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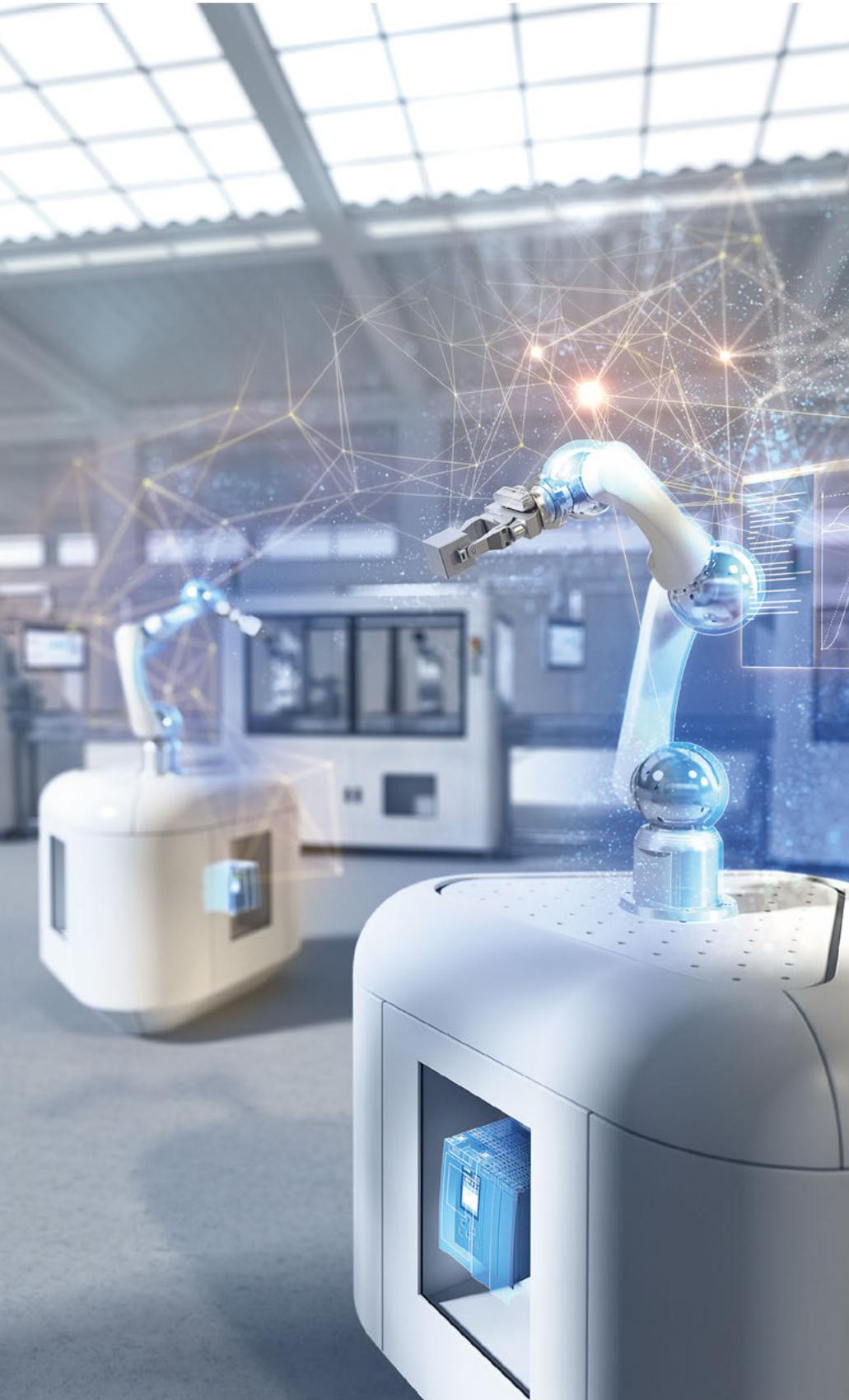
▶ Simulate

# product news

Innovations for the  
Digital Enterprise

April 2021

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



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## Autonomous factory

# On the path to automated control panel building

Manufacturing in the future will demand sustainable, resource-efficient production and great flexibility combined with a high level of productivity. The vision of “Engineering to Zero” is crucial for meeting these requirements. It is based on the use of autonomous machines such as automated guided vehicle systems and autonomous robots with fully automated, customer-oriented manufacturing as the end point.

Siemens WKC, the combination engineering plant, a leading supplier of electrical switchgear in Europe, manufactures more than 40,000 control panels every year for a wide range of customers in the mechanical engineering and plant construction industries, with an average batch size of about 1.5. Controllers and power electronics are combined and assembled into control panels, tested, and delivered to the customer’s site, all in accordance with the customer’s documentation and subject to validity checking.

Although almost every control panel is unique, it is still possible to automate individual stages in the production process. Order-specific information – mechanical and electrical – is transformed into a digital twin of the end product to provide a foundation for all subsequent production and assembly stages at WKC: material logistics, mechanical processing of the chassis, preconnection of cables, electrical assembly, wiring, and testing. These processes are constantly being optimized. For example, the laser obtains individual information from the data in the digital twin that’s created in the preparatory stage in order to autonomously process mounting plates.

### First steps toward autonomous assembly

The team at WKC is currently working on extending the automation process to include assembling the mounting plates. The data sets from the preparatory stage provide information on the height, width, and length of the cable ducts. The difficulty lies in transporting the ducts to the autonomous machines at the right time, at the right length,



and in the right position for assembly on the plates. It is essential to assign “skills” that provide a semantic description of their abilities in the production environment to the autonomous machines so they can “know” exactly what their task is. More complicated stages in the production process such as assembly, for which not all the important information is available, depend on the validity and the level of detail of the digital data. For every control panel component, in other words, it is essential to check in advance to find out if a complete data set is available, and any information that’s missing must be added manually.

A combination of the digital twin and AI-based systems could be the key to compensating for a lack of data consistency. A smart, focused comparison of the digital data with the actual situation won’t just enable gaps in data to be filled; it will also account for tolerances in the manufacturing process that aren’t present in the digital twin. ■

› [siemens.com/futureofautomation](https://www.siemens.com/futureofautomation)

Totally Integrated Automation – Integration<sup>3</sup>

# Working together to advance automation

Sustainably advancing the world of industry: That's long been the driving force behind new developments at Siemens – even 25 years ago, when Totally Integrated Automation (TIA) was introduced. At that time, TIA represented a totally new method of automation that had a lasting impact on automation technology overall. A fundamental element of TIA is consistency based on integrated automation. That's why every element in the portfolio has identical core characteristics to ensure that they will work together perfectly.

## Data transparency through OT/IT integration

Of course, the industry and the associated demands on automation have undergone major changes. We are now in the throes of the fourth industrial revolution, and factories are generating huge volumes of data. This data is the key to optimization and competitiveness, but at the same time the amount of data and the variety of data sources are rapidly growing. That's why it is a major challenge to get the most out of the data to meet increasingly refined customer demands, right down to flexible production of single-unit batches.

Data transparency and data quality both have to be good in order to meet these requirements, which is why the integrated approach has been further refined. TIA still represents maximum consistency, harmonizing all components and competencies and ensuring communication between all of these elements. Rather than being confined to the field, this now takes place at all levels through to corporate management level, with a broad scope in place for innovations that are already being thought into today and integrated step-by-step. The result is known as "Integration<sup>3</sup>."

This advance is being achieved through consistent data management, global standards, standardized interfaces, and openness from OT (Operational Technology) to IT (Information Technology). At the production level, in the OT area in other words, sensors and actuators generate a lot of data to enable automation tasks to be performed. And the IT area involves a vast amount of information, by definition. The added value and the basis for new business models lie in combining these two environments so that information from both areas can be used simultaneously. Thanks to an end-to-end range of TIA products – from Simatic controllers to Sinamics frequency converters and Simotics motors and the associated fieldbuses – Siemens offers an infrastructure built up over many years that can gather all information originating in OT. This means that the data are already available in most systems. To communicate with the IT area, Siemens relies on the open standard OPC UA, which not only offers connectivity but also defines standards for data structure with its OPC UA companion specifications. These specifications are easy to implement in TIA Portal using drag-and-drop.

## Flexible and secure from field to cloud

If the basis for communication is provided and the data are available in the right structure, there are multiple opportunities for integration. The machines can be connected to the MES system, or the production data can be transmitted directly to the cloud. The next milestone in OT/IT integration is edge computing. This involves shifting IT technologies to the manufacturing area, where Edge devices have so much computing power that they can run specific applications and orchestrate communication with other parts of the factory. Industrial Edge allows you to evaluate and



analyze all data at the machine, or to preprocess it quickly and instantly. The optimized data points can then be transmitted to the cloud more quickly. That creates new opportunities for users, including centrally installing updates or AI applications for predictive maintenance. Specific services also support users throughout the lifecycle of their machines to reveal hidden potential.

**Solutions for the future**

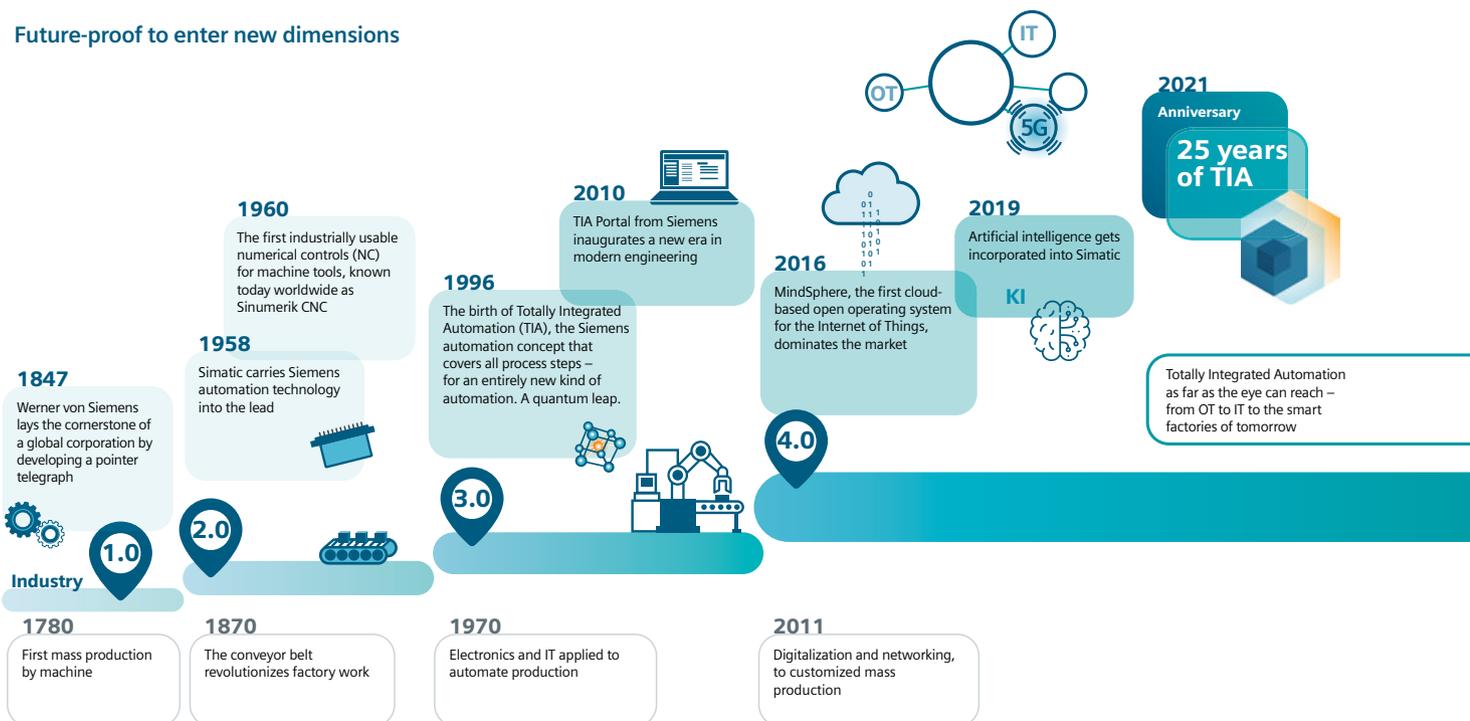
The Totally Integrated Automation approach is Siemens' way of not only responding to change but actively shaping it. Innovations such as artificial intelligence (AI) are already being gradually integrated, and more solutions for the future are being developed. But to use AI applications safely and beneficially in industry, it is essential for machine learning to work in tandem with software, hardware, the appropriate IT infrastructure, and domain and automation expertise. Entirely new opportunities for optimization will come with anomaly recognition or preventive maintenance, from autonomous handling of unfamiliar objects to improved availability and quality assurance. ■

> [siemens.com/tia](https://www.siemens.com/tia)

**Highlights**

- **Maximum data transparency** thanks to consistency, global standards, and uniform interfaces at all levels
- **New business models thanks to OT/IT integration** with OPC UA, cloud connectivity, and edge connections
- Future-proofing thanks to the **integration of innovations** such as artificial intelligence

**Future-proof to enter new dimensions**



TIA Portal Cloud

# The key role of the cloud in the “new normal”

The world of automation is transforming. On the agenda is mobile employment where location is irrelevant as well as virtual commissioning and remote maintenance. That’s why cloud solutions are of inestimable value for dealing with the challenges industry is facing.

TIA Portal Cloud automatically gives users rapid access to the latest version, TIA Portal V17, and the previous versions, TIA Portal V16 and V15.1. TIA Portal Cloud also offers them options such as the fail-safe engineering software Simatic Step 7 Safety, the Simatic Energy Suite for energy monitoring, Simatic S7-PLCSIM Advanced for simulating and testing user programs in a virtual controller, and Simatic Visualization Architect (SiVArc). The cloud also offers users a simple and high-performance test environment for TIA Portal scenarios. Web-based access to TIA Portal in the cloud makes the solution flexible enough to use in all situations. All the customer needs is Internet access, an up-to-date browser, and hardware in the form of a PC or tablet. Other impressive features of TIA Portal Cloud are its low maintenance and high level of data security.

The needs-based payment model that also became available with the introduction of TIA Portal V17 and TIA Portal



Cloud adds lots of extra value for users. If they install TIA Portal locally, user can decide whether they want the standard purchase license or an annual subscription. This on-premises subscription model is based on packages tailored to customer requirements of every kind, from basic machines to complex systems and from relatively simple control tasks to simulation and power management. TIA Portal Cloud is available only via a needs-based subscription model. The services used are covered either by a monthly subscription or on a pay-per-use basis calculated on length of use. ■

> [siemens.com/tia-portal-cloud](https://www.siemens.com/tia-portal-cloud)



Hosting as VM (lift-and-shift)



Pay-per-use  
Sub. monthly

## Highlights

### TIA Portal Cloud and V17

- **Low entry threshold** and low initial investment
- **Freemium to Premium:** Free basic engineering in the cloud
- **TIA Portal V17:** expanded security functions with state-of-the-art security and configuration wizard
- **Collaboration on projects** using the TIA Portal project server and Multiuser
- **Enhanced software quality** thanks to integrated tests with S7-PLCSIM Advanced and TIA Portal Test Suite

## Simulation in automation

# It's time to simulate!



### Highlights

- Simulation and the digital twin **create added values throughout the entire value chain**, not only during virtual commissioning
- The potentials of simulation can be exploited, among other ways, through the **modular portfolio on all levels**, whether machine, line/cell, or factory
- Simulation for automation improves **interdisciplinary collaboration**

Whether it is a shorter time to market, a faster start of production, reduced costs, improved quality, or greater flexibility – most industrial companies have to deal with constantly changing challenges in order to adapt to market changes. Simulation offers crucial answers to these challenges.

Key element in simulation is the digital twin, a virtual representation of the production machine, the production line, or an entire factory. It enables you to build machines more smoothly, make production lines available faster, and get the most out of your production. Simulation and the digital twin are not just relevant during the commissioning phase; they offer added values throughout the entire lifecycle, from design and engineering to setup, operation, and servicing. You can also use a virtual model in many different ways: for example, to evaluate different machine designs, to train operators to ensure a smooth start of production, or to serve as a demonstration model in a virtual showroom.

Collaboration is another important aspect of simulation. To master increasing levels of complexity and respond flexibly to changes, you need collaboration across different disciplines and functional boundaries. The end-to-end simulation portfolio from Siemens facilitates ongoing coordination between all engineers. Thanks to the modularity of the simulation tools, customer specific use cases can be realized. Efficient simulation can be realized at all levels – machine, production line, or factory – throughout the entire lifecycle. The Digital Enterprise portfolio combines the simulation software with the Simatic automation system and TIA Portal. Users can start with simulation at any time to deal with their customer-specific challenges and benefit from what the digital twin has to offer. And best of all, you can implement it in steps. ■

› [siemens.com/simulation](https://www.siemens.com/simulation)

## TIA Portal V17 and Simatic S7 controllers: integrated security functions

# High-level cybersecurity

Cyberthreats to OT and automation systems are increasing every day. TIA Portal and Simatic S7 controllers offer integrated security functions that are being further developed and expanded with version V17. For some security settings, a so-called security by default strategy is already being followed, which also minimizes cyberrisks. With the PLC protection levels, for example, the password assignment is automatically activated, so the user is comfortably guided through the configuration using the wizard. This reduces the risk of errors, offers transparency, and facilitates handling with maximum user-friendliness.

