certificates have already been granted, ensuring that projects can be executed rapidly.

A specific version offers preconfigured, industry-specific option packages that are precisely tailored to meet the specific requirements of the chemical industry as well as the oil and gas industry.

NEW FEATURES
• All types of Ex motors from 0.25 up to 1,000 kW from a single source for use in zones 1, 2, 21 and 22
• Low operating costs thanks to energy efficiency class IE3 and system efficiency class IES2

Simotics SD Pro

Extremely flexible and universally applicable

Simotics SD Pro completes the spectrum of the next generation of Simotics SD motors. A crucial factor for the high flexibility of the motors is that they can operate at voltages of up to 690 V and are approved for both mains-fed and converter-fed operation – without requiring time-consuming additional measures such as the use of special filters. The Simotics SD Pro motor series is currently available in frame sizes 315 to 450 and covers a power range of 250 to 980 kW (2-pole and 4-pole versions), although 6-pole and 8-pole versions are also available in a variety of designs.

The Simotics SD Pro motors meet the requirements of efficiency class IE3 – regardless of whether they are operated at 50 Hz or 60 Hz. This, in conjunction with extensive industry and country-specific certificates, means they can be used in every key region and market worldwide as well as in a wide range of plant configurations. In frame sizes 315 and 355, the new motors are multi-voltage capable, making stable operation possible at all customary line voltages used around the world while simultaneously meeting the requirements of the relevant efficiency class. This allows OEMs to integrate the motors without requiring any major adaptations to their machinery and equipment or subjecting them to restrictions.

NEW FEATURES
• Suitable for mains-fed and converter-fed operation at voltages up to 690 V
• Global certificates showing fulfillment of the requirements applicable to the respective region
• Multi-voltage capability and high efficiency – regardless of the line frequency – for worldwide use in any plant configuration
Synchronous-reluctance drive system

Completing the portfolio

Siemens has expanded its portfolio of Simotics synchronous-reluctance motors with the addition of the new shaft heights SH90 and SH225. These help to meet the various shaft height requirements of general mechanical engineering companies as well as leading manufacturers of pumps, fans, and compressors. In addition, the motors are now also available over the entire power range from 0.55 to 45 kW at speeds from 1,500 to 3,000 rpm. The coordinated system consisting of the Sinamics G120 converter and synchronous-reluctance motor enables optimal control of pumps, fans, and compressors. The Sinamics S120 converter and Sinamics Reluctance Control license even enable sensorless motor control down to standstill, which also makes them suitable for applications such as winders, servo pumps, and extruders.

Synchronous-reluctance motors have already proven themselves in practice. Customers such as the machine builder Olbrich, the plaster board manufacturer Knauf, and Kaeser Compressors praise the superior energy efficiency of the motors, particularly at partial load, the optimal operating characteristics due to the synchronous sensorless operation, and the ease of commissioning thanks to motor codes.

\[ \text{siemens.com/reluctance-drive-system} \]

NEW FEATURES

- Shaft heights SH90 and SH225
- Continuous output range from 0.55 to 45 kW
- Speed range extended to 3,000 rpm

Analyze MyDrives

Valuable insights into the drive train

The Analyze MyDrives MindApp for the Sinamics V20 and V90, modular and compact Sinamics G, and Sinamics S converters (all devices up to 250 kW) allows machine operators to monitor the drive components of their machines. The application collects and evaluates all the operating data. By constantly monitoring output voltage, speed, and frequency, service requirements are detected in real time. Then, the machine tool operator is proactively informed about any need to take action and if the machine is in a critical operating state.

\[ \text{siemens.com/sinamics} \]

NEW FEATURES

- Maximum transparency thanks to the collection and evaluation of operating data
- Identification of trends and derivation of recommendations for action
- Fewer service intervals thanks to predictive maintenance
Sinamics S210 servodrive system

New integrated safety functions

Extended Safety Integrated functions will also be available for the Sinamics S210 servodrive system soon. The new converters already come with several Safety Integrated functions, such as Safe Torque Off (STO), Safe Stop 1 (SS1), and Safe Brake Control (SBC) as standard. The STO and SS1 functions can be activated via terminals and/or via Profisafe.

The extended Safety Integrated functions introduced with firmware version V5.1 SP1 for Sinamics S210, Safe Stop 2 (SS2), Safe Operating Stop (SOS), Safely Limited Speed (SLS), Safe Speed Monitor (SSM), Safe Direction (SDI), and Safe Brake Test (SBT) permit comprehensive safeguarding of the machine functions. The extended safety functions can be activated via a license in the Sinamics S210 converter and are triggered via Profisafe from a higher-level Simatic S7-1500F or S7-1500TF controller.

The Simotics S-1FK2 motor encoders have also been updated to include extended safety functions. In addition to adding support for the extended safety functions, the resolution of the encoders has been increased to 22 bits. The motors with the new encoders are compatible with the spare parts for the existing Simotics S-1FK2 motors and will be available from July 2018.

siemens.com/sinamics-s210
With the new Sinamics S120 Chassis-2 frequency converters, Siemens has started establishing a new device series in the higher performance range. Customers are very demanding when it comes to high-performance drives. The devices need to be easy to use and easily integrated into existing solutions, yet still suitable for demanding tasks.

The electrically/mechanically updated Sinamics S120 Chassis-2 converters offer users even more possible uses and higher reliability. For example, an improved cooling concept, variable-speed fans, and increased alternating load capacity ensure a longer service life. The doubled pulse rate increases energy efficiency, while the optimized enclosures and connections simplify engineering. The new power units are compatible with the well-known Sinamics and Masterdrives series, ensuring easy retrofitting and integration. Components such as OEM kits make installation in control cabinets easy, and Sinamics S120 Chassis-2 comes with condition monitoring, which increases the availability of the converter and makes it ready for digitalization.

The innovated converters are primarily used in the metal and paper industries. The new motor modules are also available in the Sinamics S120 Cabinet Modules-2 standard cabinets.

NEW FEATURES
• High degree of flexibility, simplified installation, and optimized operating characteristics
• Compact units
• Easy control-cabinet integration

The Sinamics G120 Smart Access Module can be used to establish a wireless link between mobile devices, such as smartphones, tablets, or laptops, and the Sinamics G120, G120C, and G120P converters via Wi-Fi. This gives users a powerful tool that includes numerous functions for wireless commissioning, diagnostics, and servicing. The module can be set up in just a few steps. Thanks to its web server function, there is no need to install or download additional software: a standard web browser and operating system are all that users need. The Sinamics G120 Smart Access Module user interface is intuitive and easy to use. The Smart Access Module is available as an additional option for Sinamics G120C, Sinamics G120 with CU230P-2 or CU240E-2 control unit, and Sinamics G120P with CU230P-2 control unit.

