



SIEMENS

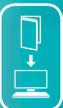
Ingenuity for life



GO!

Automation with LOGO!
and SIMATIC S7-1200

November 2018



All GO! articles can be
found online at:
[siemens.com/go](https://www.siemens.com/go)

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



SIMATIC S7-1200

Safe welding in volume production

04 Dalex uses Simatic S7-1200F to meet the requirements of the Machinery Directive.

Robotics for small and medium-sized enterprises

07 With Simatic S7-1200F, Krüger increases quality and efficiency in the automation of robot cells.

Tailwind for innovation

10 Hedrich relies on Simatic S7-1200 when casting rotor blades for wind turbines.

LOGO!

Know-how

13 With LOGO! 8, multi-phase systems can be easily set up in one configuration.

Hidden convenience

16 Flatlift GmbH uses LOGO! 8 to automate its lift systems for retractable televisions, projectors, and screens.

Reliable remote monitoring

18 Thanks to LOGO! 8, all of Belleacqua's water management systems are extremely reliable.

For a polished game

20 SwissSonic manufactures cleaning systems for golf clubs that are controlled by LOGO! 8.

New products

23 With the inrush current limiter LOGO! ICL230, switching module failure can be prevented.



Stay in touch and register for the online newsletter at: siemens.com/go

Innovative and digital

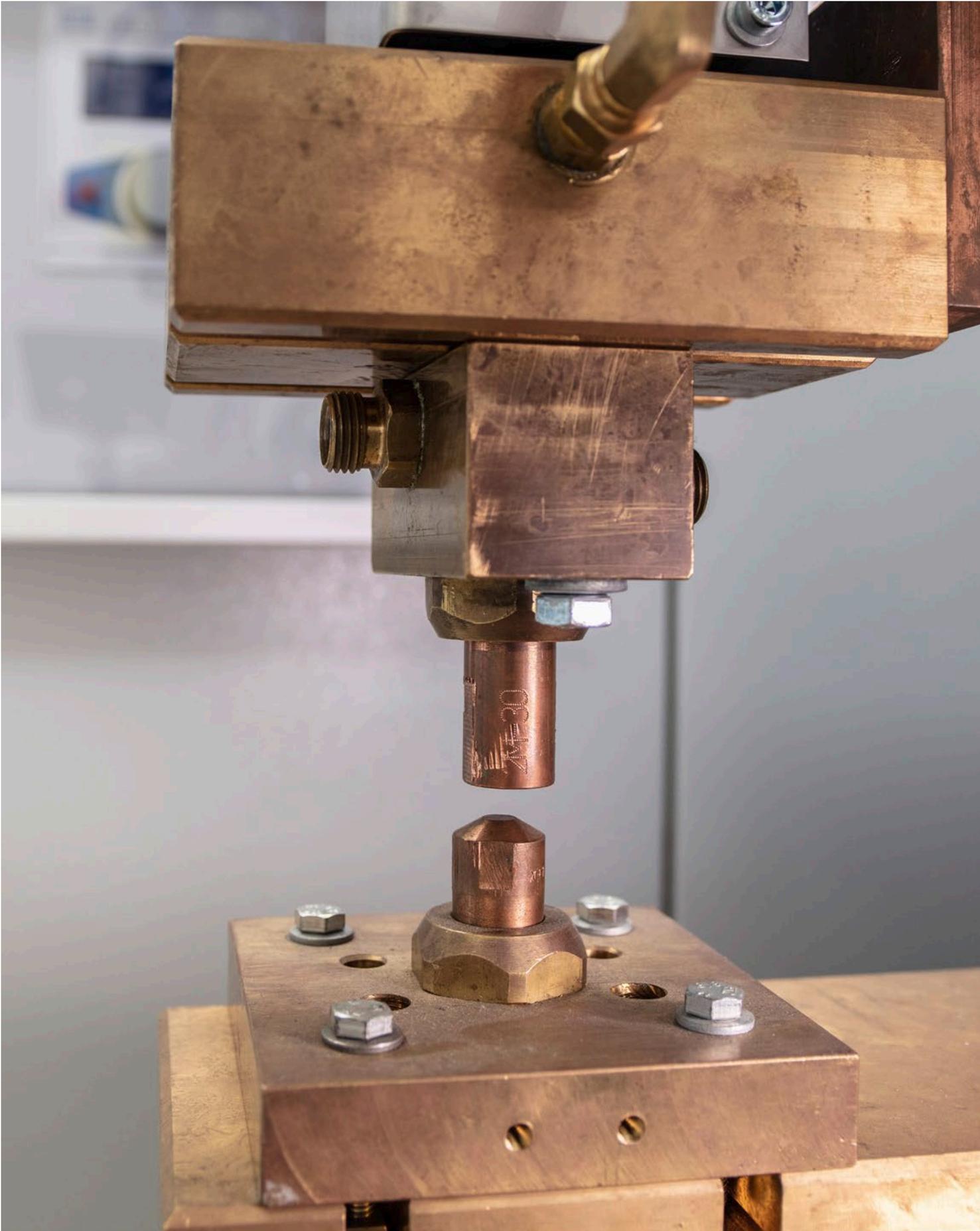
Digitalization is progressing at a rapid pace in both the commercial and private sectors, and automated solutions are playing an increasingly important role. According to a forecast from the German digital association Bitkom, the Internet of Things will connect some 50 billion devices worldwide by 2020.