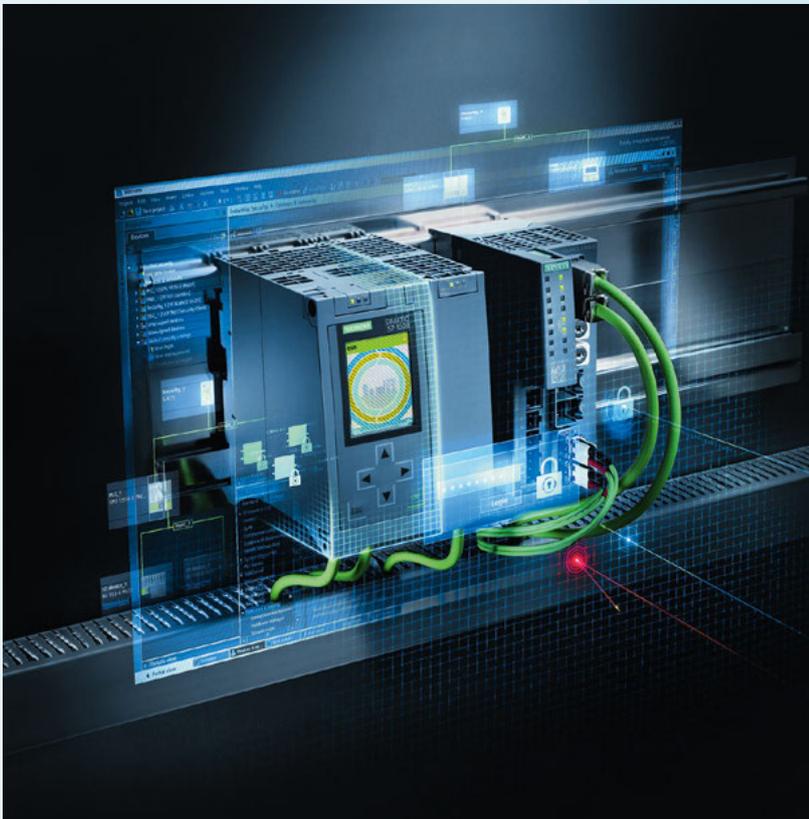
Each user should only be able to access specific devices and functions depending on their role and rights, which is handled by TIA Portal user management. In version V17, users are granted additional function rights to permit a more detailed allocation of rights such as access to safety functions. The UMC (User Management Component) option package offers the opportunity to incorporate user man-

agement in a central user management, for example, Active Directory. Even older devices that support authentication using Simatic Logon can be connected to UMC in version V17.

An additional highlight is the TLS-based protection of Simatic S7 communication between controllers, TIA Portal, and HMI stations. This provides a higher level of security, thanks to the latest security standards (TLS 1.3). It also allows users to encrypt communication and apply their own certificates.

With these security functions integrated in TIA Portal and S7 controller, unauthorized access to the automation system and to the data transfer between them is effectively prevented, thus preventing plant downtimes, production failures, or the loss of intellectual property. ■

► [siemens.com/industrialsecurity](https://www.siemens.com/industrialsecurity)



### Highlights

- **User management and access control** with single sign-on for TIA Portal and HMI
- **Improved certificate management** for OPC UA on S7-1500 CPUs
- **Greater communication security** for PG/PC controller communication
- **Security by default** with Simatic S7 protection levels

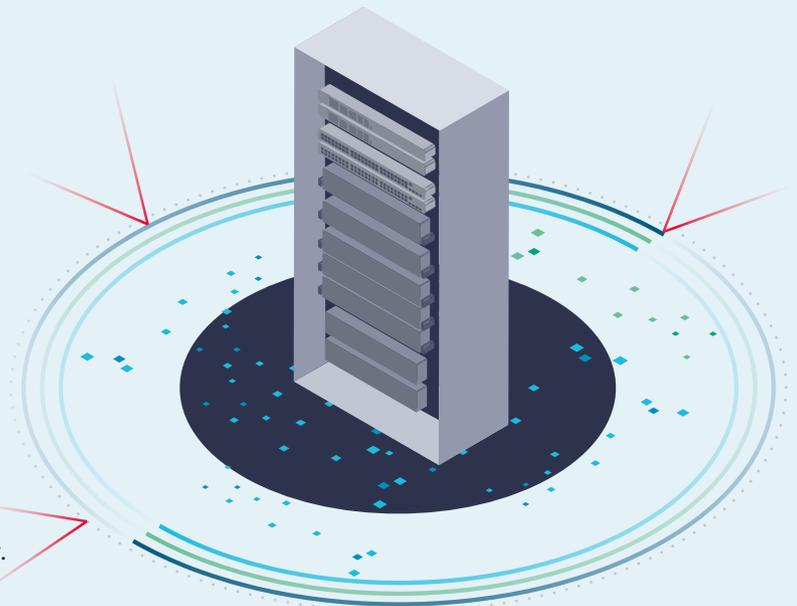
## Industrial DMZ Infrastructure

## Security at all levels



## Highlights

- **Segmentation of IT/OT networks** based on the zones and conduit model in accordance with standard IEC 62443
- **Security by design:** developed in accordance with standard IEC 62443-4-1 to meet all security requirements
- **Security features out of the box:** plant security, network security, system integrity



The Industrial DMZ Infrastructure provides you with a ready-to-run concept for segmenting your IT and OT networks that is implemented on the proven IT platform Industrial Automation DataCenter. This prevents direct access to the automation level by potentially insecure or unmonitored systems. The combined expertise of Siemens experts in the fields of automation, digitalization, and cybersecurity ensures that this solution is optimized for use in production and meets the highest requirements regarding availability and security.

To protect against cyber attacks, Siemens relies on the holistic defense-in-depth concept, which is based on the recommendations of IEC 62443, the leading international standard for security in automation environments. At the heart of the concept is a deeply tiered defense with multiple layers that makes it difficult for attackers to penetrate and cause damage.

Industrial DMZ Infrastructure increases network security by segmenting IT and OT, using next-generation firewalls to implement a zero-trust strategy, and a jump server for remote access. Included log management, backups, end-point protection, and patch management also mean a high level of system integrity. The Industrial DMZ Infrastructure can be expanded on a modular basis to include additional hardware, software, and services, all from a single source and seamlessly coordinated with one another. ■

› [siemens.com/idmz](https://www.siemens.com/idmz)

## Simatic Robot Integrator app / Simatic Robot Library

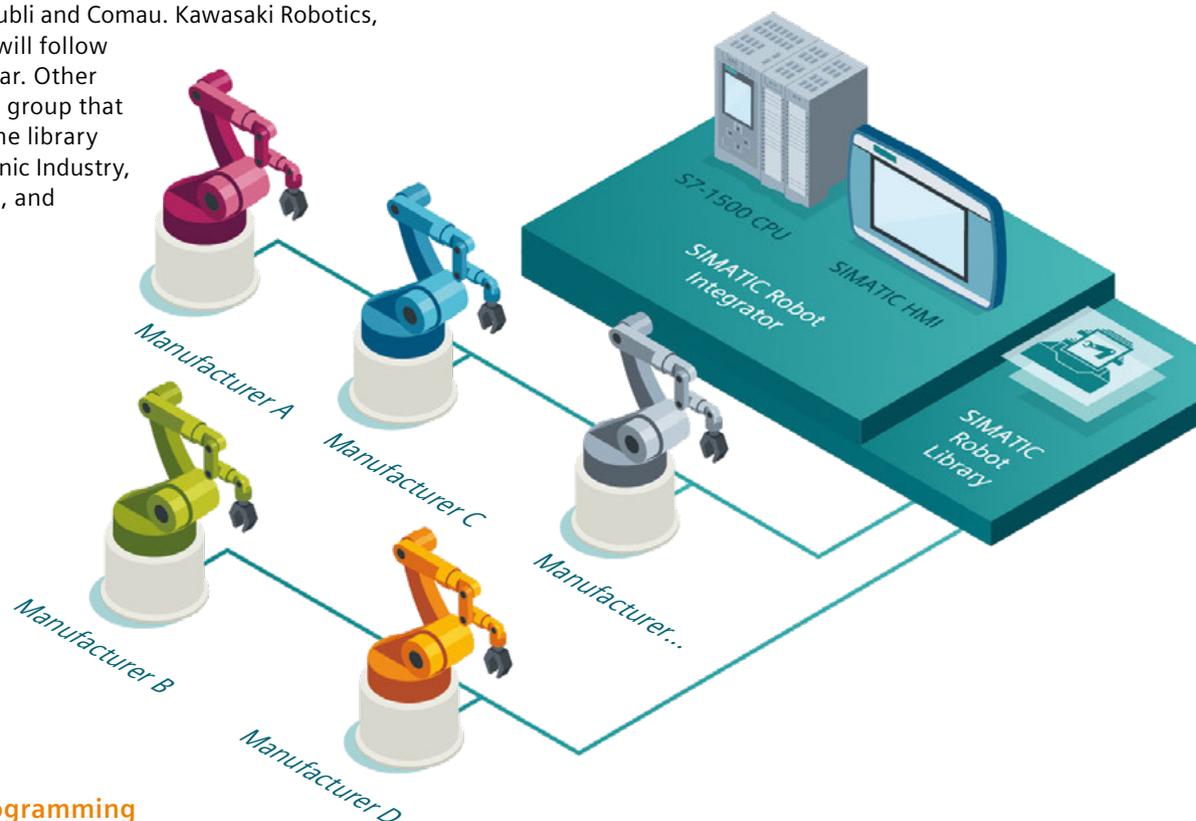
# Easily integrate robots from multiple manufacturers

More and more sectors are using industrial robots. The Simatic Robot Integrator app makes a quick and easy job of integrating robots from different manufacturers in the machine concept, with no need for specialized engineering or programming knowledge or external specialists. Users just need to be familiar with TIA Portal.

The new Simatic Robot Library is the perfect complement to the app. Until now, only a small number of robot manufacturers have provided a TIA Portal library, and you had to change libraries for each manufacturer. Now the standardized robot connection via TIA Portal creates the option for all robot manufacturers to be integrated in Simatic Robotics solutions using the app. The engineering parameters for the robots need to be set up only once, and they can then be reused for different makes. The first robot manufacturers are already on board: Stäubli and Comau. Kawasaki Robotics, Kuka, and ABB Robotics will follow before the end of this year. Other members of the working group that laid the foundation for the library are Epson, Fanuc, Panasonic Industry, Techman Robot, Yamaha, and Yaskawa.

The app uses a shared engineering environment and a single uniform operating philosophy for PLC and robots. This reduces time spent on engineering and on training operating personnel. Vendor-neutral robot programming and identical faceplates for robots from different manufacturers increase efficiency. Vendor-neutral robot programming also makes it possible to reduce errors when accepting programs – and this also reduces error costs. In addition, users can access all the diagnostic options offered by Simatic controllers, including for the robot cell, which allows optimization of remote maintenance. ■

► [siemens.com/robot-integrator](https://www.siemens.com/robot-integrator)



### Highlights

- Uniform **robot programming in TIA Portal**
- **Simple programming with Simatic HMI** – regardless of robot manufacturer
- **Reduce engineering time by up to 30%**



Siemens Industrial Edge

# Production-level intelligence

More and more companies are understanding the importance of and the need to process and analyze production data on an even larger scale: After all, state-of-the-art production facilities are data factories, and this data is the key to analysis and optimization in digital enterprises. Siemens offers integrated industrial IoT solutions to keep data integration and analysis simple, from production to the cloud, using MindSphere and Industrial Edge. Industrial Edge complements the cloud by enabling local, decentralized data processing and preprocessing directly at the machine. This ensures minimum latency, reduced costs for data storage, and secure handling of sensitive data. Using the central Industrial Edge Marketplace, app developers, system integrators, mechanical engineers, and users can make their applications available and share them with one another.

Industrial Edge takes standards familiar from IT – including central software and device management and high-level language-based data analyses and processing – closer to the data source. As a result, IT administrators can install software in their production systems easily using a highly automated process while remaining completely in control.

A key feature of this solution is decentralized data processing and analysis using Edge devices at the production level or directly integrated into the automation portfolio.

That can be achieved using the edge-capable Simatic HMI Unified Comfort Panel, for example, with apps to expand the panel's functions.

The Edge Management System serves as the central infrastructure for managing hundreds of Edge devices of all kinds – factory-wide and even worldwide. The system can be installed either in the company's own IT infrastructure, for users who place a lot of value on data security and control, or in private or public cloud infrastructures. Edge application software or updates, such as security-critical firmware updates, can be rolled out centrally and remotely via over-the-air updates on connected Edge devices. An extensive user management system assists administrators with the planned rollout and fine assignment of permissions in order to guarantee a high level of system and software availability.

Users can easily port existing software and applications to Industrial Edge, enabling them to benefit from integrated security and connectivity in automation and the cloud. All Edge devices are compatible with the Docker open-source container technology, which can be used to integrate data processing and analysis capabilities based on typical IT functions and high-level languages such as C, C++, Java Python, and Node.js easily and scalably into the automation system. Once programmed, they can run on any

hardware. Protocols such as OPC UA Client/Server, Modbus TCP, TCP/IP, Simatic S7, Sinumerik, Simotion, EtherNet/IP, and MQTT are integrated as standard for data exchanges with automation, production IT, and cloud systems.

### Industrial Edge in use on the customer side

Since September 2020, companies worldwide have been able to access the open Industrial Edge platform as a plug-and-play solution. It was preceded by a phase of close collaboration with a number of pilot customers, one of which was a global steel and technology corporation. Because it has many production facilities spread around the world, it had a growing need for greater transparency in production efficiency and system availability. The appropriate solution had to overcome a number of challenges: a broad product range, a global fleet of machines, some of them quite old, and no maintenance or IT personnel on-site. Industrial Edge was therefore the tool of choice.

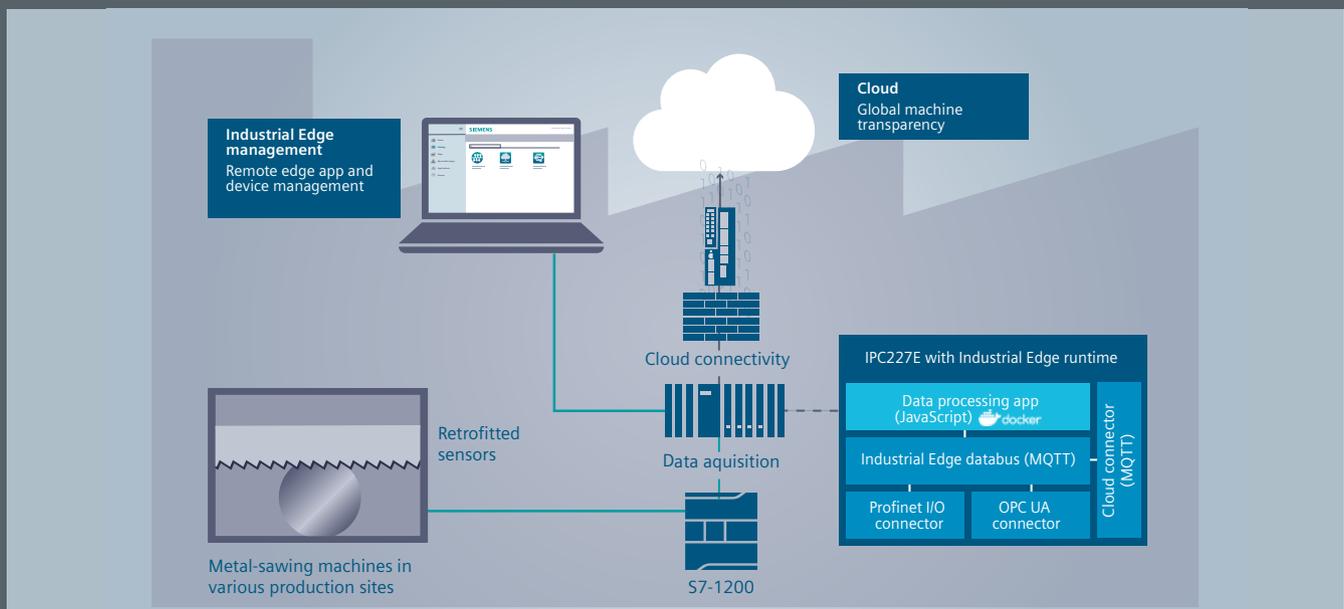
The first stage in this kind of project involves retrofitting the necessary sensor technology to the older machines. Simatic S7-1200 digitizes the analog and digital input signals, and the data obtained is standardized and transmitted via OPC UA to an Edge device for further analysis. A data processing application records, filters, processes, and visualizes the data at the machine level. Central data visualization takes place in the cloud infrastructure, which ensures company-wide standardization and control. The Industrial Edge Management System lets customers manage devices and applications globally via remote

### Highlights

- Efficient **integration of IT and data processing functions** into automation systems
- **Automation of IT processes** to make software available scalably and enable its use in production
- Edge applications for **machine-level data processing, analysis, and exchange**
- In conjunction with cloud systems, **it lays the foundation for new business models in mechanical engineering** thanks to the use of apps for global machine data analysis

access and therefore continue to add new functionalities to their machines to meet the needs of the individual plants. Industrial Edge creates transparency for machines distributed worldwide, because the platform makes it possible to monitor machine availability and displays opportunities to optimize processes and capacity utilization. ■

> [siemens.com/industrial-edge](https://www.siemens.com/industrial-edge)



## Industrial Edge apps

# Perfect for data and device management

The **Simatic Automation Tool** Industrial Edge app creates a connection with all Simatic controllers to enable firmware, PLC codes, and device updates to be installed. The integrated start/stop commands mean that there's no need for operators to be present in person.