NEW FEATURES
• Wireless commissioning
• Motor test – setting and changing the motor speed
• Easy maintenance and diagnostics
• Parameters and settings visible at a glance
• Ability to store and share converter data
Sinamics V20 – New frame size FSAC

Much smaller and even more flexible

With Sinamics V20, Siemens offers an inverter for basic applications that is easy to set up, compact and economic. The Sinamics V20 inverter portfolio is extended by the new frame size FSAC in the voltage range 1AC 200 V to 240 V, 1.1 kW to 1.5 kW. The new frame size FSAC replaces the existing frame size FSB. Compared to frame size FSB, the frame size FSAC is 40% smaller, with dimensions of 90.8 x 160.9 x 147 mm. It also features an integrated radio interference filter according to EN 61800-3 Category C1.

siemens.com/sinamics-v20

Sinamics V90 framesize FSA

With Profinet and new motor design

The most compact frame size FSA of the Sinamics V90 converter is now available as Profinet version for 200 V supply voltage. The Profinet version for 0.1 up to 0.4 kW was previously covered by frame size FSB. Today, frame size FSA covers the Profinet versions for 0.1 and 0.2 kW. This reduces space requirements by 10mm (18%). Additionally, the Profinet interface enables real-time transmission of user, process and diagnostic data with a single cable.

The motor design for Simotics S-1FL6 (SH45, SH50, SH65, SH80) was also innovated. The connections on the motor side are now angled, while those on the cable side are straight connections. This results in a more compact motor design and provides for better connectivity.

siemens.com/sinamics-v90

NEW FEATURES

- Reduced space requirements by 40% compared to the existing frame size FSB
- Even more flexible, space-saving applications for Sinamics V20
- Integrated radio interference filter according to EN 61800-3 Category C1 for use in the first environment (residential, domestic)

NEW FEATURES

- Space-saving Profinet version for 200 V
- Real-time data transmission with a single cable
- Compact design of Simotics S-1FL6 motor for better connectivity
Modern design, significantly improved functionality, and even greater versatility are the hallmarks of the new Simatic MV540 optical read devices. The connection to MindSphere opens up possibilities for using the data obtained from 1D/2D codes.

The new high-end Simatic MV500 series expands the Siemens range of optical read devices. First to be launched is Simatic MV540, which far exceeds the functionality and performance of its predecessor, Simatic MV440, without compromising compatibility.

Thanks to its modular design, Simatic MV540 is highly flexible and can be adapted to the requirements of a wide range of applications in the production and logistics process. Its compact and rugged design and its high degree of protection (IP67) make it ideal for use in harsh industrial environments and confined spaces. The device’s higher computing power accelerates the reading process. The more in-depth evaluation of the image information improves read reliability, even under the most adverse conditions. High-performance accessories, such as lenses with electronic focus and flexible-control built-in ring lights, enhance functional reliability and – thanks to the increased working distance – expand application options. The electronic focusing function reduces setup errors and downtime. Device configuration via web-based management and one-button configuration for network and reading parameters make Simatic MV540 particularly easy and convenient to use. The device is subject to Siemens IT security tests which, combined with its integration into TIA Portal, ensure the highest level of system availability and reliability.

The future is digital
The Simatic MV540 optical readers connect to MindSphere using Simatic S7-1500 and CP1543-1 for secure data transfer. As a link between the real and digital world, Simatic MV540 devices ensure that operating data, such as product ID and quality data with position and time, can be recorded so that the results of the tracking are available globally. This connectivity is made possible by a function block integrated in the S7 controller.

Thanks to the data analysis, which is sent from the production and logistics application to MindSphere using the SIMATIC MV540, all production and logistics processes are made transparent, regardless of the manufacturer. This optimizes production processes and supply chains, and boosts efficiency and quality in production, logistics, asset management, and other areas across all industries. The Simatic MV540 optical readers and MindSphere are key components of a successful digitalization strategy and form the foundation of all data-based services from Siemens.
Industrial Identification

Identification systems help companies remain competitive in increasingly dynamic markets. RFID or optical identification systems allow manufacturers to meet the ever-increasing demands relating to material flow control, asset management, tracking and tracing, and supply chain management.

Simatic RF615A antenna

Exceptionally compact UHF antenna

Simatic RF615A is the latest addition to the Simatic RF600 UHF RFID system and is extremely compact (52 x 52 x 16 mm). Its exceptionally compact design and high degree of protection (IP67) make the antenna ideally suited for use in confined spaces and for a wide range of applications in the fields of production and logistics, even in the harshest industrial environments. Simatic RF615A can be mounted on both metallic and non-metallic surfaces and provides a read/write range of up to 1.3 m. The linear polarization reliably reduces the impact of reflections and overreach. A pre-assembled antenna-connecting cable connects Simatic RF615A to Simatic RF600 readers. There are no positioning restrictions when using two antennas on one reader. RF615A – ETSI is available for use in Europe, and RF615A – FCC was designed for the rest of the world.

Simatic RF645T transponder

Direct mounting on metallic surfaces

The rugged, maintenance-free, and passive Simatic RF645T transponder is the latest addition to the Simatic RF600 UHF system. It is based on UHF Class 1 Gen 2 technology in compliance with ISO standard 18000-63. The transponder was specifically designed for direct mounting on metallic surfaces, either using glue, a mounting cover, or a bracket, and is used to permanently label tools, containers, and other metal equipment. Under these conditions, Simatic RF645T has a read/write range of up to 6 m, depending on the ambient conditions and the readers or antennas used. At just 52 x 36 x 12.5 mm in size, the transponder has a 448-bit EPC (electronic product code) and 2048-bit user memory, allowing both centralized and decentralized data storage. Its broadband operating frequency (865 MHz to 928 MHz) makes the transponder suitable worldwide for production control, supply chain management, and asset management, as well as, tracking and tracing. Thanks to its high degree of protection (IP68), it can withstand even the harshest industrial environments.

The proven Simatic RF600-series RFID readers are used to capture the transponder data.

siemens.com/transponder
MDS D560 transponders

**Transponder with huge memory**

The MDS D560 transponder is the latest addition to the Simatic RF200 and Simatic RF300 HF RFID portfolio. Its large 8 KB FRAM (ferroelectric random access memory) enables direct storage of data on workpieces, parts storage systems, and containers. This helps reduce downtime and improves plant availability. The proven FRAM technology makes it possible to write data to the transponder at high speed with an almost unlimited number of write cycles.

The rugged, maintenance-free, and passive transponder based on ISO 15693 has a range of up to 160 mm. Thanks to its compact design (16 x 3 mm), the high degree of protection (IP68), and chemical resistance, MDS D560 is ideally suited for use in confined spaces and the harshest industrial environments. Using a spacer, the transponder can be mounted directly on metal.

The proven Simatic RF200/RF300 RFID readers (ISO mode) are used to capture the transponder data.

![siemens.com/transponder](siemens.com/transponder)

**NEW FEATURES**

- 8 KB FRAM memory
- Almost unlimited number of write cycles
- Able to store data directly on workpieces, carrier systems, and containers
- Can be mounted directly on metal

**Corner fixture for MDS Dx60 transponder series**

**Corner positioning**

Siemens has designed a corner fixture for the proven transponder series comprising MDS D160, MDS D460, and MDS D560 for mounting at an angle of 45° on the corners of metallic and non-metallic workpiece carriers. Once clipped into the fixture, the transponder with the required memory capacity can be read in the longitudinal and transverse direction. This allows identification and tracing of workpieces and workpiece carriers with a greater level of production efficiency, and transportation of a large number of different product variants within a production line. The deployable transponders of the MDS Dx60 series come with memories of different sizes from 112 byte EEPROM up to 8,000 byte FRAM, enabling both centralized and decentralized data storage.

The corner fixture is ideal for harsh industrial environments thanks to its high degree of protection (IP68) and its resistance to oils and cleaning agents.