This trend is advancing worldwide, and device communication capabilities – in conjunction with increased energy efficiency, data transparency, availability, more user-friendly operation and lower costs – are becoming increasingly important.

This is where the LOGO! 8 logic module comes into its own, combining innovative technology, compact design, and intuitive controls that allow users to quickly and easily implement a wide range of measurement, monitoring, and control functions with no programming knowledge. With the integrated web server, basic functions can also be monitored and controlled using a smartphone, tablet, or PC.

If logic module parameters are no longer sufficient, Simatic S7-1200 comes into play. This controller is now indispensable in the area of basic automation. In addition to the controllers, the Simatic HMI Basic Panels are configured simply and efficiently in the engineering framework of TIA Portal. In addition, thanks to TIA Portal and Step 7, various program modules can be efficiently reused. Extensive options are also available for remote maintenance of Simatic S7-1200.

In addition to LOGO! 8 and Simatic S7-1200 being in line with the latest trends in digitalization, GO! itself is also going digital – and you are holding the last printed edition of GO! in your hands right now! On our website we will be featuring exciting reference articles as well as useful tutorials, how-to videos and the latest information on basic automation. And starting now, you can easily subscribe to GO! and have it sent conveniently in digital form to your PC, tablet, or smartphone – so you can stay up to date on the latest trends and read about interesting application examples. ■





Safe welding in volume production

SIMATIC S7-1200: The fail-safe version of this controller is used by welding machine and special equipment manufacturer Dalex to meet the high safety requirements of the EU's Machinery Directive.

In order to protect operators, the safety requirements for welding machines are extremely high – and that's why the fail-safe version of the Simatic S7-1200 was the control system of choice for Dalex Schweissmaschinen GmbH & Co. KG. The controller replaces a combination of LOGO! modules and safety relays, making it a future-proof solution with many advantages for this German manufacturer – and its customers worldwide.

Whether for standard or special machines, robot cells or high-tech tools, this welding machine manufacturer in Wissen, Germany, specializes in resistance welding – and it is one of the foremost manufacturers worldwide when it comes to this technology. Dalex GmbH is internationally known for its industrial plants, the PMS series for spot, projection, and seam welding. However, the company now generates more than 60% of its annual sales from special systems such as automatic rotary indexing machines, inter-linked plants, and robot cells. Their clients range from the automotive industry and its suppliers, to the electrical industry, to manufacturers of punch and bending parts as well as door and window fittings – and even to the aerospace industry.

“Certain functions, including the movement of the welding cylinder, must be designed according to performance level D in order to meet the high safety requirements of the Machinery Directive,” says Dirk Schneider, Deputy Chief of Electrical Design at Dalex. The F functions also include an emergency stop, and two-hand operation for projection welding. Schneider says that in order to protect the operator's hands from inadvertent contact with the machine, projection welding can only be started from a two-hand control desk. >

Greater flexibility than with safety relays

Previously, safety relays along with LOGO! and a welding controller were required to ensure safety and automation of the welding machine. The safety relays provided the safety functions and were wired to LOGO! which in turn communicated with a specific welding controller and started the actual welding process. "The solution has proven itself over many years, but the wiring was very complex," explains Schneider. "If a requirement was added, we needed another safety relay and had to rewire it, which was prone to causing faults. And so we started looking for a more flexible solution."