The **Data Service** Industrial Edge app makes it easy to configure data structures using a simple wizard. Dates and time sequences can be stored for lengthy periods, and data structures from other edge apps can be reused. The app also allows data to be exchanged between Edge apps, with security provided by a data buffer. ■

› [siemens.com/iioapps](https://siemens.com/iioapps)

## Sinumerik Edge

# Digitalization in machine tool building

Sinumerik Edge enables machine tool operators to collect and process valuable data from their machines and processes. This compact hardware not only works with Sinumerik controllers, it can also be combined with other data sources and MES or ERP systems via PLC or OPC UA or UMATI interfaces. Sinumerik Edge assists by using Sinumerik Edge apps. The **Analyze MyWorkpiece /Monitor** app for quality monitoring automatically records quality-relevant variables during processing, which allows all workpieces to be reviewed. Continuous process monitoring identifies defective workpieces more reliably, earlier, and at a lower cost. The **Analyze MyMachine /Condition** app permits condition-based maintenance. Machine data (such as axis movements, rigidity) are initially used to generate

a mechanical fingerprint of the individual machine. Current data are later compared with the reference model.

The Siemens Software Marketplace offers a fast way to learn about your Edge app and obtain it using click-and-buy. The Marketplace is also being developed into a comprehensive platform for digital applications, so that all the components in a solution can be ordered from one central point. ■

The Siemens Software Marketplace can be found at

› [dex.siemens.com](https://dex.siemens.com)

› [siemens.com/sinumerik-edge](https://siemens.com/sinumerik-edge)



## Highlights

### Simatic Automation Tool

- Update user code and firmware for S7-1200 and S7-1500
- Apply network settings during commissioning

### Data Service

- Structure machine data
- Temporarily store data locally on an Edge device



## Highlights

- Additional **quality control** and **condition-based maintenance** for your machine tool
- Connection to higher-level systems using standard interfaces such as **OPC UA** and **UMATI**
- **Managed devices** offer an open yet secure platform
- Click-and-buy with the **Software Marketplace**

## Simatic Safety Integrated for ET 200AL/ET 200SP

# A growing family

### Highlights

- Can be used up to **PL e/Cat. 4/SIL 3**
- F-DI 4/F-DQ 2: **two fail-safe digital outputs** 24 V DC/2 A, positive/negative switching (M12)
- F-TM Count HF: **integrated safety functions** SOS (Safe Operating Stop), SLS (Safely Limited Speed), SDI (Safe Direction), SSM (Safe Speed Monitor)



The F-DI 4/F-DQ 2 module expands the Simatic ET 200AL distributed I/O product range in protection class IP65/67. This lets you connect secure sensors and actuators to the machine right on site. The M12 connection can be used on the input side to connect either two individual sensors or one two-channel sensor: for example, a position switch or a light curtain.

Pulses must be reliably evaluated in many applications: for example, in connection with speed, position, and flow monitoring. In conjunction with a certified SIN/COS encoder, the compact, fail-safe technology module F-TM Count HF for Simatic ET 200SP can record signals up to a frequency of 200 kHz and forward them to the F-CPU as a numeric value or in units

representing values such as speed, frequency, and cycle duration. The integrated safety functions are run directly, and any violation of conditions is transmitted to the F-CPU. ■

- > [siemens.com/et200al](https://www.siemens.com/et200al)
- > [siemens.com/et200sp](https://www.siemens.com/et200sp)

## Simatic ET 200MP / ET 200SP

# New functions

To enable the Simatic S7-1500/ET 200MP assemblies to be used even more universally and in new applications, they have now been equipped with a whole range of new, expanded performance levels. Depending on the assembly, they can be used in a larger temperature range or at high elevations. Safety shutdown of load groups is now supported for many digital and analog output assemblies, which makes basic, conventionally wired safety solutions possible.

A new firmware version of Simatic ET 200SP MultiFelbus IM is now available. Version 5.1.1 allows users to read and write data sets for operation with Modbus TCP, and users receive

additional information for each module regarding potential limitations on the selected fieldbus when selecting modules from the hardware catalog; fiber-optic bus adapters are also supported. In its new Version V1.2, the multi-fieldbus configuration tool (MFCT) offers expanded diagnostic functions: for example, comparing target and actual values for MF configuration, and a firmware update function for the interface and I/O modules of Simatic ET 200SP and the PN/PN and PN/MF couplers. ■

- > [siemens.com/S7-1500](https://www.siemens.com/S7-1500)
- > [siemens.com/et200mp](https://www.siemens.com/et200mp)
- > [siemens.com/et200sp](https://www.siemens.com/et200sp)

### Highlights

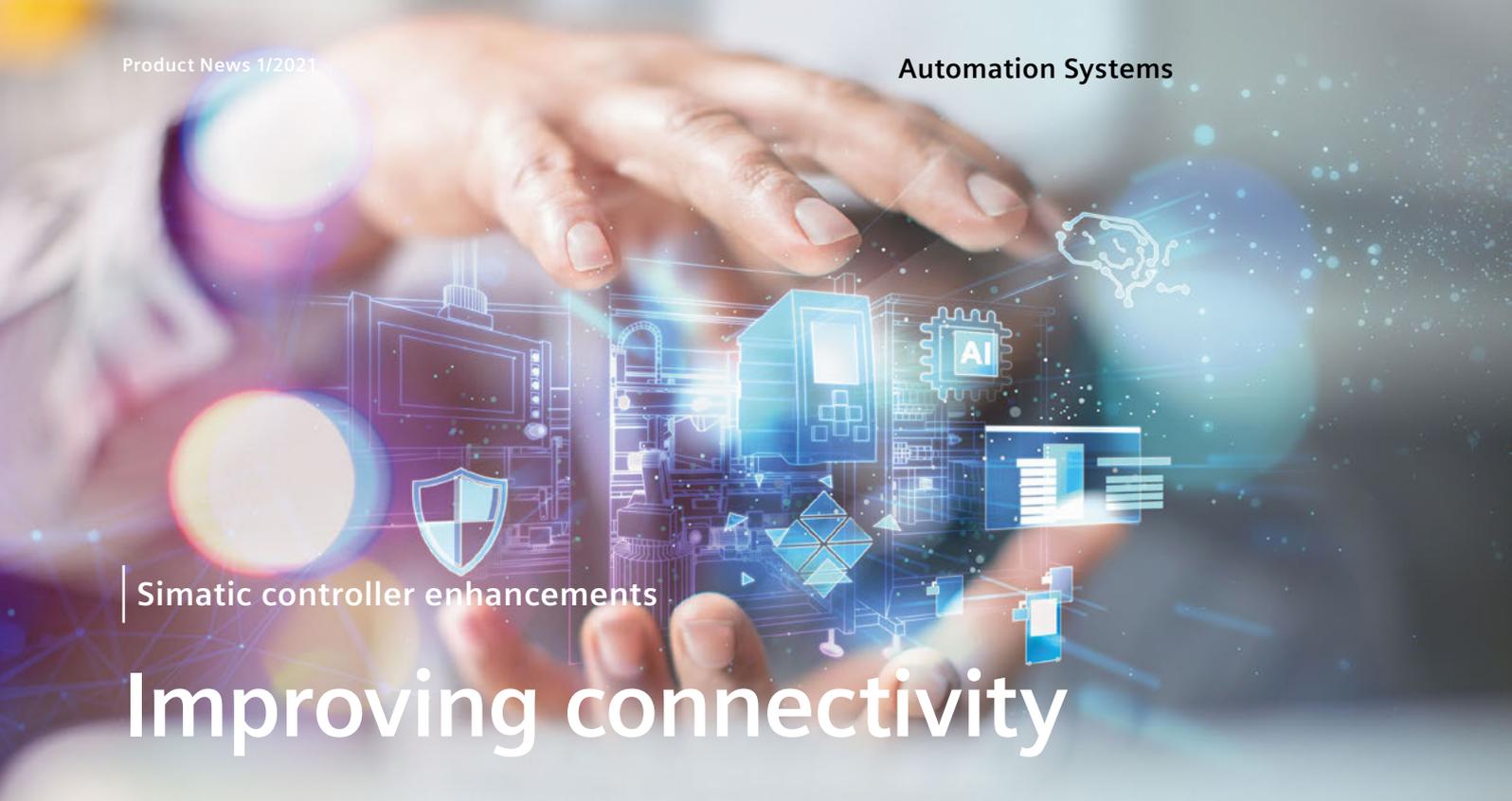
#### MFCT V1.2

- **Very fast scan function** with minimized network loading
- More functions for **selective mass update** and **selective mass activation**
- **Easy operation** and **safe implementation** of the update process

#### S7-1500/ET 200MP

- Temperature range **-30°C to +60°C**
- Can be installed at elevations of **more than 2,000 m**
- Safety shutdown for **SIL CL1/2, Cat2PL c, and Cat3/PL d**





Simatic controller enhancements

# Improving connectivity

Data is among the most valuable assets in a plant. Data collected in automation systems makes it possible to analyze the manufacturing process and identify the actual condition of a machine or plant. Analyzing this data can optimize the process, improve product quality, and make the use of resources more efficient. Not least, this data is the foundation for a variety of innovative solutions, including machine learning for autonomous machines, artificial intelligence, and predictive maintenance. The data is collected, sorted, and made available in the cloud, to which all controllers can establish a connection either natively or via IT mechanisms. Siemens offers a scalable portfolio for connecting to cloud platforms.

LOGO!, the controller for simpler automation tasks, comes with a cloud connection for the first time in Version 8.3. Because it has an Ethernet interface and associated connectivity, LOGO! can be used as a gateway to the cloud, regardless of whether the installation is controlled by LOGO! itself, by Simatic, or by systems from other manufacturers. In this way, the data for which the controller provides only limited storage space can also be transferred to the cloud. This gives users the option to collect data from individual machines in a central location, access distributed systems remotely, implement new models such as pay-per-use, and much more.

## Highlights

- **Cloud connectivity** from Simatic S7-1500, S7-1200, and LOGO! via the standard MQTT protocol
- **New OPC UA functions** in Simatic S7-1500, OPC UA standard for S7-1200
- **50% more program storage** and **three times more data storage** (60 MB) with CPU 1518
- **Easy website creation with View of Things** for CPU parameters – for maintenance and diagnosis right on the machine
- **S7-1500 edge integration with TM MFP:** Simatic Industrial OS, Linux-based, high-level language enhancements C/C++

The Simatic S7-1500 controllers have been equipped with a wide range of new features. The PLCs with DHCP/DNS and OPC UA with GDS have integrated IT connectivity. DHCP (dynamic host configuration protocol) and DNS (domain name system) make administration and addressing easier, even in extended networks with a large number of users. Thanks to OPC UA with Global Discovery Server (GDS), OPC UA certificates can now be managed centrally. Among other things, this makes it easier to commission OPC UA devices, because certificates can be conveniently retrieved from the server. The Alarms & Conditions function was also added to OPC UA. This alarm and event mechanism enables the controller to send a message from the user program if an unexpected event occurs and, for example, to actively notify an employee that the system has malfunctioned. The V2.9 firmware also allows the I-Device functionality to be easily activated and deactivated in the program via a function module. As a result, modules can be added or removed more easily than before in a line.

Another new feature in V2.9 is View of Things, a standard editor for all devices. It allows web visualizations to be easily compiled from graphical elements. The TIA Portal project tree has an additional node that enables users to easily build a website for the CPU with no special programming skills required. Because the View of Things function is also used to create an operating image for the HMI system, the Simatic CPU visualization can be easily transferred to the HMI device.

The methods and integrated diagnostics added to the standard OPC UA offer more connectivity for Simatic S7-1200. A number of software innovations – such as reading and writing ASCII files via the integrated web server, the new GET SMC Info function module, and OUC (open user communication) connections – make the PLC even more flexible.

Integrating edge computing seamlessly into the Simatic S7 controller will be possible in the future with the new Multifunctional Platform (TM MFP) technology module. In addition to the ability to use optional software packages/applications (such as Proneta) and Edge apps (such as Simatic FlowCreator), the tool is also open to customer-specific high-level language enhancements to make protocol adjustments or to preprocess data. Thanks to

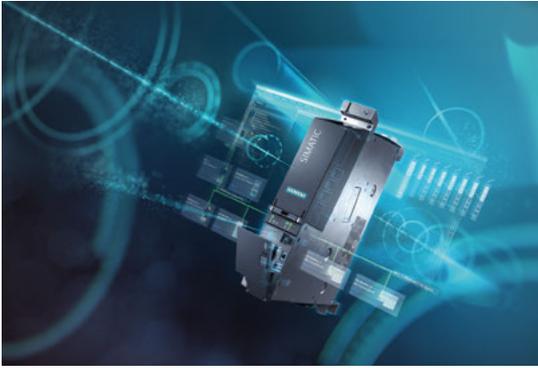
Edge Runtime, Simatic S7-1500 TM MFP can handle Siemens Industrial Edge applications on the control level and can be connected centrally to any Simatic S7-1500-CPU (1511 to 1518) with scalability. The backplane bus permits high-performance data exchanges in real time. It is also possible to communicate with any Simatic S7-1200 and the Simatic Drive Controller via Ethernet and process their data right on the controller. ■

> [siemens.com/s7-1500](https://www.siemens.com/s7-1500)

> [siemens.com/s7-1200](https://www.siemens.com/s7-1200)

> [siemens.com/logo](https://www.siemens.com/logo)





## Technology CPUs / portfolio additions

# Scalable motion control solutions

Some products require machines and production lines that can be quickly and easily adapted to different formats, sizes, product types, and production processes. For complex, high-end motion control applications that impose high demands on performance, axis quality structures, and synchronism functionalities, the Advanced Controller portfolio with the new Simatic CPU S7-1518T/TF provides an optimal solution.

The Cross-PLC Synchronous Operation function is available in all technology CPUs and makes it possible to perform synchronous gearing or camming between axes across multiple CPUs. This makes it easier to implement modular automation concepts and distribute computing power across multiple CPUs in the Advanced, Distributed, and Driver Controller families. Additional functions were added to the cam editor. You can now comfortably conduct detailed diagnostics down to the element level and display them in graphical or tabular format. Bode diagrams also simplify commissioning and drive optimization. ■

› [siemens.com/simatic-technology](https://www.siemens.com/simatic-technology)

## Highlights

- Functional enhancements to the **CPU 1504D TF and CPU 1507D TF drive controllers** as a drive-specific design
- **CPU 1515SP PC2 T and CPU 1515SP PC2 TF distributed controllers** bundled with WinCC Runtime Advanced
- Addition of **synchronization functions and support for linear motors**

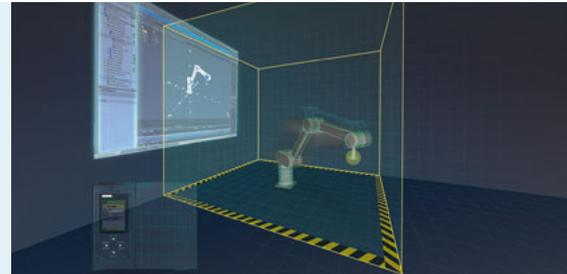
## Simatic Safe Kinematics V2.0

# Robots – Safety without limits

Industrial robots often work in production cells surrounded by protective fences to separate operators from the hazard zones in the cells. This means that users have to decide which is more important: saving space or paying for more robust barriers.