![siemens.com/transponder](siemens.com/transponder)

**NEW FEATURES**

- Corner positioning of the transponder on a workpiece or workpiece carrier
- Identification and traceability with high production efficiency
- Transportation of different product variants within a production line
- Use of transponders with different memory sizes possible
Industrial security appliances such as Scalance SC-600 meet industrial requirements needed to implement special security concepts. They provide effective protection for machine and plant networks at the field and aggregation levels.

The new Scalance SC-600 industrial security appliances are equipped with all the features needed for effective protection against unauthorized access at the industrial cell level. The Scalance SC632-2C and SC636-2C versions have a stateful inspection firewall with a data throughput of up to 600 Mbit/s, making them ideally suited for protecting the machine or plant cell. With Scalance SC642-2C and SC646-2C, it is also possible to manage up to 200 IPsec VPN tunnels. Along with security functions such as firewall and VPN, the new Scalance SC-600 devices also offer network-structuring options, for example virtual LANs (VLANs) or Network Address Translation (NAT/NAPT). In addition to the traditional cell protection concept, the new industrial security appliances also support the implementation of security zones with flexible configurations, thus ensuring structured protection in the plant network.

Flexible components in a compact design
The compact security network components boast a data rate of up to 1,000 Mbit/s on each of up to six Ethernet ports, two of which are combo ports. These support both 100 Mbit/s and 1,000 Mbit/s optical SFPs in single-mode or multimode versions. By using fiber optic cables with LC connection technology, it is possible to cover distances of up to 200 kilometers. Scalance SC632-2C and SC642-2C define one port each for the higher-level network and for the network to be protected with higher security requirements. For Scalance SC636-2C and SC646-2C, the six active ports can be flexibly allocated to different security zones as needed.

The Scalance SC-600 devices have a redundant DC 24 V power supply as well as a signaling contact, and can also be integrated into the Sinema Server network management software. Industrial security appliances are configured either using an integrated web server, the Simple Network Management Protocol (SNMP), the Command Line Interface (CLI), or via the Step 7 V15 engineering tool (TIA Portal). The housing design is based on Simatic S7-1500 controllers, enabling user-friendly installation next to the control systems in the control cabinet. Approvals for zone 2 potentially explosive areas and approvals for the shipbuilding industry complete the product range.

Guaranteed secured remote access
All Scalance SC-600 versions can be connected easily via Sinema Remote Connect, the management platform for remote networks. After providing the relevant data via Sinema Remote Connect, setting up the VPN tunnel to the industrial security appliances is easy. Here, Sinema Remote Connect acts as an administrative unit between the authorized service technicians and the machines protected by Scalance SC-600 in the field. This enables secured remote maintenance and remote diagnostics of machines and plants worldwide.
Industrial Communication

From the simple connection of a sensor to the collection and transmission of all of a factory’s quality and production data – the whole package for industrial communication enables the efficient integration of all company divisions.

Scalance W1788

11ac standard WLAN

The new Scalance W1788 access points take the current IEEE 802.11ac Wave 2 WLAN standard into industrial environments. Thanks to gigabit data rates, the devices can also handle wireless applications with particularly high bandwidths. The innovative multiuser MIMO technology makes it possible to structure data flows to achieve an even higher data throughput. The integrated switch with two managed Ethernet gigabit ports offers a variety of networking options, such as link aggregation. With their high degree of protection (IP65) and the firmly screwed-down M12 and N-Connect connectors, Scalance W1788 access points are able to withstand harsh environmental conditions. Device versions are available for flexible installation requiring little effort, with internal or remote antennas, or with one or two radios for optimal data usage. In addition to configuration interfaces, the new access points have various national approvals for worldwide use, not to mention a wide range of available accessories that are optimally suited to specific applications.

NEW FEATURES

- Gigabit data rates for demanding wireless applications
- Investment protection with current IEEE 802.11ac Wave 2 WLAN standard
- Various device versions with internal or remote antennas available

Siemens.com/scalance-w1788

Scalance XB-100

Switches for buildings and industrial applications

Connecting smart sensors and actuators to the production network is quick and easy with unmanaged Industrial Ethernet switches. The new Scalance XB-100 unmanaged Industrial Ethernet switches are available in five versions – from devices with up to 24 electrical RJ45 connectors to derivatives with 2 optical connectors with SC or ST/BFOC connector technology. The 10/100 Mbit/s devices enable a cost-optimized network design in discrete manufacturing and meet the requirements of an industrial environment with a redundant DC 24 V power supply. In addition, all Scalance XB-100 devices support a power supply with AC 24 V, which is required in building automation. Thus, they are ideally suited to connect devices for monitoring, controlling, regulating and optimizing to the Ethernet via the medium-independent BACnet/IP protocol. With its space-saving and lightweight housing, Scalance XB-100 can be easily installed in any control cabinet. In addition to approvals for use in zone 2 potentially explosive areas, the new switches also comply with Profinet CC-A.

NEW FEATURES

- Unmanaged Industrial Ethernet switches in electrical and optical versions
- DC 24 V and AC 24 V (50/60 Hz) for buildings and industrial applications
- Up to 24 electrical ports for large-quantity frameworks

Siemens.com/xb-100

33
Simatic S7-1200 CPs – new V3.1 firmware

Secured remote access for teleservice and telecontrol

The new V3.1 firmware version for Simatic S7-1200 communication processors (CPs) supports the connection to Sinema Remote Connect with auto-configuration. For the CP 1243-7 LTE, CP 1243-1, and CP 1243-8 IRC versions, the process of setting up a VPN tunnel to the CPs with Sinema Remote Connect is very easy. This enables worldwide secured remote diagnostics and remote service for machines using Simatic S7-1200.

In addition to teleservice applications, the new V3.1 firmware also enables the implementation of additional security requirements in telecontrol systems with TeleControl Server Basic. Here too, the combination of CP and Sinema Remote Connect makes it very easy to centrally configure and manage tunnel connections (VPN) between the telecontrol center and the remote terminal units (RTUs) based on the Simatic S7-1200 controller. The VPN tunnel to the control center is established by the CP in the RTU, offering encryption throughout the entire communication line.

siemens.com/s7-1200-rtu

Simatic ET 200SP CPs - new V2.0 firmware

Communication for distributed controllers

The new V2.0 firmware version for the communication processors (CPs) of the Simatic ET 200SP series enables easy and secured remote access to Simatic ET 200SP Distributed Controllers. Using autoconfiguration, the CP 1543SP-1 and CP 1542SP-1 IRC devices can be easily connected via Sinema Remote Connect. Combining the Sinema Remote Connect management platform and the CP makes it very easy to configure and manage VPN tunnels between a control center and remote stations based on the Simatic ET 200SP Distributed Controller, both for teleservice and telecontrol applications. To do this, the CP establishes an encrypted VPN tunnel directly from the ET 200SP station to the control center.

With the new V2.0 firmware, CP 1542SP-1 IRC now also supports the Sinaut ST7 telecontrol protocol in addition to the TeleControl Basic, DNP3, and IEC 60870-5-104 telecontrol protocols. As a result, remote terminal units (RTUs) based on Simatic ET 200SP can be optimally integrated into existing telecontrol systems. The CPs are configured in TIA Portal with the Step 7 Professional V15 engineering software.

siemens.com/cp-for-et200sp
The new Simatic PCS 7 V9.0 process control system realizes Profinet in process automation down to the field level. The network components used in this process are robust Scalance XF-200BA managed Industrial Ethernet switches that are equipped with coated PCBs (conformal coating), cover an extended temperature range of −40°C to +70°C, and also function at altitudes of up to 4,000 m. Depending on the topology requirements, the flexible bus adapter concept of these network components makes it possible to set up line, star, and redundant ring structures in electrical or optical versions.

An additional version is now available with the new BA 2xRJ45VD HA bus adapter. This can be used to cover a distance of up to 1,000 m through copper cables between two devices that can use this bus adapter. The new bus adapter not only enables standard Ethernet communication over 4-wire cables (twisted pair), but also data transfer via 2-wire cables (single twisted pair). Users can continue to use existing Profibus cable infrastructures, preventing costly and complex retrofitting, especially at the field level. In addition, Profinet devices can be reached at distances of up to 500 m using an 8-wire cable. Depending on whether copper cables with 2, 4, or 8 wires are used, as well as on the desired data rate, distances between 100 m and 1,000 m can be covered. The new BA 2xRJ45VD HA bus adapter is used in Scalance XF-200BA Industrial Ethernet switches as well as in Simatic ET 200SP HA, Simatic CFU, and IE/PB LINK PN IO.
TeleControl Server Basic V3.1

No more data loss

TeleControl Server Basic enables monitoring and control of automated systems from the control center by means of HMI/SCADA clients accessing and influencing process data based on the standard OPC interface. TeleControl Server Basic communicates with the compact (Simatic RTU3000C) or modular remote terminal units (RTUs) based on Simatic controllers via the TeleControl Basic telecontrol protocol. TeleControl Server Basic V3.1 offers a new data buffering function at the OPC interface. This prevents loss of data, even in the event of disconnection or a data surge.

To further increase data security, version V3.1 also supports the operation of TeleControl Server Basic in connection with Sinema Remote Connect. All telecontrol connections between the RTUs and the control center are established with TeleControl Server Basic via VPN tunnels.

NEW FEATURES

- Data buffering at the OPC UA interface
- Use of Simatic RTU3010C
- Operation in connection with Sinema Remote Connect

Simatic TIM 1531 IRC V2.0

More flexibility through open telecontrol protocols

Remote terminal units (RTUs) based on the Simatic S7-1500 Advanced Controller impress users with their high performance and flexibility. The RTUs are particularly well-suited for complex telecontrol applications. They are connected to a telecontrol center via the TIM 1531 IRC telecontrol interface module using a telecontrol protocol. The telecontrol interface module (TIM) can also be used as a node and as a master station.

With the new V2.0 firmware, TIM 1531 IRC now also supports the open IEC 60870-5-104/101 and DNP3 telecontrol protocols in addition to the Sinaut ST7 telecontrol protocol – the telecontrol protocol is simply selected in TIA Portal V15.1 during configuration. The new proxy functionality simplifies the use of new RTUs that are based on Simatic S7-1500 in existing telecontrol systems. Sinaut V5.5 SP3 engineering software can be used to create and export the connection configuration of new stations with TIM 1531 IRC modules in the existing project. These can then be imported into Step 7 Professional in TIA Portal V15 or higher.

NEW FEATURES

- Free choice of telecontrol protocol in various telecontrol applications (Step 7 Professional V15.1 and higher in TIA Portal)
- Use as a substation (RTU), node station, or master station
- Proxy function in Sinaut V5.5 SP3 for connection configuration in Step 7 V5.5 with import function in TIA Portal V15

siemens.com/telecontrol
The Ruggedcom RSG907R and Ruggedcom RSG909R gigabit Ethernet switches support the High-availability Seamless Redundancy (HSR) protocol and the Parallel Redundancy Protocol (PRP) in accordance with the IEC 62439-3 standard. In fully digital applications, such as digital substations, Ruggedcom Ethernet switches reduce costly downtime and communication disruptions by supporting the setup of seamless, redundant, high-bandwidth networks. In addition, the devices provide redundant power supply inputs for additional failure safety. Through the precise time synchronization compliant with IEEE 1588, the new switches also cut investment and maintenance costs by combining accurate time synchronization and data communication in a single network. The integrated DIN rail mounting and forward-facing interfaces make it easy to install these compact devices even in space-limited cabinets. Like all Ruggedcom products, Ruggedcom RSG907R and Ruggedcom RSG909R are very robust, with a temperature range of –40°C to +85°C, and offer improved electromagnetic compatibility (EMC) and immunity in case of strong electrical interference.

NEW FEATURES

• HSR and PRP redundancy protocols according to IEC 62439-3
• Precise time synchronization according to IEEE 1588
• Reduced risk of downtime and communication disruptions
• High flexibility through redundant SFP ports

The rugged device is designed for operation at extreme temperatures between –40°C and +85°C and in environments with strong electrical interference (electromagnetic compatibility/EMC). This allows the switch to be used in harsh environments, such as power generation, transportation, and the oil and gas industries.

siemens.com/rsg900r

The new IEEE 1588-compliant Ruggedcom RST2228 Ethernet switch adds a device suitable for 19” racks to the Ruggedcom portfolio. 10 Gbit/s uplinks and 24 additional 10/100/1000 Mbit/s Ethernet interfaces provide high bandwidth, and multiple ports reduce the number of network devices required. The 24 interfaces are based on 6 modular slots, each of which supports 4 interfaces. The product can be ordered preconfigured with modules but can also be combined with the Ruggedcom RMM2973-4RJ45, RMM2973-4FC, and RMM2972-4SFP media modules available separately – for quick on-site installation and modification. This simplifies the migration from copper to fiber optic networks. By supporting the IEEE 1588 Transparent Clock process, the Layer 2 rack switch makes precise time synchronization possible. With the Ruggedcom CLP, a pluggable storage medium, users can simply transfer the configurations from one switch to another when replacing a device. This minimizes downtime.

NEW FEATURES

• Four 1/10 Gbit/s uplinks, up to 24 modular interfaces with 10/100/1000 Mbit/s
• High bandwidth for increasing data volumes
• Build-to-order and field modularity allows for easy installation and modification in the field

Easier migration to fiber optic networks

Ruggedcom RSG907R/RSG909R

Compact IEEE 1588 Ethernet switches

siemens.com/rsg900r

Ruggedcom RST2228

The Ruggedcom RST2228 Ethernet switch adds a device suitable for 19” racks to the Ruggedcom portfolio. 10 Gbit/s uplinks and 24 additional 10/100/1000 Mbit/s Ethernet interfaces provide high bandwidth, and multiple ports reduce the number of network devices required. The 24 interfaces are based on 6 modular slots, each of which supports 4 interfaces. The product can be ordered preconfigured with modules but can also be combined with the Ruggedcom RMM2973-4RJ45, RMM2973-4FC, and RMM2972-4SFP media modules available separately – for quick on-site installation and modification. This simplifies the migration from copper to fiber optic networks. By supporting the IEEE 1588 Transparent Clock process, the Layer 2 rack switch makes precise time synchronization possible. With the Ruggedcom CLP, a pluggable storage medium, users can simply transfer the configurations from one switch to another when replacing a device. This minimizes downtime.