Simatic Safe Kinematics makes it possible to optimize both choices. A safe zone-monitoring system detects collisions between the robot and virtual zones modeled ahead of time and shuts down the robot before it reaches the protective fence. This allows fences to be installed closer to the robot. It optimizes the footprint and saves money, because more economical barriers can be used, including none at all, depending on the application. ■

› [siemens.com/safe-kinematics](https://www.siemens.com/safe-kinematics)



## Highlights

- **Fail-safe motion monitoring** of predefined kinematics with up to 12 interpolating axes in **cartesian space**
- **Implementation of flexible zone concepts** with the help of safe zone monitoring
- **Safe velocity monitoring** for any point on the robot, tool, and workpiece
- **Safe orientation monitoring**: for example, to monitor the orientation of welding devices

## Calibration Kit TM ECC CCS2

# Easy solution for charging DC electric vehicles

### Highlights

- **Optimized vehicle charging infrastructure communication** in the SLAC phase in accordance with CHARIN and DIN SPEC 70121 recommendations
- Semi-automated calibration of the CP signal to **-75 dB/Hz with accuracy of ±3 dB**
- **Cable length up to 30 m**
- **Simplified calibration process** with no spectrum analyzer

The TM ECC CCS2 calibration kit gives you an easy plug-and-play solution for calibrating the CCS2-DC charging control process. In conjunction with the TIA Portal function block ECC Calibration, the kit lets you modify the powerline signal for vehicle communication to suit the specific properties of the charging station (for example, cable length, cable type) in accordance with the requirements of CHARIN and DIN SPEC 70121. The calibration kit can be used in all DC charging stations with a Simatic ET 200SP TM ECC PL ST DC charge controller.

Using the calibration kit lets you charge electric vehicles with DC via a central Simatic industrial controller. Machine builders and end users benefit equally: The engineering effort for machine builders is significantly reduced, which saves costs, and charge point operators can enjoy a shorter time to market and experience less downtime. The benefit for the drivers lies in stable and reliable charging processes for their electric vehicles. ■

› [siemens.com/ecc](https://www.siemens.com/ecc)

## Simatic Field PG M6

# Also available in an LTSC version

With its robust magnesium enclosure, the semi-ruggedized Simatic Field PG M6 is ideally equipped for mobile use in harsh environments. Because it has all the important automation interfaces, it can be connected to machines and systems via either Profibus or two fast Profinet interfaces. It also supports serial connections. The Simatic memory cards can be deleted and programmed right in the appropriate slots. The necessary Simatic software, the TIA Portal engineering framework, and Sinema RC are preinstalled.

The Field PG M6 has been expanded to include new properties: As before, it is available as a trial version with no operating system and as a TIA Portal or combination version with Windows 10 or it is now also available as a combination version with Windows 10 LTSC. The Industry Mall and the TIA Selection Tool configurators have also been updated. These also include a CCC-certified Chinese version with a line cable. ■

› [siemens.com/simatic-pg](https://www.siemens.com/simatic-pg)

### Highlights

- New **Windows 10 IoT Enterprise 2019 LTSC, 64 Bit** operating system option
- Accessories available to order expanded to include **32 GB DDR4 SDRAM memory module**
- Versions with **TIA Portal V17 in the preparation phase**



## Simatic WinCC Unified V17

# More options means more flexibility



In the new Simatic WinCC Unified version (V17), Siemens also supports flexible remote access to visualizations with HMI Unified Comfort panels. Multiple authorized users can access the visualization directly via modern HTML5-compatible web browsers without having to install additional applications or programs, and they can operate the machine locally, independent of the display. Machines can also be operated via the company intranet, making workflows more efficient in extensive plants.

In many areas of manufacturing, employees face the challenge of having to keep an eye on multiple machines and processes at the same time. The Collaboration option in Simatic WinCC Unified now allows them to implement concepts for visualization across machines or for monitoring lines much more efficiently. The engineering process directly links an existing image of another WinCC station, regardless of whether it is an HMI Unified Comfort panel or a PC-based system. Depending on the operating concept and navigation implementation, Simatic WinCC Unified V17 provides more options that increase flexibility, enabling

users to display the visualization of another station and integrate detailed images into their own visualizations through image windowing. Important information from upstream or downstream machines can therefore be integrated into the local operation, or visualizations of individual machines can be incorporated into a complete line overview. This reduces configuration work by using existing images for other machines. The Collaboration functionality also significantly increases value during operation. Machine operators don't have to log in repeatedly, because their user rights are preset in standard roles. This makes it easier to work with different operator control units (see graphic, p. 21), eliminates unnecessary travel, reduces operator errors, and thereby helps improve productivity throughout the line or plant.

In certain situations, the customary control and monitoring functions that use operator panels or even PC systems are not displayed: for example, where space is especially tight or stations are difficult to access (such as water pumping stations in remote locations) that only require temporary

monitoring and whose display is not time-critical. When it comes to displaying and analyzing the data from a Simatic S7-1500 controller, the web server integrated into the CPU allows users to run images generated in TIA Portal as web applications. These images created specifically for a particular customer application can then be easily combined in graphical form with the aid of View of Things and with no programming skills required. Users create the images they need for the controller in TIA Portal with the elements supported for the CPU: for example, SVG graphics and input/output fields. They use the same image editor tool for this process that are employed for the panel and the PC system. To obtain the visualization in the browser on a mobile device, the user also connects to the controller via a secure communication link. Web images created in View of Things can therefore be used to temporarily monitor and control the most important parameters of a unit. Service personnel can then adapt controller parameters via remote access: for example, in the event of a malfunction.

Another WinCC Unified option makes it easier to trace user actions for quality assurance and documenting purposes when process values change. WinCC Unified Audit places the data relevant to the audit trail in a protected log and provides it in a report, if needed.

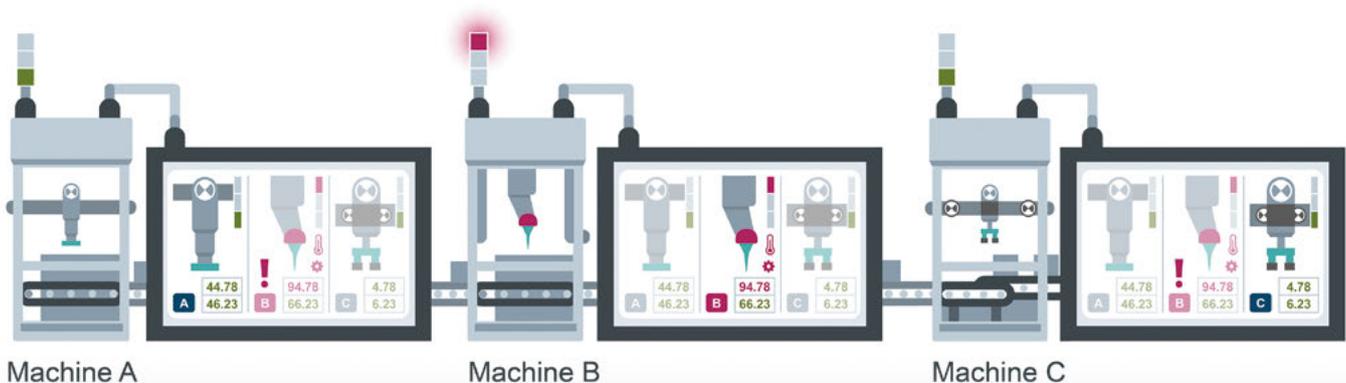
When generating platform-neutral visualization solutions that can be flexibly adapted to the requirements of different applications or users, it is important to protect both the internal interfaces and access to the plant visualization. Simatic WinCC Unified consistently relies on secure communication by means of certificates for linking controllers and collaborating among multiple Unified stations, as well as for remote access to the visualization from browsers.

## Highlights

- **WinCC Unified Client** for flexible remote access to HMI Unified Comfort panels and WinCC Unified PC stations from web browsers – with no additional apps or plug-ins
- **WinCC Unified Collaboration** for directly integrating images of other panel- or PC-based WinCC Unified stations in order to set up distributed configurations
- **View of Things** for easily creating web images for the Simatic S7-1500 web server in TIA Portal
- **Secure connections**, use of certificates, and individually configurable user management

User rights can also be individually configured based on roles and groups, from pure observation and accessing individual machines to full user rights for the entire plant. Existing Windows users and groups can also be imported when integrating the user management system into a central IT solution. ■

> [siemens.com/wincc-unified](https://www.siemens.com/wincc-unified)



## Simatic WinCC V7.5 SP2

# Even more SCADA

Plant operators need maximum process transparency in order to increase their productivity and efficiency in processes even more. That's why Simatic WinCC V7.5 SP2 supports users with numerous functional enhancements for traceability, action tracking, data communication, and usability.

Among other things, the functions for commenting on and acknowledging messages during runtime and documenting user actions in the WinCC Audit option have been expanded. Expansions in the interfaces also ensure the platform- and software-independent connectivity of the SCADA system with cloud and IT systems. With the new WinCC V7.5 SP2 REST interface, users can connect data sources via the REST API and therefore use REST, a widely used IT standard for web services. Users also benefit from new functions that relieve them of routine tasks, including multi-object generation, optimizations, and expansions for the WinCC WebNavigator – and it is also easier to import data from TIA Portal. ■

› [siemens.com/wincc-v7](https://www.siemens.com/wincc-v7)



## Highlights

- **System-wide traceability** in the Simatic WinCC basic system
- **Improved action tracking** with the WinCC Audit option
- **Advanced functions in the day simulator** for example, for testing and commissioning
- Efficient engineering thanks to automated routines and the **Delta Publishing function in the WebNavigator** for the standard functionality

## Simatic IPC847E

# Top performance and flexibility in the industrial environment



## Highlights

- **Maximum system performance** with ninth-generation Intel Xenon E-2200 processors
- Optional **AC power supply up to 850 W**
- **Maximum expandability** (3 x graphic interface, 3 x LAN, 6 x USB, up to 11 x PCI(e))

When it comes to rapidly processing and storing very large volumes of data, performing challenging visualization tasks, and individually expanding the industrial PC with numerous cards or modules, the Simatic IPC847E high-end IPC offers the ideal balance between high-performance innovative technology and outstanding investment protection. In addition, the IPC is designed for even more demanding applications such as image processing and AI applications with high-end graphics cards. ■

› [siemens.com/ipc847e](https://www.siemens.com/ipc847e)

## Simatic Industrial Flat Panel

# More than just an industrial monitor with a state-of-the-art design

Simatic Industrial Flat Panels are outstanding industrial monitors with a rapid response time for real-time operator control and monitoring. The product range has now been expanded to include the Simatic IFP1200 12" panel. The Multitouch panels come with a widescreen display with an end-to-end glass front and projected-capacitive touch technology, which are ideal for innovative operating concepts. The scratch-resistant, nonreflective surface lets you easily read all content, even under challenging light conditions. Simatic Industrial Flat Panels can be used safely even in harsh environments, because the monitor automatically detects inadvertent contact. You can also operate the panel while wearing gloves. ■

› [siemens.com/ifpv2](https://www.siemens.com/ifpv2)



## Highlights

- **Slim front design now also available in 12":** 12" (1,280 × 800), 15"/19"/22"/24" in full-HD resolution (1,920 × 1,080)
- **Built-in or PRO versions**
- **Can be placed up to 100 m away:** HDBaseT V2 technology

## Simatic IOT2050

# Smart gateway for edge and cloud connections



## Highlights

### Starter kit

- Plug-in power supply
- Micro-SD card
- Shield Interface

IoT gateways let you turn future-oriented production ideas into reality using an existing system. You can enjoy greatly improved performance with the new generation: Simatic IOT2050 combines the latest generation of processors with 2 GB DDR4-RAM, integrated eMMC memory, and Simatic Industrial OS preinstalled. Simatic IOT2050 supports a range of communication protocols and programming languages. Thanks to the smart interface, you can standardize communication between the various data sources, analyze data on-site, and forward it to the appropriate locations. As a result, you can use Simatic IOT2050 for both preventive maintenance and linking production to the ERP level. A starter kit will become available at midyear to provide a turnkey setup solution. ■

› [siemens.com/iot2050](https://www.siemens.com/iot2050)



## Braumat / Sistar V8.0 SP1

## The perfect blend



## Highlights

- New **OPC UA connection**
- **Mobile use** based on WinCC Unified
- Connection to the **Alarm Control Center**
- **Key leading indicators (KLI)** with PM quality

The new service pack (SP1) for the Braumat V8.0 and Sistar V8.0 process control systems offers new functions with greater flexibility for dairies and other food producers. In a modern dairy, the dairy technician sits in the control station, but what happens if an inspection is coming up? The process has to remain under control even during their absence. The new SP1 provides the necessary control because the most important times, states, switch-on triggers, and other values from the process control system can now be displayed on smartphones using HTML5 technology for web browsers such as Chrome.

With SP1, the WinCC Unified visualization software user interface is available for the first time in the Sistar and Braumat control system. The smartphone images are designed using preconfigured image elements in TIA Portal. Users don't need an additional Braumat or Sistar license, just a one-time WinCC Unified server license for all connected mobile devices. For high flexibility, the Braumat and Sistar control systems also have an OPC UA interface in the new version. ■

► [siemens.com/braumat](https://www.siemens.com/braumat)

## Simatic CN 4100

## Maximum Connectivity

The innovative communication node Simatic CN 4100 is a flexible and high-performance platform for all communication tasks. With its scalable, modular design Simatic CN 4100 ensures efficient process control design by connecting third-party systems. Redundantly designed components increase plant availability and ensure uptime. In addition, the integrated dual redundancy link results in a small footprint and reduced wiring effort. Simatic CN 4100 is fully integrated into the process control system Simatic PCS neo. The connection to the process control system Simatic PCS 7 is realized with the lean engineering tool Simatic CNET and a provided Simatic PCS 7 library. ■

► [siemens.com/process-control](https://www.siemens.com/process-control)



## Highlights

- **Ensured support during the entire lifecycle**
- A wide range of **connectivity options with Simatic PCS neo**
- Temperature range: **-30°C to +60°C**

## Simatic ET 200SP HA

## High-performance I/O system



The high-performance I/O system Simatic ET 200SP perfectly meets the requirements of the process industries but also offers clear benefits for all applications in discrete industries where robustness and highest availability are a must. Redundantly designed components, online module replacement, and configuration in run (CiR) as well as online firmware updates significantly increase the availability of plants. The innovative backplane bus concept without any active components reduces the probability of failures of the system. The compact and modular design of the system, the tool-free connection using push-in terminals, and fixed wiring ensure efficient installation and assembly. Furthermore, it allows an exact adaptation to your needs and reduces the footprint of the entire system to a minimum.

New additions to the Simatic ET 200SP HA can now be implemented in sophisticated applications. Intrinsically safe I/O modules for use in explosive areas and applications are available in different versions.

Separate Ex-barriers with the corresponding complex wiring and space requirements are no longer needed with the new Ex-modules. The modules can be installed up to ATEX zone 2 and connected via intrinsically safe circuits to field devices up to zone 0.

Fail-safe I/O-modules permit safety-related monitoring and thus a safe shut-down of the plant. The communication and integration into the process control system is enabled with the proven Simatic Safety Integrated technology. Fail-safe modules are available as 16-channel digital input and 10-channel digital output versions. The upcoming fail-safe analog input module will have 8 channels including HART communication. All modules are SIL 3 certified for each channel.

A new Sub-D terminal block with 32x I/O connections allows fast connection of process signals, fast wiring, and simple field connection. ■

› [siemens.com/simatic-et200spha](https://www.siemens.com/simatic-et200spha)

### Highlights

- **Profinet R1 interface** and **I/O redundancy**
- Extended temperature range: **-40°C to +70°C**
- Up to **32 channels per module** and up to **56 modules per station**
- Installation up to **Ex-zone 2**
- Wide range of available **I/O modules**
- **Channel-specific diagnostic functions**

## Simatic PCS 7 V9.1 Distributed Control System

# Room for new perspectives



The Simatic PCS 7 process control system takes the next step toward greater scalability, availability, and safety in process automation. The new version V9.1 supports the use of Simatic ET 200SP HA fail-safe I/Os, so users can now benefit from the advantages of the powerful peripheral system in safety applications.

The consistent use of types and instances ensures greater efficiency and consistent plant and automation planning because integrated mass data engineering significantly reduces the risk of errors. Proactive lifecycle management always keeps the process control technology fully up-to-date and contributes to improved cybersecurity. ■

› [siemens.com/pcs7](https://www.siemens.com/pcs7)

### Highlights

- **Fail-safe applications** with the powerful Simatic ET 200SP HA peripheral system
- **Efficient upgrade strategies** thanks to customized tools and services for proactive lifecycle management
- **Technological engineering** with Simatic PCS 7 Plant Automation Accelerator V3.1
- Support for Microsoft Windows 10 Enterprise LTSC 2019 and Windows Server 2019 – **for greater IT security and future viability**

## Simit Simulation Platform

# Virtual plant or machine always at hand

Simit enables the creation of simulation models of machines and plants in the manufacturing and process industry. This makes it possible to virtually test automation software and practice how to use it. Thanks to Simit, the digital twin created for this purpose can be used flexibly: for example, in the home office.