NEW FEATURES

• Four 1/10 Gbit/s uplinks, up to 24 modular interfaces with 10/100/1000 Mbit/s
• High bandwidth for increasing data volumes
• Build-to-order and field modularity allows for easy installation and modification in the field

Easier migration to fiber optic networks

Ruggedcom RSG907R/RSG909R

Compact IEEE 1588 Ethernet switches

siemens.com/rsg900r

Ruggedcom RST2228

The Ruggedcom RST2228 Ethernet switch adds a device suitable for 19” racks to the Ruggedcom portfolio. 10 Gbit/s uplinks and 24 additional 10/100/1000 Mbit/s Ethernet interfaces provide high bandwidth, and multiple ports reduce the number of network devices required. The 24 interfaces are based on 6 modular slots, each of which supports 4 interfaces. The product can be ordered preconfigured with modules but can also be combined with the Ruggedcom RMM2973-4RJ45, RMM2973-4FC, and RMM2972-4SFP media modules available separately – for quick on-site installation and modification. This simplifies the migration from copper to fiber optic networks. By supporting the IEEE 1588 Transparent Clock process, the Layer 2 rack switch makes precise time synchronization possible. With the Ruggedcom CLP, a pluggable storage medium, users can simply transfer the configurations from one switch to another when replacing a device. This minimizes downtime.

NEW FEATURES

• Four 1/10 Gbit/s uplinks, up to 24 modular interfaces with 10/100/1000 Mbit/s
• High bandwidth for increasing data volumes
• Build-to-order and field modularity allows for easy installation and modification in the field

Easier migration to fiber optic networks

Ruggedcom RSG907R/RSG909R

Compact IEEE 1588 Ethernet switches

siemens.com/rsg900r

Ruggedcom RST2228

The Ruggedcom RST2228 Ethernet switch adds a device suitable for 19” racks to the Ruggedcom portfolio. 10 Gbit/s uplinks and 24 additional 10/100/1000 Mbit/s Ethernet interfaces provide high bandwidth, and multiple ports reduce the number of network devices required. The 24 interfaces are based on 6 modular slots, each of which supports 4 interfaces. The product can be ordered preconfigured with modules but can also be combined with the Ruggedcom RMM2973-4RJ45, RMM2973-4FC, and RMM2972-4SFP media modules available separately – for quick on-site installation and modification. This simplifies the migration from copper to fiber optic networks. By supporting the IEEE 1588 Transparent Clock process, the Layer 2 rack switch makes precise time synchronization possible. With the Ruggedcom CLP, a pluggable storage medium, users can simply transfer the configurations from one switch to another when replacing a device. This minimizes downtime.

NEW FEATURES

• Four 1/10 Gbit/s uplinks, up to 24 modular interfaces with 10/100/1000 Mbit/s
• High bandwidth for increasing data volumes
• Build-to-order and field modularity allows for easy installation and modification in the field

Easier migration to fiber optic networks

Ruggedcom RSG907R/RSG909R

Compact IEEE 1588 Ethernet switches

siemens.com/rsg900r

Ruggedcom RST2228

The Ruggedcom RST2228 Ethernet switch adds a device suitable for 19” racks to the Ruggedcom portfolio. 10 Gbit/s uplinks and 24 additional 10/100/1000 Mbit/s Ethernet interfaces provide high bandwidth, and multiple ports reduce the number of network devices required. The 24 interfaces are based on 6 modular slots, each of which supports 4 interfaces. The product can be ordered preconfigured with modules but can also be combined with the Ruggedcom RMM2973-4RJ45, RMM2973-4FC, and RMM2972-4SFP media modules available separately – for quick on-site installation and modification. This simplifies the migration from copper to fiber optic networks. By supporting the IEEE 1588 Transparent Clock process, the Layer 2 rack switch makes precise time synchronization possible. With the Ruggedcom CLP, a pluggable storage medium, users can simply transfer the configurations from one switch to another when replacing a device. This minimizes downtime.

NEW FEATURES

• Four 1/10 Gbit/s uplinks, up to 24 modular interfaces with 10/100/1000 Mbit/s
• High bandwidth for increasing data volumes
• Build-to-order and field modularity allows for easy installation and modification in the field

Easier migration to fiber optic networks

Ruggedcom RSG907R/RSG909R

Compact IEEE 1588 Ethernet switches

siemens.com/rsg900r

Ruggedcom RST2228

The Ruggedcom RST2228 Ethernet switch adds a device suitable for 19” racks to the Ruggedcom portfolio. 10 Gbit/s uplinks and 24 additional 10/100/1000 Mbit/s Ethernet interfaces provide high bandwidth, and multiple ports reduce the number of network devices required. The 24 interfaces are based on 6 modular slots, each of which supports 4 interfaces. The product can be ordered preconfigured with modules but can also be combined with the Ruggedcom RMM2973-4RJ45, RMM2973-4FC, and RMM2972-4SFP media modules available separately – for quick on-site installation and modification. This simplifies the migration from copper to fiber optic networks. By supporting the IEEE 1588 Transparent Clock process, the Layer 2 rack switch makes precise time synchronization possible. With the Ruggedcom CLP, a pluggable storage medium, users can simply transfer the configurations from one switch to another when replacing a device. This minimizes downtime.

NEW FEATURES

• Four 1/10 Gbit/s uplinks, up to 24 modular interfaces with 10/100/1000 Mbit/s
• High bandwidth for increasing data volumes
• Build-to-order and field modularity allows for easy installation and modification in the field

Easier migration to fiber optic networks

Ruggedcom RSG907R/RSG909R

Compact IEEE 1588 Ethernet switches

siemens.com/rsg900r

Ruggedcom RST2228

The Ruggedcom RST2228 Ethernet switch adds a device suitable for 19” racks to the Ruggedcom portfolio. 10 Gbit/s uplinks and 24 additional 10/100/1000 Mbit/s Ethernet interfaces provide high bandwidth, and multiple ports reduce the number of network devices required. The 24 interfaces are based on 6 modular slots, each of which supports 4 interfaces. The product can be ordered preconfigured with modules but can also be combined with the Ruggedcom RMM2973-4RJ45, RMM2973-4FC, and RMM2972-4SFP media modules available separately – for quick on-site installation and modification. This simplifies the migration from copper to fiber optic networks. By supporting the IEEE 1588 Transparent Clock process, the Layer 2 rack switch makes precise time synchronization possible. With the Ruggedcom CLP, a pluggable storage medium, users can simply transfer the configurations from one switch to another when replacing a device. This minimizes downtime.

NEW FEATURES

• Four 1/10 Gbit/s uplinks, up to 24 modular interfaces with 10/100/1000 Mbit/s
• High bandwidth for increasing data volumes
• Build-to-order and field modularity allows for easy installation and modification in the field

Easier migration to fiber optic networks

Ruggedcom RSG907R/RSG909R

Compact IEEE 1588 Ethernet switches

siemens.com/rsg900r
Sirius 3RW5 soft starters are suitable for any drive, easy to integrate into the automation system, and capable of supplying data to MindSphere. Integrated functions, such as automatic parameterization, and a rugged design that can tolerate fluctuating line voltages ensure smooth operation in a wide range of applications.