Simit can be expanded and optimized with individually reservable service modules: Siemens offers customized services that extend all the way to a complete turnkey virtual plant. The simulation platform will undergo continuous development, and a new release will appear in the summer of 2021. ■

› [siemens.com/simit](https://www.siemens.com/simit)

### Highlights

- **Virtual commissioning** with Simit, even with no access to real plants and machines
- Extensive integration and use of existing data **for the easy creation of the digital twin**
- Operator training system (OTS) for the safe and **efficient training of plant personnel** in a virtual environment
- **New service:** The Component Development Center (CDC) helps users **create individual simulation components**



## XHQ Operations Intelligence Software

# Turn data into actionable information

XHQ operations intelligence software integrates applications for various process, engineering, maintenance, and advanced analytics into a single entry point. Enterprises get easy access to complex data from various sources and are empowered to make better informed decisions.

The latest XHQ release, version 6.1, offers enhanced functionalities and new features that benefit existing and new customers. As an example, Visual Tile Composer (VTC) is a new feature that enables users to easily assemble shareable views by using modern

browsers. The time required for configuring solutions is reduced due to enhancements in the workbench. XHQ now has more capabilities to support shift reporting and handover use cases. Edge connectivity and web server architecture have been enhanced as well, to enable cloud and PlantSight integration. Furthermore, numerous IT and security hardening updates round out the new version and make XHQ 6.1 more secure and reliable. ■

› [siemens.com/xhq](https://www.siemens.com/xhq)



### Highlights

- **Faster time to value** with personalization
- **Accelerated** deployment
- **Reduced** IT overhead



## Moby.Check

# Create digital checklists

### Highlights

- **Quick digitalization** of existing checklists
- **Minimal training effort**
- **Low costs** thanks to stand-alone solution
- **Independent of control system**

Working with collaboration partner Lo.Go.Motion, Siemens helps plant operators create individual checklists for service and maintenance measures and for production and logistics processes. The stand-alone Moby.Check software solution makes it easy to digitalize templates from MS Office. This means that they are ready to use by personnel in the field in a short time. The intuitive use of the desktop interface minimizes the training required for users – which reduces costs and saves time.

Moby.Check can be integrated quickly and easily into existing maintenance and ERP systems. The solution not only works independent of the control system, it also provides bidirectional interfaces to many systems, including SAP, OSI PI, and LIMS. In addition, Moby.Check supports Android and Microsoft operating systems, an absolute must when it comes to working with mobile devices such as tablets and smartphones in the field. ■

› [siemens.com/comos](https://www.siemens.com/comos)

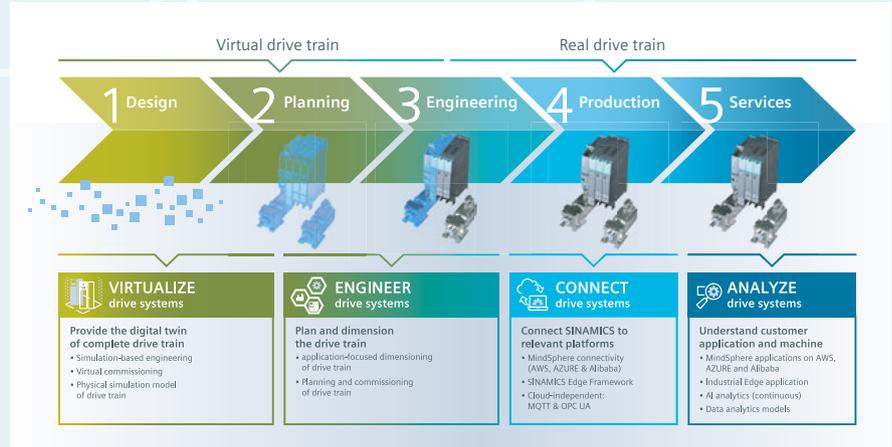
## Digitalization of drive systems

# Drive simulation: fast, easy, validated

Digitalization in manufacturing with software-aided solutions is now an indispensable part of state-of-the-art industries. This applies to drive technology as well as automation technology. In this context, digitalization means much more than the Internet of Things. Integrated digitalization also means using functioning solutions to plan or virtualize machines and systems right from the beginning of the engineering workflow.

Using Sinamics DriveSim Basic, you can simulate, adapt, and optimize specific drive combinations and their behavior in machines and systems – even before a definitive product selection has been made. The virtual drive model represents the drives, for example, Sinamics S120 or G120, including the motor. The focus of the model application is on the drive environment and supporting the customer's application. It provides a reliable representation of the drive system with the level of detail required for the virtual setup of the PLC controller with familiar Profidrive telegrams or complex mechanicals on the virtual driveshaft.

The necessary drive parameters and the interfaces known from the real-world application are available for the



simulation. Users configure the part of the drive they need for their simulation purpose; there's no need for a full virtual commissioning. These models link seamlessly to the existing drive documentation, that is, the function plans. The model was validated using the same test vectors from the real device applications.

Sinamics DriveSim Basic is available as a standardized FMU (functional mockup unit) model and is compatible with many market-standard simulation programs (including Simit Simulation, Simcenter Amesim, NX Motion, and Matlab Simulink). Along with other virtual Siemens solutions (such as

Simatic S7-PLCSIM Advanced and NX Mechatronics Concept Designer), it is possible to implement an integrated, model-based development process.

That makes your entry into drive simulation fast, easy, and more precise than current solutions thanks to the validated model. The development phase can be much faster using Sinamics DriveSim Basic, because it is designed specifically for compatibility, user-friendliness, and simulation speed. ■

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



## Highlights

- **Verified and validated digital twins of drives**
- **Highly compatible FMU models with minimal configuration effort**
- **Machine builders and end users can speed up the development phase**

## Sinamics Startdrive Advanced V17

# Safe, user-friendly, and intuitive configuration

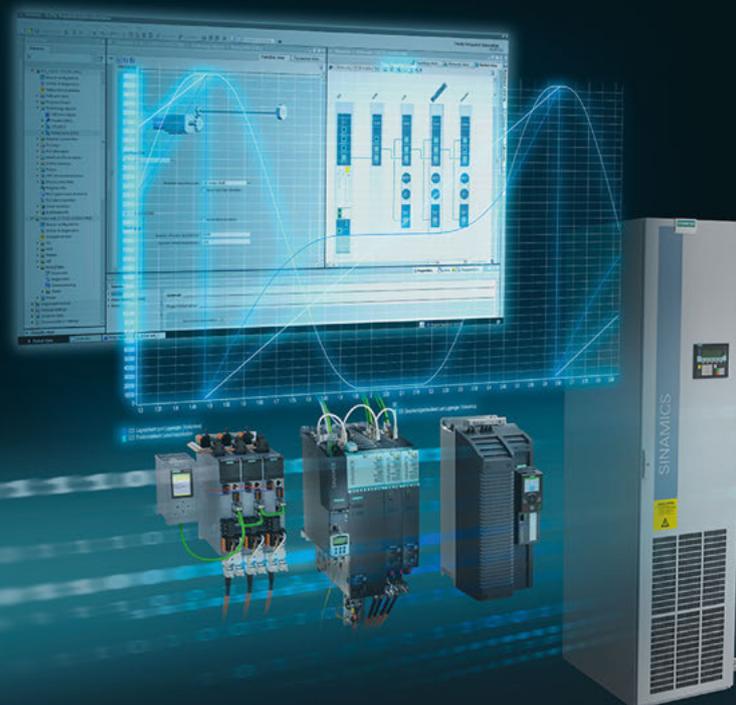
### Highlights

- **Safety Activation Test:** Save time and prevent errors with guided acceptance and automated, standards-compliant documentation of safety functions
- **DCC online mode:** Modify and expand running programs during setup with no need to restart and download
- **DCC knowledge protection:** ensures protection of intellectual property for machine builders
- **Bode diagram in trace:** allows experts to find the right control setting for each machine
- **Sinamics G115D with Startdrive:** Special screens let you intuitively configure specific conveyor system tasks

V17, the new version of Sinamics Startdrive in TIA Portal, offers a number of new functions that add benefits for its users. The new Safety Activation Test, an expansion of the existing Safety Acceptance Test, lets you validate the entire drive chain in a given safety function, from sensor to the triggered drive response. This means that application engineers working on the safety functions can draft all test situations in advance, with precise expectations. Then, for machine acceptance, the commissioning engineer is guided by the assistant step-by-step and automatically receives an acceptance report.

For experienced drive experts, the new version also includes the option to represent a number of controlled variables in Bode diagrams for the targeted optimization of Sinamics servo converters. In addition to the general expansion of user and access rights in the Startdrive project, there's also separate knowledge protection for DCC plans. They can now be modified and expanded to include new functions in online mode, even during operation. And last but not least, Sinamics Startdrive V17 also comes with new developments for the Sinamics G115D intralogistics drive system: The conveyor technology functions can be quickly and easily configured using intuitive graphic screens. ■

> [siemens.com/startdrive](https://www.siemens.com/startdrive)



## Sinamics S210

## New motors expand range of applications

With the Sinamics S210 servo drive system comprising a servo drive and servo motor, the emphasis is on the highly dynamic servo solutions that are often found in handling systems, packaging machinery, and many machine-building applications. The system works perfectly with the Simatic S7-1500 controller via Profinet to meet the stringent demands on motion control functions in these applications: for example, dynamic positioning, gear synchronization, and multi-axis cam disks. All motors in the Sinamics S210 servo drive system are connected by a cable that combines the power conductors, encoder signals, and brakes.

The Simotics S-1FK2 planetary servo gearmotors have been added to the Sinamics S210 drive system with immediate effect. When maximum clock speeds need to be achieved with a light and low-inertia gear configuration, or if inertia has to be adjusted to the precise motion of heavy loads, Simotics S-1FK2 planetary servo gearmotors for Sinamics S210 facilitate economical and long-lasting drive solutions in a broad range of industrial environments. The availability of a large number of gear ratios and sizes means that you can find the perfect match for your application. And thanks to the digital twin of the geared motors in the TIA Selection Tool, thermal dimensioning is just as easy as with a servo motor.

The newly developed Simotics S-1FT2 servo motor offers a wealth of different options for the Sinamics S210 servo system. For example, encoders with high resolution (up to 26 bits) improve system accuracy. A higher protection class (up to IP67) and different motor paint finishes allow use in harsh environments. New machine options such as higher-rated speeds are also available.

The latest addition to the Sinamics S210 servo system is the Simotics S-1FS2 servo motor for use in the pharmaceutical and food and beverage industries. With a stainless-steel enclosure, the maximum protection class of IP67/69, and high-resolution 22-bit absolute multiturn encoders, it meets all hygiene requirements. The servo motor helps with mixing and stirring, air-conditioning and ventilation, metering and filling, and conveying, packing, and storage of many different end products in the food and beverage and pharmaceutical industries. ■

› [siemens.com/sinamics-s210](https://www.siemens.com/sinamics-s210)



### Highlights

- **Simotics S-1FK2 planetary servo gearmotors:** a ready-assembled drive system that's specified as a unit to ensure optimal adjustment of speed, torque, and inertia
- **Simotics S-1FT2 servo motors:** protection class IP67 with 26-bit encoder, highly rated speed, and other optional properties
- **Simotics S-1FS2 servo motors in stainless-steel enclosure:** with product properties required in the pharmaceutical and food and beverage industries

## OEM kits for Sinamics S120 Chassis-2

# Easy installation in your own control cabinets

The new OEM installation kits are now available for the Sinamics S120 Chassis-2 frequency converters. These optimally support the construction of your own cabinets, and simple selection and ordering reduce effort, enable the creation of ready-to-use drive systems, and guarantee reliability through tested reference designs. The kits can be used in all industries and applications, including metal, cranes, conveyor belts, test stands, and many more. The new OEM kits are available for Rittal VX25 cabinet systems and have tested reference designs for 32 different installation kits. ■

› [siemens.com/sinamics-s120-innovation](https://www.siemens.com/sinamics-s120-innovation)

### Highlights

- **Optimized kits for easy installation**, including detailed assembly instructions
- **Very cost-effective**, thanks to standardized components and simplified engineering
- **User-friendly selection tool**
- **Selection of kit designs** enables needs-based installation and assembly for all customer applications



## Sinamics G115D distributed drive system

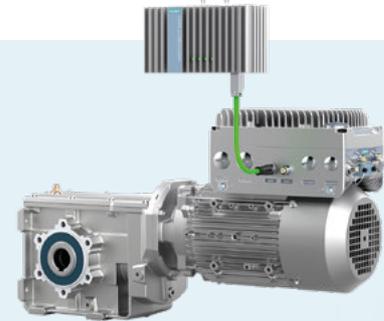
# Innovative system solution for conveyor applications

The Sinamics G115D drive system has been developed to meet the challenges of intralogistics, especially as this industry branch sees an enormous rise in e-commerce. The distributed drive system is the right choice to transport goods safely on conveyors over short or long distance. The out-of-the-box concept is easy to handle and enables an extremely simple operation. Thanks to the distributed drive system, fewer

cables are required because the system is installed directly at the application, therefore less space in the control cabinet is needed. This is followed by shorter installation and setup time and reduced costs.

With Sinamics G115D, customers can choose between a motor-mounted or a wall-mounted system. With both solutions motors can be controlled

close to the actual application. The improved concept of the drive system enhances electromagnetic compatibility and reduces thermal loss. Both versions include the same electronic module. They are compatible with a power supply of 3 AC 380-480 V and feature a power range from 0.37 to 4 kW for motor-mounted version, and from 0.37 to 7.5 kW for wall-mounted version. Data is exchanged via Profinet, EtherNet/IP, AS-i or I/O control. Both systems include an integrated DC 180 V holding brake as standard (independent from the main voltage), and optionally the wall-mounted version can include a repair switch (RS), local remote control (LRC), and an AC 400 V brake dependent on the main voltage. ■



### Highlights

- **Full integration in TIA Portal** for user-friendliness and intuitive interaction with the automation layer
- High degree of protection: system **IP55/IP65** (opt.); drive **IP65/IP66** depending on variant
- Seamless interaction with **IE3 asynchronous** or **IE4 synchronous** reluctance-geared motors

› [siemens.com/sinamics-g115d](https://www.siemens.com/sinamics-g115d)

## Sinamics PCS

# Inverter cabinet system for industrial and public power networks



The new VDE-AR-N-4110-certified Sinamics Power Conversion System (PCS) for battery storage applications efficiently and reliably controls battery charging and discharging processes. For example, Sinamics PCS balances out spikes, which makes it possible to optimize energy procurement costs. The inverter cabinet system is also used in isolated networks in industrial environments and in frequency stabilization systems in public networks.

Sinamics PCS covers a power range of 435 kW to 870 kW and needs only minimal space, making it easy to integrate into a container. Based on the liquid-cooled Sinamics S120 converter series, the system is very robust and reliable. In a worst-case scenario, customers have access to a global service network to get the storage system back on the grid again quickly. ■

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

## Highlights

- **Energy-efficient, sturdy, and certified**
- **Technically optimized series device** based on the proven Sinamics S120 platform
- **High-efficiency liquid cooling** for operation in harsh environments and optimal cooling of passive components
- Extremely energy-efficient, thanks to a **low auxiliary power requirement**
- Availability of **unit certificate** ensures simplified **plant certification** and faster **project planning and implementation** (certified in accordance with VDE-AR-N 4110)
- Simulation using a **certified simulation model** (included in package)



## Simotics Connect 400 / Sidrive IQ Fleet

# Digitalization solution with improved flexibility

Especially for pump, fan, and compressor applications, you can save a lot of power by using a frequency converter to configure the motor to the fluctuating power needs. From now on, it is possible to equip these variable-speed motors with the Simotics Connect 400 plug-and-play connectivity module and integrate it into the cloud-based condition data analysis offered by the Sidrive IQ Fleet MindApp.

Sidrive IQ Fleet is now available on Alibaba, which makes it accessible to the Chinese market. This means that both global and local businesses can easily use the analysis application. In addition, new and expanded data-

sharing models give users even more flexibility when they're developing their own service-supporting business models. For example, the Cross Tenancy plug-and-play functionality enables multiple parties to inspect motor data simultaneously via a process of asset sharing.