The new three-phase controlled 3RW52 and 3RW55 soft starters cover a power range from 5.5 to 560 kW. Various sizes are available, depending on the application requirements, allowing the user to choose the ideal soft starter and expand it individually with standardized accessories, including operator panels with or without displays as well as communication modules for Profinet/Profibus and Modbus. Numerous certificates and approvals, such as UL, IEC, and CSA, make the starters suitable for worldwide use. Winner of the iF Design Award 2018, the device is not only visually impressive, but also extremely rugged thanks to coated circuit boards.

Concentrated, application-specific functionality
The new Sirius soft starters can be used in a wide range of applications such as for pumps, fans and compressors, in conveyor technology, or in production machines. Features such as integrated self-learning automatic parameterization depending on motor startup, and special pump rinsing and pump discharge functions (to prevent water hammer), ensure reliable operation. In TIA Portal you can also set limits for condition monitoring and perform preventive maintenance to increase plant availability. Fluctuating line voltages are no problem for these rugged electrical devices: their soft start alone avoids current peaks and contributes to grid stability.

Efficiency thanks to hybrid switching technology
The innovative hybrid switching technology used in Sirius soft starters ensures low-wear switching and energy-saving operation. Once the motor has started softly via semiconductor, the low-loss switching contacts assume control of the power for the rest of the operating phase until the motor switches off.

The data recorded by the soft starters can be made available anywhere and anytime via integrated communications links. It can then be used for energy monitoring, for example. This allows the soft starters to be perfectly integrated into the automation system and other higher-level solutions, such as MindSphere.

Support is available to users as early as the planning phase. The Simulation Tool for Soft Starters ensures quick and easy product selection, comprehensive CAx data serves as a useful resource for electrical planning, and the Soft Starter ES engineering software in TIA Portal makes engineering and commissioning especially easy.

siemens.com/softstarter
Industrial Controls

Whether the task involves switching, protecting, starting, or monitoring, with the Sirius modular system Siemens offers a coordinated portfolio for industrial controls that is easy to install in the control cabinet and straightforward in its integration into distributed systems.

Sirius ACT ID key-operated switch

Individual functions – very user-friendly

The new E03 version added two new user-friendly functions to the Sirius ACT ID key-operated switch. Now, using an individual number, users can easily add new keys after delivery of the system. They can register using the Port Configuration Tool (PCT) or the user program – there is no need for the key to make physical contact with the ID switch. Also, now that all the authorization levels can be individually combined, significantly more user profiles can be added. Here again, the settings are entered using the PCT or the user program, enabling much more complex and flexible rights management.

siemens.com/sirius-act

NEW FEATURES

- Location-independent registration of additional key-operated switches via IO-Link
- Unlimited selection and combination of authorization levels
Electrification goes MindSphere

Electrical power distribution in digital factories

Industrial plants are becoming increasingly automated and networked, requiring products and systems for electrical power distribution to be seamlessly integrated into digital environments. This not only increases energy efficiency and plant availability, it also optimizes the entire value chain.

Connecting the electrical power distribution to the digital industrial environment begins with the low-voltage main distribution. Besides protection and switching devices for fail-safe and efficient power distribution, the Sivacon S8 low-voltage switchboard is also equipped with communication-capable devices to capture energy data. Part of the switchboard is Simaris control – the digital twin of Sivacon S8. Simaris control enables all components to be digitally operated, monitored, and parameterized. The captured data, such as status information and energy data, can then be transmitted to higher-level automation and energy management systems, as well as to cloud-based, open IoT operating systems such as MindSphere. Thanks to continuous monitoring and predictive maintenance, this ensures increased plant availability.

The electrotechnical planning of control cabinets is also conducted on the basis of digital twins. Through the integration of 3VA molded case circuit breakers and measuring devices of the 7KM PAC series from the Sentron portfolio into the TIA Portal engineering framework, electrification becomes an integral part of automation. Using TIA Portal, all components can be directly configured and put into operation. The result is engineering with just a single tool and an intuitive configuration of the power distribution.

Via Simaris control or MindConnect components, the captured power data can also be provided in MindSphere, which makes the information available via the cloud-based, open platform for specific analyses. These include evaluations of the plant condition and the power quality as well as the optimization of energy consumption. The precise, reproducible, and reliable measurements for current, voltage, power, and energy form the basis for systematic power and system monitoring. It opens the door for enormous business savings potential and is the basis for sustainable operational energy management in the digital age.

→ siemens.com/lowvoltage/mindsphere
Gas-insulated medium-voltage switchgear has been successfully established on the market for more than three decades. These systems are particularly characterized by their modularity, longevity, and high availability. Now, Siemens is expanding its 8DAB portfolio in order to take account of today’s requirements related to sustainability, higher ratings, as well as intelligent measuring, protection, and control technology. The new, advanced solutions in the area of circuit-breaker switchgear and cloud applications will be presented at the Siemens booth at the Hannover Messe trade fair.

NEW FEATURES
- 8DAB portfolio expansion
- 3,150 A in 600 mm width
- Intelligent measuring, protection, and control technology

NEW FEATURES
- Easy, affordable entry into operational power monitoring
- Comparison of the energy consumption of individual loads and identification of current peaks
- Power monitoring as the technical basis for a certification in accordance with ISO 50001 and 50003
- MID certification allows the costs for the measured energy consumption to be billed to third parties
NXPLUS C gas-insulated medium-voltage switchgear

Extended ratings

NXPLUS C, the proven gas-insulated medium-voltage switchgear with more than 90,000 panels in 110 countries, is offering further options for flexible switchgear configuration with a new circuit-breaker panel in a narrow design, a new air-insulated transfer metering panel, as well as a new auxiliary transformer panel.

The new generations of type 3AE4 circuit-breakers, disconnectors, and switch-disconnectors are now also installed in the already known switchgear panels up to and including 1,250 A for single- and double-busbar switchgear. Ratings have been extended to 17.5 kV, 31.5 kA, 3 s, and 24 kV, 25 kA, 3 s. Thus, new panel versions are available: Circuit-breaker panels from 630 A to 1,250 A, disconnector panels from 630 A to 1,250 A, and bus sectionalisers (single- or double-panel designs) of 1,000 A and 1,250 A. The portfolio has been expanded with a new switch-disconnector panel (with HV HRC fuses), a metering panel, a ring-main panel, as well as a vacuum contactor panel (with HV HRC fuses). As a completely new voltage level, ratings of 36 (38) kV, 25 kA, 3 s are now also available for NXPLUS C. In this new voltage level, NXPLUS C switchgear starts with a circuit-breaker panel from 630 A to 1,250 A, a disconnector panel from 630 A to 1,250 A, and a bus sectionalizer of 1,000 A and 1,250 A. Further panel versions will follow. All panel versions feature the clear design of the operating front with a well-structured mimic diagram and colored control elements of the disconnector, the earthing switch, and the main switching device (circuit breaker or vacuum contactor).

With the new cable connection from the rear, space-saving switchgear concepts are now also possible. Cables can be routed from top-rear or bottom-rear, which is beneficial for the connection of three-core cables. Single-pole solid-insulated busbars and single-pole insulated cable connection systems ensure compatibility with the existing NXPLUS C product range.

← siemens.com/nxplusc
EnergyIP Substation Device Management

Reliable version and patch management

The web-browser-based application EnergyIP SDM (Substation Device Management) is part of the EnergyIP Application Suite, powered by MindSphere. Siemens offers a centrally managed SDM platform, where every customer has its own account. This account shows all devices of the customer’s related substations, with data protection and information security as the top priority. SDM can handle existing asset data from SICAM ToolBox II development projects.