Sidrive IQ Fleet is one of the first "packaged" applications from Siemens. Users obtain their own MindSphere tenant (account) and the Sidrive IQ Fleet analytical software free of charge. After that, they simply pay per asset, giving them risk-free and flexible scaling. ■

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



### Highlights

- Expanded range of applications for **shaft heights of 80 to 355 mm**
- Super-easy to **install and set up**
- Perfect for **motors of all ages and brands** (mains-fed and converter operation)
- Available on **AWS and Alibaba**
- Ideal foundation for **preventive maintenance strategies**



## Simotics SD

# IE4 efficiency for the entire range

### Highlights

- **Option of IE3 or IE4** across the entire range from 2.2 to 1,000 kW
- Market- and application-specific variants ensure **maximum flexibility**
- **Variable-speed operation up to 690 V** with no additional output filter on the converter
- **Robust, compact design** – perfect for harsh environments

The European Union's ErP (Energy related Products) Directive, also known as the Ecodesign Directive, requires efficiency class IE3 (Premium Efficiency) for 2-to-8-pole electric motors from 0.75 to 1,000 kW as of July 2021, and IE4 (Super Premium Efficiency) for medium power motors from 75 to 200 kW as of July 2023. Although this latter regulation excludes 8-pole motors, they've been included in the IE4 range of Simotics SD products.

With its expanded range of IE4 motors ranging from just a few kW to 1,000 kW, and with 8 poles from 55 kW, the Simotics SD range already exceeds the legal requirements that will apply from 2023, in terms of both the number of poles and the power range. This motor series therefore lays the groundwork for a wide range of extremely reliable and energy-saving drive systems, both in normal industrial settings and under extreme conditions. ■

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

## Simotics XP

# Explosion proof motors for every need



### Highlights

- **All types of explosion protection** (Ex db, Ex eb, Ex ec, Ex tb, Ex tc) for every power class
- **Everything runs smoothly** at every stage of your project
- **New offshore paint finish** for the most demanding corrosion-protection category CX, optional in accordance with NORSOK
- **Mains-fed and converter operation** (up to 690 V without filter)

Explosion-proof Simotics XP motors with flame proof enclosure (Ex db and Ex db eb) for Zone 1 are now available for either gas group IIB or IIC across their entire power range, from 0.25 to 460 kW. Motors certified for Gas Group IIC are tailored for environments that contain the highly explosive gases acetylene and hydrogen. Motors in accordance with gas group IIB are the cost-effective alternative for system components in zone 1 if these two gases are not present.

The industry-specific Simotics XP Chemstar range has also been expanded. These explosion proof motors are now available in two versions, for the chemical industry and for oil and gas. The “chemical” version meets VIK requirements, and the “oil and gas” version also meets the new IOGP (International Association of Oil & Gas Producers) specification. Additional options also enable project-specific modifications. ■

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

## Simogear explosion-protected geared motors

# Compact, rugged, and explosion-protected

Simogear explosion-protected geared motors can be operated in hazardous zones. The combination of gearboxes and motors now features an integrated solution covering ATEX zones 2 for gas and 22 for dust. These integrated explosion-protected geared motors boast compact design and short length. Thanks to the integration of the motor with the gearbox, the geared motor comes completely assembled from the factory as one package and is available under one order number. They are also newly implemented in the DT Configurator, which makes the selection and ordering easy for the customer.

In addition, Simogear offers ATEX-compliant gearboxes for zones 1, 2, 21, and 22. These gearboxes can be installed with a flange via an adapter on all Simotics XP motors. All Simogear geared motors can be combined with appropriate Sinamics frequency converters. ■

› [siemens.com/simogear](https://www.siemens.com/simogear)



### Highlights

- **User-friendly selection and dimensioning** due to integration in DT Configurator and TIA Selection Tool (in preparation)
- **Easy ordering** with one order number for the entire package
- **Simple integration:** Simogear comes fully assembled from the factory
- Space- and cost-effective **compact design**

## Remote Collaboration Services

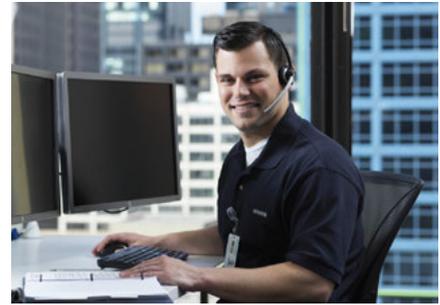
# Fast and location-independent system-specific support

With Remote Collaboration Services, plant operators have access to the expert know-how from Siemens everywhere and without any delay. This enables fast and safe troubleshooting, system diagnosis, and technical support. Using the proven remote infrastructure from Siemens, Remote Collaboration Services fulfills the highest industrial security standards.

Remote Collaboration Services, based on the four modules Remote Engineering, Commissioning, Assistance, and Learning, can be combined flexibly and perfectly aligned to customer's needs. Remote Engineering and

Commissioning already provide support during planning and development phases of plants and systems. Through secure remote access, the development of digital twins and virtual commissioning is possible right from the beginning. In case of an emergency, Remote Assistance provides fast, expert support and identifies potential for optimization. And Remote Learning provides users with virtual trainings and exercises, regardless of time, location, or device. ■

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



## Highlights

- **Less travel cost and reduced downtime** enabled by secure remote access
- Fast access to **expert know-how in case of emergencies**
- Location-independent **virtual training classes and practical exercises**



## Highlights

- **95% compatibility** with all field devices and software systems
- **Seamless integration** into existing IT infrastructure
- **Countless connection options**
- **Unlimited scalability** of connected assets

## Industrial Connectivity Services

# Unlimited connection

Never in history has industry generated as much data as it does today. The challenge is to get the right data to the place where it is needed – whether you are connecting different machines, looking for transparency on energy consumption, or using artificial intelligence to identify defects early. The solution: Industrial Connectivity Services from Siemens can connect all kinds of data sources in a production network to any higher-level information system such as Edge, SCADA, MES, ERP, or the cloud. The data can be sent in parallel to individual systems or to all of them. Because connectivity is based on a gateway solution, users can decide for themselves what data should go to each higher-level server and cloud system. ■

› [siemens.com/industrial-connectivity-services](https://www.siemens.com/industrial-connectivity-services)

## Digital Factory Optimization

# Optimization of production and logistics based on simulation and AI

With Digital Factory Optimization, the digital twin of existing and planned plants is realized to identify optimization potential in production and logistics. The software tools Plant Simulation and HEEDS generate and test multiple production scenarios in the virtual world to identify optimal parameter constellations – based on artificial intelligence and simulation. This enables optimization of resources and material flow, and identification of bottlenecks. This is how Digital Factory Optimization predicts the optimum for best possible production and investment decisions. ■

> [siemens.com/dfp](https://www.siemens.com/dfp)

## Highlights

- **Customer co-creation workshop** with Siemens Consulting experts to pinpoint customers' challenges
- **Optimized production workflows and processes** verified with simulation and AI
- Accurate simulation model ensures **proven investment decisions and cost reduction**



## Sitrain

# Learning in a digital age

Digitalization of learning media is surging. Sitrain is also expanding its range from top to bottom on the Sitrain access digital learning platform. It is also developing new formats such as online trainings and the Virtual Exercise Lab. Sitrain's broad spectrum of digital media now offers new options for conveying knowledge for use by companies and their employees in the ongoing training sector.

The Sitrain digital learning platform offers a diverse mix of new learning media and formats. Participants have access anywhere, anytime to digital training options so they can build their own personalized store of knowledge about Siemens products for industry. One important ingredient for successful learning over the long term is to apply what's been learned. The Virtual Exercise Lab – the latest highlight in Sitrain access – now makes it possible to apply knowledge practically in the virtual world using cloud technology. The Sitrain range is supplemented with online training, an optimal combination of conventional in-person training and the digital world. Specialist teachers present training content in theory and in practical exercises live in a virtual classroom. ■

> [siemens.com/sitrain-access](https://www.siemens.com/sitrain-access)  
> [siemens.com/sitrain-elearning](https://www.siemens.com/sitrain-elearning)

## Highlights

- **Sitrain access:** a vast range of courses and training options on many different topics
- **Virtual Exercise Lab:** an individual development environment, with latitude for experimentation and mistakes
- **Online training:** live and interactive

## Vizendo Virtual Training Solutions

# Turn your digital assets into qualification



Industrial companies today need to put more and more complex production steps into action in shorter and shorter cycles. This makes it all the more important to provide fast and focused training for employees in all types of work steps – especially for product and process changes that occur on short notice, and for scheduled ones as well. Vizendo Virtual Training Solutions enables companies to optimize their processes and production quality, improve employee qualifications, and build motivation using innovative learning methods with 3D models. Vizendo Virtual Training Solutions uses your company's digital assets to prepare realistic training environments for staff.

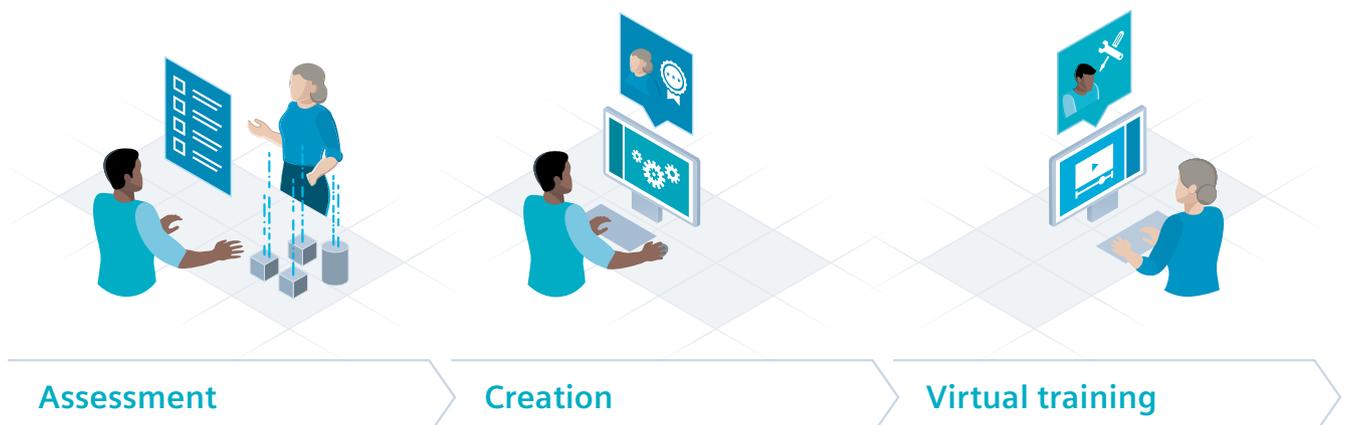
Vizendo Virtual Training Solutions is a full-service solution with three different modules. The foundation is module 1, Assessment. Here a project's scope and objectives are defined with the customer, and the work situation is assessed and defined using the available digital assets (product structure, 3D CAD data, and process data).

Based on the results of the Assessment, module 2, Creation, uses the "Creator" authoring tool to prepare customized training materials with practical training scenarios and predefined alternatives for change management. Detailed discussions with the customer throughout the process ensure fast iteration loops and enable the development of high-quality training materials. The third module, Virtual training, then delivers the custom training materials in the desired formats (for desktop computers, mobile devices, or as a VR/AR solution). Thanks to augmented and virtual reality technologies, training courses can be conducted in a realistic virtual environment, which produces the desired learning results faster. Training progress can be tracked, and a qualification credential can be issued based on how well the training goes. After a training is implemented, customers are continuously assisted with service and support. In addition to training on how to work with the software, they are regularly supplied with updated training documentation. If desired, individual service agreements are available to keep the delivered trainings updated. ■

> [siemens.com/vvts](https://www.siemens.com/vvts)

### Highlights

- **Reduction of training time up to 50%**
- **Quality improvements** by reducing manual assembly mistakes **up to 40%**
- **Reduction of cost intensive pre-production products** and physical prototypes



## Simatic RTLS with Location Intelligence

# Greater transparency in production and logistics

### Highlights

- **Analysis of material flows and dwell times** in order to identify unexpected problems with orders in real time
- **Order monitoring in real time** creates a transparent overview of material flows
- **Reduced search procedures**, thanks to visualization of all relevant objects on a range of terminals in real time



Location Intelligence is a web-based software that can be accessed directly from your local ERP system or MES. It expands Simatic RTLS to include the digital twin of performance. By intelligently linking transponder IDs and

order data, and by using “geofences” (virtually defined areas), it is possible to analyze and display movement data and also process events in real time. The combination of local and business information based on position data gives the user a transparent overview of material flows, order information and analytical statistics. A new feature also allows them to display the dwell or throughput time for each order in the geofence in question. This means that orders can be compared with others and problems identified at an early stage. ■

> [siemens.com/rtls](https://www.siemens.com/rtls)

## Simatic RTLS4084T Plus

# Paperless plus more space for order data

The new battery-operated Simatic RTLS4084T Plus transponder, with a 4" E-Paper screen, creates new opportunities for digital transparency of process information. Important production data can be clearly displayed on the large screen in black-and-white as text, in image format, or as code. The transponder is especially suitable for locating pallets and other large containers as well as production resources. The combination of an E-ink screen and seamless real-time wireless location measured down to the centimeter range gives every employee order-based and position-specific information on the current state of processing – and it is all paper-free. The result is transparency and improved quality, with a huge saving of paper and printing costs. ■

> [siemens.com/rtls](https://www.siemens.com/rtls)



### Highlights

- **Paperless display of order information** on the E-Paper transponders by linking the transponder ID with available order data
- **Large E-ink screen** has plenty of space to clearly display process information
- **Improved quality**, thanks to seamless documentation and communication throughout the production process

## Simatic RF360R

# Compact and communicative

The new Simatic RF360R HF-RFID reader combines the functions of a communication module and a reader in one device. Its particularly compact design enables space-saving and cost-effective installation.

Simatic RF360R is the first Simatic RF300 reader to come with an integrated OPC UA interface. This means that it can be connected directly to cloud applications via an Industrial IoT gateway such as Simatic CC716, and data can be made available across company boundaries. The result is optimized production processes and a great improvement in efficiency and quality. Simatic RF360R has two onboard Profinet interfaces for direct integration in automation environments. The two ports allow the construction of star, line, and ring topologies. When configured as an MRP (media redundancy protocol) client according to IEC61158, the device offers very high network and system availability via an alternative communication path.

You will also benefit from the speed and ease of integrating the reader into the system and the verification of software and hardware components based on Profinet and TCP/IP, in addition to the availability of standard function blocks in TIA Portal. Web-based management and seamless integration into TIA Portal also enable access to configuration, diagnostic, and logbook data. Rapid and time-saving setup and status queries while the system is running help significantly reduce downtimes. Power LEDs that are clearly visible from all sides and proven, integrated setup assistance make diagnosis and optimization of reader-transponder positioning extremely easy and user-friendly.

Like all Simatic RF300 readers, Simatic RF360R also has an ECC (error correcting code) mode. This recognizes data corruption, which can lead to a huge improvement in data security. Bit errors are automatically corrected. And last but not least, electrical robustness and a high protection rating (IP67) make Simatic RF360R predestined for use in harsh industrial environments. ■

› [siemens.com/rf300](https://www.siemens.com/rf300)



## Highlights

- Functions of a **communication module and a reader** are combined in **one single device**
- **Integrated OPC UA interface** provides direct connection to cloud applications via an Industrial IoT gateway
- **Multivendor communication** in automation as per Auto-ID Companion Specification V1.0 is straightforward
- **Working distance of up to 140 mm** with an operating temperature range of 0°C to +55°C

## Sinec NMS and Simatic Ident

# Managing industrial networks efficiently

### Highlights

- **Automated commissioning procedure** for Simatic Ident applications with Sinec NMS
- **Ruggedcom WIN device support** of Sinec NMS
- Sinec NMS as important **building block of a backup strategy**
- Sinec INS new with **SFTP and DNS server**



With its new version V1.0 SP2, Sinec NMS, the Network Management System for industrial network structures in an increasingly digital world, is the first choice for the management of Simatic Ident. All Simatic RF600 and RF18xC devices can now be centrally managed with the Sinec NMS software. That means that you can easily discover, monitor, and commission them via policy-based configurations. This includes user management, device configuration, certificate rollout, and firmware management.

The new system backup and restore function allows an entire backup and restoration of the whole Sinec NMS system. By generating regular system backups that can be restored, for example, in case of emergency, system reliability is enhanced. An essential security benefit for automation systems is the new certificate management, which enables a unified certificate chain for customers. The Sinec Network Management System can now also be

integrated into existing certificate infrastructures, operated by customers. Due to a seamless integration into their infrastructure, it perfectly fits into the individual security requirements.