EnergyIP ISDM – the Interface for Substation Device Management – is a web-browser-based Java application that can run on any Windows PC in the substation. Every substation has its own local ISDM collector, which creates a specific file with device information for that substation. By uploading the file into the SDM application, customers can effectively achieve transparency of their installed base.

siemens.com/digital-substation

Siprotec and Sicam

Connectivity to MindSphere

Siprotec and Sicam – products and solutions for protection, automation, as well as for power quality and measurement – can be directly and easily connected to MindSphere. MindSphere, the cloud-based, open operating system for the Internet of Things (IoT) from Siemens, fulfills all industry-relevant security standards and offers data analysis, applications and services. Siprotec and Sicam connectivity is enabled by updating its communication firmware with the standardized OPC UA PubSub protocol – no hardware extension is required. By using an IoT gateway, such as Sicam A8000, devices from other manufacturers can also connect with MindSphere. This allows all relevant data from connected devices to be transmitted according to security standards via the OPC UA PubSub protocol to the cloud, where they are available for MindSphere applications.

The Siprotec Dashboard, part of the Grid Diagnostic Suite powered by MindSphere, is one of these applications. It enables transparent processing of grid data in the cloud and provides information from devices, such as Siprotec in a card view. This enables grid operators to analyze status signals, such as protection tripping and safety events, and to optimize their maintenance activities.

siemens.com/siprotec-mindsphere

NEW FEATURES

Connection to MindSphere or other cloud systems via the standardized OPC UA PubSub protocol

• Enhances the transparency of plant and equipment status
• Increases grid availability and service quality
• Meets the most stringent security requirements
Self Optimizing Grid

Intelligent grid automation

Self Optimizing Grid is an innovative solution designed for distribution grids in a semi-decentralized approach. It allows remote operation and control of the stations to ensure high reliability of supply and improve system performance without investing in costly new assets. The solution integrates the intelligent automation functions, such as self healing, load management, automatic source transfer, overload reduction, and area voltage control, into a modular design. By analyzing the current grid status, Self Optimizing Grid offers the possibility of remotely restoring and optimizing the grid configuration.

siemens.com/self-optimizing-grids

EnergyIP Energy Efficiency Analytics

Cloud-based analysis of energy data

EnergyIP EEA (Energy Efficiency Analytics) is a cloud-based solution for high-frequency sampling, real-time monitoring, and web access, as well as big data acquisition and analytics. Operators do not need to install software on their PCs and have no license fees to pay, but still receive unlimited analysis options.

EnergyIP EEA is offered as a modular managed service, where customers can select various levels of service and different applications according to their individual needs. The dashboards and the determined variables are tailored to customers’ needs to enable different industries and companies to obtain the types of analyses that are most relevant to them. For example, if a customer’s process uses compressed air and heat, these core elements will be specifically monitored and analyzed to ensure that these evaluations are significant.

siemens.com/energyip-eea

NEW FEATURES

• Artificial intelligence model for complex processes and forecasts of energy consumption
• Application programming interface for customers to create their own analysis of the data
• Tailored to individual customer needs

NEW FEATURES

• Easy configuration and maintenance using Sicam PAS predefined algorithm and logics
• Visualization of grid topology as an HMI in Sicam SCC
• Integration of different motorized primary equipment into the automation system
• Support of compensated distribution grids and specific earth-fault treatment
• Evaluation of grid status and closed-loop automation for self healing, load management and area voltage control
• Simulation mode for test operation and offline operation
To master the challenges of the digital world, today’s electrical power distribution systems not only deliver power, but also data. The Sivacon S8 low-voltage switchboard with the integrated Simaris control diagnostics station supports the connection to the digital industrial environment. Simaris control, the digital twin of Sivacon S8, enables all components to be digitally operated, monitored, and parameterized. Status information and measurement data are presented clearly, creating high transparency all the way to the individual feeders. Detailed warnings and fault signals allow for fast diagnosis of fault causes. Statistical data help optimize and plan maintenance. Sensor data such as temperature values are also visualized in order to reduce downtime. The switchboard’s energy demand can be analyzed and optimized using the consumption values of the feeders. Changes to the switchboard can also be reproduced on the digital twin. The captured data, such as status information and energy data, are not only available for on-site diagnostics and control. They can also be reliably transmitted to higher-level automation and energy management systems, as well as to cloud-based analysis systems, such as MindSphere. Continuous monitoring and predictive maintenance ensure increased switchboard availability.

Sivacon S8 is design verified in accordance with IEC 61439-2 and stands for safety at a high level. The verification with testing under conditions of arcing in accordance with IEC/TR 61641 ensures personnel safety. The active protection system against internal arcing detects and quenches an arc fault quickly and reliably. The patented forced-cooling technology reduces derating, and the low temperature profile inside a motor control center (MCC) ensures the long-term operation of all electronic devices.

Sivacon S8 offers solutions for all requirements. The flexible modules allow for the simple exchange or addition of functional units. The withdrawable design in particular ensures a high level of flexibility during operation. In addition, the new frequency converter panel with the Sinamics frequency converters of the G120 series – tested in accordance with IEC 61439 and with arcing class B – offers a flexible and safe solution for your switchboard.

siemens.com/sivacon-S8
Whether it is for an infrastructure or an industrial application, the Sivacon 8PS busbar trunking systems provide an alternative to cables that is superior both technologically and economically. They are highly flexible both during the planning process and in operation. Their compact design enables a more space-saving installation compared with cables.

During operation, outgoing feeders can be varied by means of flexible-use tap-off units. In order to generate the data required for efficient energy management, communication-capable measuring and switching devices can be integrated into these tap-off units. In addition, the decentralized installation with switching devices close to the consumers makes operation more transparent, and faults are easier to eliminate.

Innovative software tools support the operator throughout the entire project cycle. With the Simaris sketch software tool, it is easy to create three-dimensional line routing plans for the busbar trunking systems. BIM (Building Information Modeling) data are available for a consistent database. The digital twin of the power distribution system therefore integrates into comprehensive superior building designs for efficient planning, implementation, and maintenance. Plant extensions or modifications are easy to plan and implement using the Simaris planning tools.

For a simple and high-quality installation and documentation, the BusbarCheck installation app is available. This provides the installer with necessary information, such as the installation instructions. Furthermore, every junction can be identified and visually documented. From this, an electronic bolt protocol detailing each step of the installation can then be produced at the push of a button, and handed over to the customer as documentation of the high-quality installation.

siemens.com/busbar
By connecting machines and physical infrastructure to the digital world, MindSphere provides powerful industrial applications with advanced analytics and digital services to unleash increased productivity and efficiency across entire businesses.
Every machine and system in a business provides a wealth of data with benefits yet to be fully realized. MindSphere, the cloud-based, open IoT operating system from Siemens, enables users to transform this data into productive business results. By connecting machines and physical infrastructure to the digital world, MindSphere provides powerful industrial applications with advanced analytics and digital services to unleash increased productivity and efficiency across the entire business. Customers benefit from the combined global scalability of Siemens as the number one automation provider and the world’s largest cloud providers, including Amazon Web Services and Microsoft Azure.