In addition, the new version V1.0 SP1 of Sinec INS, the tool for central management of essential OT-relevant network services, offers even more security and comfort. The implemented SFTP server can be used, for example, to deploy configuration and firmware upgrade files in a secure manner, because the data transfer is encrypted, and access is only possible with a user account. Moreover, with centralized, role-based user management via Radius server, users can quickly and securely access Scalance devices, for which they are entitled. This simplifies the handling of user profiles. ■

> [siemens.com/sinec](https://www.siemens.com/sinec)

# Scalance MUM856-1 5G router and Sinema Remote Connect

## Secure industrial remote access – now with 5G!

The growing number of participants in mobile communication, flexible plans, and autonomous logistics all makes reliable wireless connectivity increasingly important in industry. With its extremely high data rates, maximum reliability, and very low latencies in communication, 5G lays the groundwork for future Industrie 4.0 and IIoT applications. 5G has arrived in industry in the form of Scalance MUM856-1, a 5G router that enables machines, control elements, and other devices to connect to private 5G campus networks and public 5G wireless networks, with data rates up to 1 Gbit/s.

The development process focused on the special hardware demands posed by industry. The IP65 metal enclosure has four antenna connections and a micro-SIM card slot. The router is designed to operate in an expanded temperature range, and can be flexibly mounted directly to mobile participants or on a rail using an adapter. The modules have the same form factor as the Wi-Fi 6 modules to make it easy for users to choose between 5G and Wi-Fi 6 with a simple device swap.

Recent social upheavals have also led to a growing demand for remote access solutions in industry: for example, for remote maintenance of machines and plants located at a distance. Public 5G networks will become an important support for remote access, because service technicians in the field will be able to use them to connect wirelessly to machines that need maintenance. To ensure that remote access is secure, Scalance MUM856-1 supports connections to Sinema Remote Connect. This management platform for VPN (virtual private network) connections manages secure VPN connections between the head office, service technicians, and the installed systems. Starting from the latest version (3.0), Sinema Remote Connect comes with a REST-API, which means you can automate almost all tasks, and data can be integrated into the company's own management systems. All licenses are centrally managed, and all Siemens routers, industrial security appliances, and various CPs are easy to connect to Sinema Remote Connect using auto-configuration for remote access. ■

› [siemens.com/industrial-5g](https://www.siemens.com/industrial-5g)



### Highlights

- **5G communication** in **public** and **private** networks
- **Fallback to lower wireless mobile standards** (3G, 4G) if 5G connectivity is unavailable
- **Robust IP65 enclosure** for industrial use
- **Simple VPN remote access** via public 5G networks with Sinema Remote Connect



## Private 5G networks for industry

# 5G campus networks create new prospects

5G offers important opportunities to develop new, flexible factory concepts in all industries. Private 5G networks in particular offer major advantages for industry. In these cases, the company operates the 5G network itself using a private 5G frequency, which means it can customize the network to precisely meet its requirements in terms of data rates, reliability, and the required latency time. In addition, in a self-managed network the data remains on-site and the company decides what data will be forwarded to the cloud, for example. At its own Automotive Test Center in Nuremberg, Siemens tests industrial applications in its own private, stand-alone 5G network in order to take the technology to the point where it can be used in industry. Another private 5G

network from Siemens will also be available to third-party users in the near future. One hall at the exhibition venue in Hanover this summer will be equipped with a 5G infrastructure from Siemens, giving users the opportunity to test 5G under real conditions in the 3.7 to 3.8 GHz frequency band. ■

› [siemens.com/industrial-5g](https://www.siemens.com/industrial-5g)

### Highlights

- 5G campus networks offer major **benefits for industry**
- They work with local **5G campus licenses**
- **Data security in own hands**



## Scalance WAM766-1 / Scalance WUM766-1

# Wi-Fi 6: The latest wireless LAN standard for industry

Wireless LAN from Siemens has proved itself in industrial settings for more than 15 years. To continue to meet the requirements of digitalization in the future, the Scalance W portfolio has been expanded to include the WAM766-1 Wi-Fi 6 Access Points and the Scalance WUM766-1 Client Module. IEEE 802.11ax (Wi-Fi 6) is the latest wireless LAN standard. It focuses on maximum efficiency and fairness when transmitting data and on providing gigabit data rates.

Thanks to compact, robust, IP65-rated hardware and a range of industry-specific approvals, the new Scalance products offer a vast range of uses. The Access Points can connect a very large number of clients at data rates up to 1,201 Mbps. The Scalance WUM766-1 Client Module is also easy to integrate into existing wireless LAN infrastructures. For example, a sleep mode function and a digital input/output interface make it possible to run AGV fleets with high energy efficiency, because unused participants can be selected and switched off. ■

› [siemens.com/wifi6](https://www.siemens.com/wifi6)

### Highlights

- **First industrial Wi-Fi 6 client module** on the market
- **Easy device replacement in the field** using CLP removable data storage medium
- **Redundancy via WLAN** with iPRP



## CloudConnect

# The professional path from sensor to cloud

### Highlights

#### Simatic CP 1545-1 for modern TIA installations

- Easy and professional transfer of Simatic S7-1500 field-level data to cloud systems
- Integrated stateful inspection firewall for protection from unauthorized access
- Trigger management for event-driven and cyclic communication
- Full integration in TIA Portal

#### Simatic CloudConnect 7 for existing plants

- Connection of Simatic S7-300 or S7-400 via industrial Ethernet or Profibus/MPI interface using S7 protocol
- Openness through OPC UA client function for standardized connection of subordinate field devices
- Extended payload editor for MQTT messages
- Plant optimization through cloud application using MQTT subscribe function

#### Ruggedcom RX1400 with CloudConnect for extreme conditions

- All-in-one cellular router for data acquisition, filtering, and conversion
- IIoT data transfer to cloud-based solutions
- Trigger management for event-driven and cyclic communication



Cloud computing is the first step toward profiting from the benefits of digitalization in industry, which include shorter development cycles, higher productivity, and improved quality.

But this can only work if the cloud receives valid data from the field level. Power consumption, temperature, vibration, and the corresponding curve progressions over time provide indications of plant status and process quality. When combined with more information such as the type of material used or tool condition, these data create entirely new possibilities: for example, improved product quality, process optimization, and the option for preventive maintenance. The MQTT subscribe function supports changing approved process values in the connected controller via cloud application, for example for process optimization.

With CloudConnect products, this information can be optimally transferred to a wide variety of cloud platforms, including MindSphere, Microsoft Azure, Amazon Web Services (AWS), or Oracle IoT Cloud. ■

> [siemens.com/cloudconnect](https://www.siemens.com/cloudconnect)

## Ruggedcom APE1808 and Scalance LPE9403

# Powerful edge computing for industries

While digitalization creates opportunities for businesses, it poses new challenges for handling large amounts of data generated in industrial plants. Ideal for industrial operating environments, Ruggedcom APE1808 and Scalance LPE devices seamlessly integrate edge computing applications and bring data closer to the source by processing and pre-processing large amounts of data on a local and decentralized level in real time.

Ruggedcom APE1808 is the latest industrial application hosting module for the Ruggedcom Multi-Service Platform. With support for Linux and Windows 10, it provides a standards-based platform to host commercially available software, eliminating the need for an external industrial PC. As an IIoT device, Ruggedcom APE1808 can deploy edge computing applications, including network log and load processors and intrusion sensors. With an operating temperature range of  $-40^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$ , it provides a reliable platform to extend the open Siemens Industrial Edge ecosystem to networks in electric power, transportation, oil and gas, and other industries that experience harsh environments.

Scalance LPE9403 is a local processing engine (LPE) that implements customer-specific applications close to the process. With a similar design to Simatic S7-1500, it offers many advantages over comparable, commonly available products, including an operating temperature range from  $-40^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ , a redundant power supply, and a fiber-optic connection for bridging distances of up to 200 km. Scalance LPE9403 comes with a preinstalled Linux operating system and is used for tasks such as diverting and mirroring data directly at the machine. Additional installed applications make it possible to perform predictive maintenance and identify network anomalies. Scalance LPE offers two options for installing software packages: native or containerized. The latter makes it easy to install container-based applications on Scalance LPE, for example, via the existing Docker interface. Through the integration of edge computing, Siemens provides businesses with intelligent solutions for improving the flexibility and security of industrial automation. ■

> [siemens.com/ape](https://www.siemens.com/ape)

> [siemens.com/lpe](https://www.siemens.com/lpe)



## Highlights

- Lowers latency and operational costs with the **integration of edge applications**
- **Ruggedcom APE1808: industrial application hosting platform** for the Ruggedcom RX1500 family
- **Scalance LPE9403: local processing engine with high-performance CPU**

## Ruggedcom RX1524/1536 and APE1808

# Reliable security for industrial control systems

Digitalization is accompanied with an increased risk of cyber incidents. More so for critical infrastructure industries that need to balance a complex regulatory environment with limited resources. Recognizing this challenge, Siemens has expanded its portfolio of utility-grade networking devices with the Ruggedcom RX1524 and Ruggedcom RX1536 Multi-Service Platforms.

These modular, rack-mount devices offer switching, routing, cybersecurity, and management functionalities in a single box. The Ruggedcom RX1524 and RX1536 are designed to be secure and feature several performance enhancements, including upgraded hardware, more processing power, lower latency, and security improvements such as higher IPsec VPN throughput and faster encryption. With the Ruggedcom APE1808 module that can host third-party software, these switches provide a standards-based platform to run certified security applications from the Siemens software portfolio and from cybersecurity partnerships. These include next-generation firewalls, intrusion prevention systems, secure access management solutions, and intrusion detection systems with deep packet inspection capabilities.

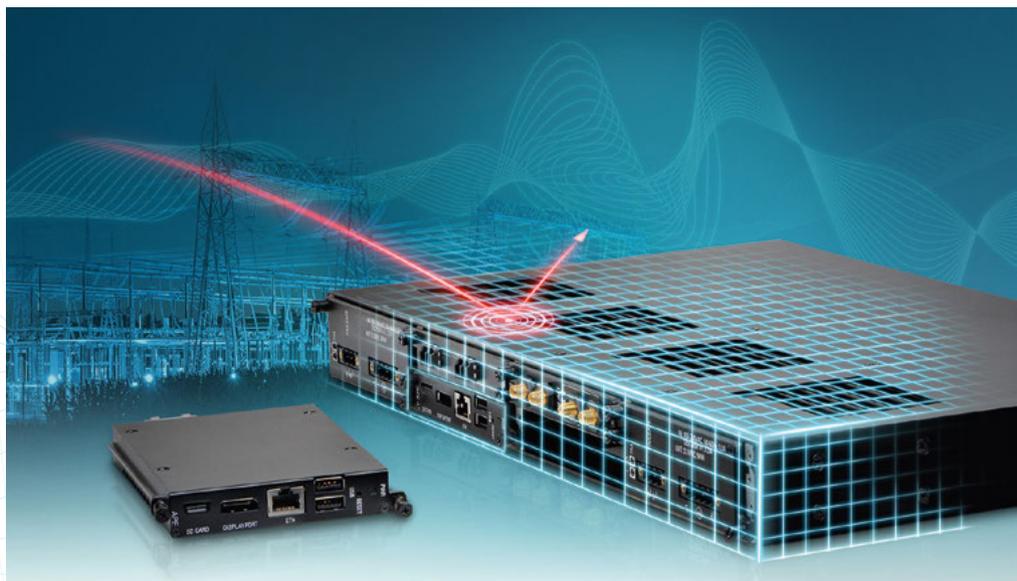
Defense in depth, the multilayer security concept following the recommendations of IEC 62443, can be achieved for a typical industrial control system by deploying the Ruggedcom RX1524 or the RX1536 as the gateway router with a firewall. An intrusion detection system installed in another such device with the APE1808 in the operations center can be used to detect and report on network anomalies in real time. Furthermore, NERC-CIP-compliant secure remote and local access to field assets can be implemented with the Ruggedcom Crossbow application hosted on the APE1808.

With an extended operating temperature range of  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  and high tolerance for EMI, shocks, and vibrations, these devices ensure high reliability and availability for industrial networks in harsh environments. Ruggedcom RX1524 and RX1536 devices are certified to the stringent requirements of standards for the electric power, intelligent traffic systems and rail (ITS), and oil and gas industries. ■

› [siemens.com/rx1500](https://www.siemens.com/rx1500)

## Highlights

- Hot-swappable modules with **redundant power supply option** for high availability
- Improved **IPsec performance of up to 100 Mbit/s**
- **Different communications options over the same physical infrastructure** improves flexibility and lowers CAPEX
- Global **cybersecurity partnerships** to offer bundled solutions for industrial control systems with rugged hardware and advanced software



## CP 1243-7 LTE V3.3

## Connecting S7-1200-RTUs wirelessly

The new firmware version (V3.3) of the CP 1243-7 LTE communications processor for Simatic S7-1200 now supports connection to a telecontrol control center using standardized telecontrol protocols (IEC 60870 and DNP3). As a result, the remote terminal units (RTUs) based on Simatic S7-1200 can be seamlessly integrated directly into existing telecontrol systems via mobile communication (4G). ■

> [siemens.com/telecontrol](https://www.siemens.com/telecontrol)

### Highlights

- **Several telecontrol protocols** IEC 60870-5-104, TeleControl Basic, or DNP3
- **Integrated 4G modem** for cost-optimized direct connection to wireless networks
- Standard engineering with TIA Portal Step 7 enables **fast and easy programming, networking, and setup**



## CP 1543-1 V3.0

## Identify S7-1500 in secure networks

The new firmware version (V3.0) of the CP 1543-1 communications processor for Simatic S7-1500 supports authentication in a secure network via IEEE802.1X using an authentication protocol (EAP = extensible authentication protocol). This means that Simatic S7-1500 controllers can be authorized to access the network via the CP 1543-1 using the mechanisms as per IEEE802.1X in a network with an authentication server (Radius server).

Using the new firmware version V3.0 of the CP 1543-1, you can also connect the S7-1500 system to a Sinema RC server via OpenVPN. ■

> [siemens.com/cps-for-s7-1500](https://www.siemens.com/cps-for-s7-1500)



### Highlights

- **Authentication via IEEE802.1X** using the EAP processes TLS, MD5, PEAPv0, MSCHAPv2, PWD, or TTLS
- **OpenVPN** for connection to Sinema RC
- **Firewall and VPN** to protect the S7-1500
- Standard engineering with **TIA Portal Step 7 Professional V17** enables quick and easy programming, networking, and setup



## Highlights

- Alarms and status messages via **OPC UA Alarms & Conditions**
- **Global Discovery Service:** certificate management via OPC UA
- New **compact blocks for clients**
- **PubSub can be used on S7-1500 CPUs** by means of sample application
- Easy **representation of OT data** on the OPC-UA data model **in TIA Portal**

## OPC UA in TIA Portal V17

# Important standard for digitalization

Advances in digitalization are also making changes necessary in communication. Data flows from the controller level form the basis for higher-level SCADA, MES, or ERP systems, all the way to the cloud. The ideal interface is the open, platform-independent communications standard OPC UA (open platform communications unified architecture) which enables seamless communication with applications from third-party providers and is flexibly scalable to meet requirements in every case. OPC UA can be integrated into existing industrial Ethernet networks and run using the existing Profinet infrastructure with no impact on performance. Security mechanisms such as authentication, authorization, and encryption ensure that the connection is secure.

OPC UA is standardized for processing data in IIoT applications. Thanks to internationally defined interfaces known as “companion specifications,” not only can you integrate modules and special applications such as laser and robotics components (regardless of manufacturer) into the system via OPC UA; you can also transfer mass data in a smart and appropriately prepared structure to higher-level IT systems, including MES, SAP, and edge on-site or to cloud applications beyond your immediate company premises.

Secure data transmission plays a major role in integrating OT data into higher-level IT systems. The security mechanisms must also be open to dynamic adaptation. That’s why in the latest version of TIA Portal V17, OPC UA offers the Global Discovery Service (GDS) function that enables security certificates to be dynamically adapted while the system is in operation. You benefit from increased security combined with maximum system availability.

The Alarms & Conditions (A&C) function lets you integrate HMI applications into TIA automation systems and vice versa using OPC UA mechanisms in the new version 17 of TIA Portal. Alarms and status messages are transmitted via subscriptions to higher-level SCADA, MES, and HMI applications. The result is fully integrated alarm management, including a value sequence for system monitoring, even in the absence of an original interface between the higher-level systems and TIA or Simatic components. The Sitop PSU8600 power supply system enables comprehensive diagnostic options for preventive maintenance via Profinet and OPC UA. With the right buffer and battery modules, you can bridge outages lasting from seconds to hours and therefore prevent system downtime. ■

› [siemens.com/opcu](https://www.siemens.com/opcu)

## Scalance X – Power over Ethernet (PoE)

# Power and data for PoE-capable terminal devices



Industry uses the Power over Ethernet (PoE) technology known from office and home applications and adds the Scalance XC-200PoE, XR-100PoE WG, and XR-300PoE WG Industrial Ethernet switches to the Scalance X family portfolio. PoE switches that are suitable for powering surveillance cameras, Scalance W IWLAN Access Points, Simatic RTLS Gateways, and Simatic MV500 optical identification systems are now available for the entire industrial network.

PoE-capable Scalance X switches are used in various sectors, including automation technology, infrastructure and tunnel applications, and transportation. To optimize the PoE power budget allocation, optimized settings can be configured on the end device to supplement the standardized performance classes. If the switch's internal power is insufficient, the new Scalance PSR9230PoE power supply units provide additional power of up to 600 W to Scalance XR-300PoE WG.

The new PoE switches supply data and power for up to 26 end devices via a FastConnect cable. Equipped to meet the latest IEEE 802.3bt standard, they supply 30 W per port. In the

case of the 10-Gbit/s copper ports on Scalance XR-300PoE WG products, they even supply 60 W per port. All Scalance X PoE versions with fiber-optic interfaces also have two 10-Gbit/s ports each for transmitting at high data rates. Furthermore, the 10 Gbit/s ports on Scalance XR-300PoE WG devices are designed as combo ports, which enables them to supply energy-intensive devices (such as high-resolution HD cameras and cameras with integrated heaters) with both the necessary energy (up to 60 W) and sufficient bandwidth (up to 10 Gbit/s). ■

› [siemens.com/poe](https://www.siemens.com/poe)

## Highlights

- **Comprehensive PoE portfolio** including Industrial Ethernet switches, power supply units, and end devices
- **Up to 210 W internal power** with no additional PoE power supply
- **Unmanaged and managed PoE switches** with 10 Gbit/s ports



## Highlights

- **For explosion-proof environments:** ATEX standard (zone 2/22), IECEx (zone 2/22)
- **Sitop BUF1200** buffer module **with maintenance-free electrolytic capacitors**
- **Affordable protection from power failure,** including a buffer time of 300 ms at 40 A load current, 600 ms at 20 A, and 1,200 ms at 10 A
- **Support of the power supply unit up to 40 A** in the event of high power requirements in the short term

## Sitop PSU6200 Ex, Sitop BUF1200

# Power supply under critical conditions

The PSU6200 24 V/5 A, 10 A, and 20 A 1-phase standard power supplies are now also available with painted circuit boards (conformal coating), and they already meet the new explosion protection standard for 2022 in accordance with ATEX and IECEx. In addition, they offer the same impressive features as the PSU6200 family: for example, robust wide-range input, high overload capacity, very high efficiency, and extensive diagnostic functions.

The new Sitop BUF1200 buffer module can be used under critical network conditions. When connected in parallel to 24 V Sitop power supplies, the compact add-on module in the PSU6200 design buffers a load current of 40 A for 300 ms – and therefore reliably protects against the most frequently occurring power interruptions in the millisecond range. At lower load currents, the buffer time is extended accordingly. ■

› [siemens.com/sitop-psu6200](https://www.siemens.com/sitop-psu6200)



## Sitop PSU8600

# Maximum flexibility and availability

The Sitop PSU8600 modular power supply system has base units for operation on 1-phase and 3-phase networks. By connecting CNX8600 expansion modules, the power supply system can be expanded with up to 36 outputs. Each output is flexible and can be adjusted during operation between 4 and 28 V, either manually or via a control program. Maintenance-free BUF8600 buffer modules and a UPS8600 UPS module can be used to bridge power failures that extend from seconds to hours. Comprehensive diagnostic and maintenance information is available via the two integrated Ethernet/Profinet interfaces as well as via OPC UA and can be evaluated directly in the Simatic S7 or other automation systems. This allows users to localize faults more quickly and reduce downtime. ■

› [siemens.com/sitop-psu8600](https://www.siemens.com/sitop-psu8600)

## Highlights

- **1-phase power supply** with rated output current 4 x 5 A and **3-phase power supplies** with 4 x 5 A, 20 A, 4 x 10 A, and 40 A
- Modular expansion with up to **36 outputs** and for **buffering power failures**
- **The System Clip Link** makes it **fast and easy to connect** the add-on modules with no wiring effort
- **Comprehensive diagnostics** for preventive maintenance, thanks to Profinet and OPC UA



## Smart Electrification

# Power distribution for industry, buildings, and infrastructure facilities



With demands for cleaner and more efficient and flexible energy, humanity is moving closer and closer to a purely electric world that's more careful with its resources, the environment, and its inhabitants. An efficient, reliable, and safe electricity supply is therefore the cornerstone of all business activity. That's why a smart electricity supply system can represent a genuine business advantage: It saves money, enables improvements in efficiency, helps reduce CO<sub>2</sub> levels, and makes your operations more environmentally friendly. Siemens ensures a sophisticated power supply chain and makes the appropriate infrastructure available. This means that customers can concentrate on their core business.

To keep the economy moving, businesses need a reliable and stable electricity supply. But achieving that goal is a complicated task, because extreme

weather, cyberattacks, and even fluctuations in the power network can cause problems ranging from temporary interruptions to work to life-threatening events. To prevent these incidents, Siemens offers intelligent, integrated, and comprehensive energy solutions that meet the individual requirements of every electricity consumer.

Digital twins of energy systems and industrial automation let you perfectly coordinate all your systems and services. This allows you to prevent errors and make long-term cuts in your planning, construction, and maintenance costs.

IoT-capable platforms are the driving force behind smart electrification. Cloud-based remote monitoring and accurate data collection, display, and analysis mean that you can proactively

## Highlights

- **Smart electrification** to save costs, improve efficiency, and go easy on resources
- **Integrated electricity supply** for resilience and reliable operation
- **Uses digitalization** for performance and condition monitoring, analyses, and to develop new business opportunities
- **Reduce planning, construction, and maintenance costs** with digital twins of your energy systems

recognize situations likely to compromise your system's efficiency. You can also use these features to optimize your operations, power consumption, and maintenance intervals. ■

› [siemens.com/smart-electrification](https://www.siemens.com/smart-electrification)

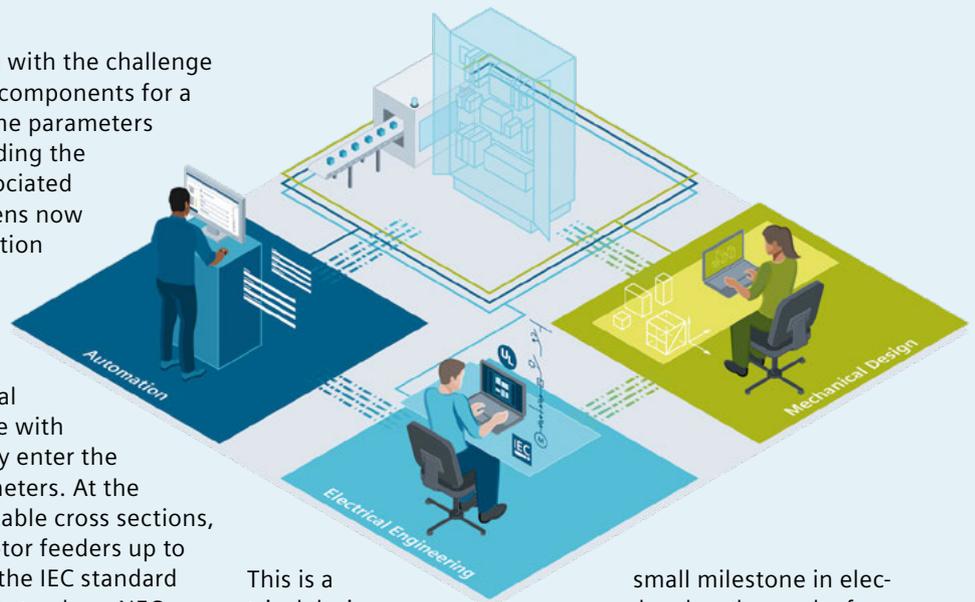
## Smart Control Panel Design

## The new standard in electrical engineering

Electrical planners are often confronted with the challenge of having to select not only the correct components for a motor-starting application but also all the parameters associated with the motor feeder, including the appropriate cables and calculations associated with short circuits and overloads. Siemens now offers a comprehensive and simple solution to this problem.

Using Control Panel Design Assistant in TIA Selection Tool, the user can design and dimension the main electrical components of a machine in compliance with standards. Electrical planners can simply enter the motor data and the desired cable parameters. At the press of a button, all the components, cable cross sections, and short-circuit ratings for fuseless motor feeders up to 250 kW are automatically displayed for the IEC standard region and for the North American market, where NEC, UL 508A, and NFPA79 are the standards for designing electrical equipment.

Control Panel Design Assistant not only provides users with the right switchboards and standard-compliant calculated values; it also supports them in visually designing the main circuit. In addition, the entire system is displayed in the detailed single-line diagram typical of electrical designs. Finally, all the technical data and calculation results are output in the form of complete PDF documentation.



This is a small milestone in electrical design and makes the work of planners much easier. The right switchboards for a direct online motor are sometimes difficult to select, because the device combinations have to serve as suitable switching and protection devices for the motor, including in the case of an overload or short circuit. Selecting the right cables all the way to the motor is equally important. When planning the cable layout, electrical designers need to comply with all specifications from IEC 60204-1, UL 508A, and other standards. They can do this much more quickly and easily using the new Control Panel Design Assistant in TIA Selection Tool, because they no longer need to manually calculate the cable cross section and short-circuit currents.

1.

Easy dimensioning  
**A new dimension  
 of dimensioning**

2.

Digital expertise on standards  
**Standard conformity  
 with no worries**

3.

Consistent workflow  
**Electrical engineering  
 with unlimited creativity**

4.

Supported portfolio  
**Intelligent devices for  
 versatile solutions**



To begin with their configuration, electrical planners just need the current offline version of the free TIA Selection Tool and some basic input data to describe the mechanical load, meaning the motor. On this basis, tool users are guided step-by-step through the freely selectable parameters of the configuration process. To determine the cable cross section, for example, they can easily select their method of installation, the number of loaded circuits or cables, and the ambient temperature. The result: cables that are optimally designed for the prevailing conditions at the machine, which are also standard-compliant. Everything happens so quickly and easily that it is no problem to also test out the influence of the various parameters: for example, the effects of the control cabinet air-conditioning system on the cable cross sections.

Users are also shown the correct devices for the entire motor feeder, which they can then easily add to an order list in a subsequent step. They are also provided with complete documentation of the technical data and calculations, which they need, for example, for verifying short-circuit strength. The verification of short-circuit strength is performed based on the risk assessment of electrical

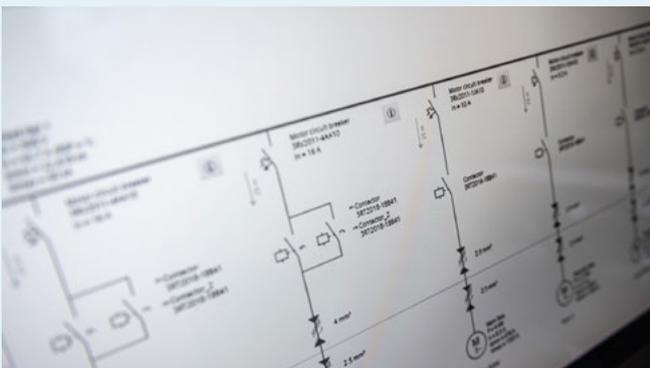
equipment for machines and is also mandated by the new version of DIN EN 60204-1, "Electrical equipment of machines," published in June 2019, or UL-508A. This not only saves electrical planners valuable time right from the outset, it also guarantees that the cables and short-circuit ratings conform to standards. ■

For more information on control panel design in TIA Selection Tool, to download the tool, and to learn about other tools from Siemens for routine electrical design work, visit:

> [siemens.com/cpd](https://www.siemens.com/cpd)

## Highlights

- Fuseless and fused **load feeders according to IEC up to 250 kW**, fuseless **load feeders according to UL up to 500 hp**
- **Main disconnect dimension for IEC infeeds**
- Visual planning of main circuit in a **single-line diagram** and generation of complete **EPLAN projects**
- Easy selection of suitable **switching and protection devices** for the motor
- Complete **PDF documentation** of technical data and calculation results, for example, the rated short-circuit current



## Gas-insulated medium-voltage switchgear 8DJH 24 – blue GIS

# Switchgear for the future – sustainable and digital

The new future-proof load-break switchgear 8DJH 24 expands the portfolio of sustainable, gas-insulated switchgears up to the 24 kV voltage level. The new 8DJH 24 combines the sustainability of the blue GIS portfolio with the benefits of the proven 8DJH product family.

The heart of the ring main unit is the innovative blue Switch, a three-position load-break switch with a vacuum tube interrupter in the auxiliary path that doesn't produce any toxic by-products during arc quenching. The blue Switch is applied at ring main switches and in combination with fuses at transformer panels. The simple, reliable, and proven operating principle – on, off, earth – of the 8DJH product family is also applied in the blue GIS portfolio and ensures continuity.

The switchgear is used in public and industrial power grids at the secondary distribution level. Possible applications

are secondary transformer substations, customer transfer substations, and switching substations, as well as industrial and infrastructure facilities. This medium-voltage switchgear meets all requirements for digital, safe, and economical grid operation: compactness, maintenance-free design, and a high degree of operating and personal safety as well as availability.

The 8DJH 24 convinces with its intelligent and digital solutions. It can be controlled remotely, is communication-capable, and can be linked to IoT platforms such as MindSphere as well as other open IoT systems. Furthermore, it offers the possibility for the integration of components for condition monitoring and distribution grid automation based on NCIT technology, an innovation with far-reaching benefits. ■

> [siemens.com/8djh24](https://www.siemens.com/8djh24)



### Highlights

- **Clean Air:** F-gas free insulation medium based on the components of ambient air
- **blue Switch:** proven switching principle based on vacuum technology
- **Gas-insulated switchgear** with all known advantages
- **Ready for digitalization** with intelligent future-proof solutions



## Sentron components, Alpha and Sivacon power distribution boards

# Equipped for digitalization

From planning and engineering to operation: With Sentron components and the Alpha 3200 Eco and Sivacon S4 power distribution boards, all process steps in electrical power distribution can be totally supported digitally for industrial plants, infrastructure, and buildings. With the Alpha 3200 Eco (DIN market) and Sivacon S4 (NF market) power distribution boards, Siemens now supports the engineering of power distribution boards in 3D, which increases planning reliability and reduces project timelines. The new 3WA air circuit breaker combines all the functions that electrification components need to fulfill in digital enterprises today: These range from reliably protecting people and facilities from electrical damage and accidents, flexible use, a long service life, and reduced maintenance to innovative functions for integrated e-engineering, reliable energy data acquisition, and seamless integration into digital environments.

Users benefit from high efficiency throughout the workflow and maximum flexibility. 3VA molded-case circuit breakers ensure highly available production processes. The new condition monitoring function provides a simple overview of the health status of the circuit breaker and also detects its remaining service life.

With the new 5SL6 COM miniature circuit breakers, AFDD/miniature circuit breakers, and 5ST3 COM auxiliary fault-signal contacts from the Sentron portfolio, Siemens is bringing digitalization right into the final circuit. These compact devices record electrical values such as current, voltage, temperature, and switching states and make it easier to pinpoint the cause of faults. This makes it possible to quickly detect consumers with increased power consumption, irregularities, and faults in the final circuit and to rectify these defects at an early

## Highlights

- **3WA air circuit breaker:** makes energy flows transparent and works seamlessly with digitalization
- **3VA molded-case circuit breakers:** for worldwide use thanks to the series with IEC and UL approval
- **Sentron circuit protection devices with measurement and communication functions** (MCB 5SL6 COM, AFFDD/MCB 5SV6 COM, HS/FS 5ST3 COM): protection and measurement function with a width of only 1 MW
- **Sentron LV HRC fuse link 3NA COM:** for effective protection of people and facilities
- **Sentron measuring devices and energy monitoring:** for efficient and safe monitoring of power distribution

stage. Maintenance of the equipment can also be planned early on. The 7KN Powercenter 1000 data transceiver collects the recorded data and transmits it to mobile devices, PCs, and cloud solutions for visualization and analysis. The Sentron LV HRC fuse link 3NA COM makes it easy to integrate existing installations into digital structures. The fuse protects against overload and short circuits and brings transparency to power distribution. With the help of Sentron measuring devices and energy monitoring, users can identify potential savings with minimal effort. Not only are the measuring devices easy to install, the associated software is also intuitive to use. ■

- › [siemens.com/3WA](https://www.siemens.com/3WA)
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Published by  
© Siemens AG 2021

Digital Industries  
Factory Automation  
P.O. Box 48 48  
90026 Nuremberg  
Germany

For the U.S. published by  
Siemens Industry Inc.  
100 Technology Drive  
Alpharetta, GA 30005  
United States

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