**MindConnect: Secure connection of hardware and software**

Users require a medium with which to connect machines and plants, as well as databases or enterprise systems, to MindSphere. In addition to the existing solutions MindConnect IoT2040, MindConnect Nano and MindConnect LIB, MindConnect Integration provides a secure way to connect multiple data systems to MindSphere. Examples are historian databases, enterprise resource planning (ERP), manufacturing execution systems (MES), and supervisory control and data acquisition (SCADA) systems. With cloud-based enterprise systems and data historians, MindConnect Integration for On Cloud provides a secure connection between valuable data assets and MindSphere. MindConnect Integration for On Premise systems establishes connectivity through generic and non-generic adapters.

**MindConnect IoT Extension** expands the number of protocols that can communicate with MindSphere. Numerous field protocols are supported out of the box, along with a wide range of hardware. This enables MindSphere connectivity to extend to even more protocols.

**MindAccess: Direct access to development and the use of applications**

MindAccess offers cost-effective and flexible options for building and operating digital products around MindSphere. In addition, MindAccess is the user’s portal to the MindSphere Store, a marketplace for powerful industrial applications from external partners.

With MindAccess IoT Value Plan, users can ingest and visualize immediate real-time data and analytics results in one centralized location, and thereby obtain quick access to MindSphere. They also have the option to connect devices from Siemens and third-party providers to MindSphere – with no development required.

**MindAccess DevOps Plan** provides ultimate flexibility to rapidly develop, test, and operate market-specific applications. The MindAccess Developer Plan offers development intelligence and insight about connected assets or machines.

**Visual Analyzer:** A workflow tool that enriches MindSphere and allows users to design their own workflows to prepare data for further visualization. Rules and trigger actions can be defined using a web-based editor.

**MINDSPHERE COMPONENTS**

- **Data Exploration built on Tableau®:** Connects the Tableau installation to MindSphere – for enhanced data analysis and dashboards. Users can employ Tableau’s analytics capabilities to easily identify problems and root causes.

- **Predictive Learning:** Enables data scientists to build prediction models through machine learning techniques. This allows companies to optimize product quality, reducing potential field failures and performance issues.

- **Report Builder:** A software application used to generate dashboards and reports, improving the utilization and understanding of data. With the Report Builder, customized dashboards and reports can be created for internal use or for end customer facing applications.

- **Visual Analyzer:** Provides an in-depth view of time series data for connected devices and extends the functionality of MindSphere to gain intelligence and insight about connected assets or machines.
teams development space access using highly scalable and cost-effective cloud infrastructure based on Cloud Foundry. By accessing the open MindSphere Application Programming Interfaces (APIs), they can utilize reusable modules including data management, parsing, analytics, and visualization to accelerate time to deployment. MindSphere APIs and analytics for common IoT tasks streamline application development. Following streamlined development of a MindSphere application, the MindAccess Operator Plan enables applications to be seamlessly operated and offered to customers in the MindSphere Store.

MindApps and Applications for MindSphere enable users to configure industrial assets, visualize analytics, and explore insights from analytics data. MindApps are Siemens-developed applications based on broad domain expertise across a wide range of industries. Applications for MindSphere are developed by partners or customers and deployed for dedicated environments, or they can be offered to other customers in the MindSphere Store.

The Product Intelligence MindApp is used to automate insight from product performance data to create actionable intelligence. Product Intelligence creates context by enabling billions of events to be searched and analyzed in seconds. The solution significantly reduces the cost and time spent searching for the source of value chain problems, enabling users to focus on solutions.

MindSphere is supplemented by Siemens’ services. The MindSphere Academy offers a wide range of training sessions to help users quickly get started with MindSphere and ease their MindSphere journey. These range from a basic overview of MindSphere to basic and advanced application developer training and connectivity sessions.

MindSphere Professional Services provides a variety of support options – from ideation workshops to developer support, consulting, and use case sessions. With the support of MindSphere experts, users are well equipped to generate business value with MindSphere.

siemens.com/mindsphere
Industrial Security

With a Siemens product and service offer for industrial security, plant operators can be certain the necessary measures have been implemented at all levels for the protection of productivity.

Industrial Security Services

Prevent to protect your plant

The management of security vulnerabilities affecting your production is an essential part of a broad asset management concept. Machine tools for industry and industrial control systems embed proprietary products, third-party components, and open source software (OSS). These components are regularly affected by security vulnerabilities, which can be exploited to carry out cyberattacks and cause severe disruptions to production. To prevent or inhibit these cyberattacks, appropriate measures need to be put in place: Security norms and standards (e.g. IEC 62443 2-3) provide recommendations to deploy an appropriate vulnerability management process.

Industrial Security Services (ISS) have recently developed an application running on the cloud-based, open IoT-platform MindSphere to identify vulnerabilities affecting OT components, including third-party components, open source software, and Siemens products installed in machine tools and automation systems. Based on the registered components, the new Security Vulnerability App provides a digital security bulletin containing information such as a CVSS score, vulnerability description and impact, patch information, and a vendor link. The application also integrates a security dashboard with charts and figures to support the user with the remediation and closure of vulnerabilities.

The Security Vulnerability App is an IoT solution that monitors your industrial assets, efficiently manages the database with more than 22,000 components, and provides an optimized solution to identify, remediate, and report security vulnerabilities. It complements the existing tool for managing Microsoft patches on Simatic PCS7 and McAfee Application Whitelisting, which have been tested with Sinumerik PCU 50.x, thus providing protection for outdated legacy systems.

siemens.com/plant-security-services
Simatic DCS / SCADA Infrastructure

Innovative archiving of process data

Powerful IT platforms, virtualized systems, and the processing and use of large amounts of data volumes are prerequisites for innovative services in the industrial environment. Simatic DCS/SCADA Infrastructure is a powerful and optionally redundant server platform designed and configured to meet all of the user’s archiving needs. Process Historian is a fully integrated long-term archiving system that enables secure and fast processing of large amounts of process and asset information.

The Information Server application handles reporting and data visualization and also offers the option to flexibly adapt report templates. The turnkey solution significantly shortens the engineering and commissioning phases. The five-year full-service package includes a central contact person, who assists the user, coordinates all support activities, and answers questions regarding third-party components. Additionally, any spare part requirements are covered for the duration of the service agreement.

siemens.com/sidsi
Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

Security information
Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines, and networks. In order to protect plants, systems, machines, and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens’ products and solutions only form one element of such a concept. The customer is responsible to prevent unauthorized access to its plants, systems, machines and networks. Systems, machines, and components should only be connected to the enterprise network or the Internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place. Additionally, Siemens’ guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit siemens.com/industrialsecurity.

ET 200, LOGO!, MindSphere, S7-300, S7-400, S7-1200, S7-1500, SCALANCE, SICAM, SIDRIVE IQ, SIMARIS, SIMATIC, SIMATIC HMI, SIMATIC IT, SIMATIC MV, SIMATIC RF, SIMIT, SIMOTICS, SINAMICS, SINAUT, SINEMA, SIPLUS, SIRIUS, SITOP, SIVACON, SIPROTEC, STEP, TIA, TIA Portal, WinCC are registered trademarks of Siemens AG. Any unauthorized use is prohibited. All other designations in this document may represent trademarks whose use by third parties for their own purposes may violate the proprietary rights of the owner.