When the fail-safe versions of the Simatic S7-1200 control system came onto the market in 2015 – and in particular the Simatic CPU 1214FC – they corresponded to the precise needs and requirements of the machine manufacturer Dalex. "This PLC was exactly what we had been looking for," says Schneider. "It allows us to dispense with the safety relays and take care of the wiring in the software, so to speak, which also saves our design engineers drawing time. Now, if we need an additional safety function, we can simply use additional inputs of the controller. The rest is programming."

The system can also be easily expanded, if, for example, the customer requires additional tool functions for his machine six months later. The CPU version 1214FC can be extended by up to eight standard or fail-safe signal modules. "This also allows us to use them for larger machines," notes Schneider. Thanks to communications taking place within the machine, such as via Profinet between the Simatic S7-1200 and the welding control, no additional wiring is required.

Greater efficiency through standardization

The bottom line is that the solution is no more expensive than the old one and will even save costs in the future. Dalex electrical design engineers have been able to standardize the design of the control cabinet for all machines in the PMS series, and now mounting plates can be produced in volume. The completely new visualization also serves to increase efficiency, according to Schneider. "When we changed the controller at the beginning of the year, we decided to equip all our machines with a Simatic Basic Panel KTP 400 and to standardize the software so that it works for all machines in the PMS series. This now allows us to easily parameterize and commission them using the panel," Schneider explains.

It is customers who benefit most from this, with the ability to preselect welding programs on the panel thanks to data transfer via Profinet or to enter the number of welding operations after which the electrode must be changed, while welding operations are tracked with a spot counter: when the specified number is reached, an indicator is displayed.

Standardized engineering, simple diagnostics

The standardized engineering with TIA portal makes it possible to use the library of standard modules developed for



Simatic S7-1200 in the CPU1214 FC version can be extended by up to eight standard or fail-safe signal modules – and exactly meets Dalex's requirements and needs

the PMS series and Simatic S7-1200 – even for the most demanding special machines. "The welding processes remain the same, in part, although today we use Simatic S7-1500F in machines for particularly complex tasks. Thanks to TIA Portal and Step 7, we can simply copy the components to the programming of the Simatic S7-1500," says Schneider. The same applies to the HMI software if a large Simatic Basic Panel KTP 700 is required.

Standardization, continuity, and panels also improve service – which, in turn, benefits customers: "If our service technicians are familiar with the programmed components, troubleshooting becomes much easier," Schneider points out. "The customer receives plain text information through the Simatic panel, where they previously only had indicator lights. They can pass this information on to our service department, which can access the corresponding diagnostic images." At the request of the customer, remote maintenance through a VPN router is also possible with Simatic S7-1200.

Ready for Industrie 4.0

Thanks to the communication capabilities of Simatic controllers, machines in the PMS series are easily integrated into larger lines, too, further supporting Dalex's strategic direction. The user is thus equipped for Industrie 4.0 and for connecting to the cloud-based, open IoT operating system, MindSphere. With so many advantages, Schneider is already considering where else he can use the controller within the expansive Dalex portfolio. "I already know from our many years of cooperation with Siemens that our contact person in Siegen, Andre Meyer, will always provide us with reliable support," adds Schneider. ■

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

✉ andremeyer@siemens.com



Robotics for small and medium-sized enterprises

SIMATIC S7-1200: Plant engineering specialist Krüger Industrieautomation GmbH relies on Simatic S7-1200F for the automation of small and mid-sized robot cells in order to increase production quality, efficiency – and operator safety.



A special gripper lifts the wire frame, rotates it 180° and passes it on to a second gripper

Founded in 1999 and based in Wipperfürth, Germany, Krüger Industrieautomation GmbH specializes in plant engineering and robotics for small and medium-sized enterprises. The company's second major division is closely related to this: Krüger upgrades its robots so they can be reused in new or existing plants. One of the new plants developed and built in close cooperation with its customers includes a robotic cell with a lifting portal and gripper solutions for a metal construction company.

As with other systems with one or two robots, Krüger uses a Simatic S7-1200F Basic Controller as standard. The advantages of this fail-safe programmable logic controller (PLC) completely persuaded Andreas Pfeifer, Head of Project Engineering at Krüger: "It enables us to control and monitor all components in the robot cell independently of the robot program. In this case, it's the end

position sensors for monitoring the gripper position," he says. "In addition, all communication between the robot and the welding machine goes through the Simatic S7-1200F and via Profinet."

Robot cells tailored precisely to the customer's requirements

A mat pullout pushes the finished wire frame mat from the welding machine directly under the special gripper of the industrial robot. This gripper holds and lifts the wire frame, rotates it 180°, transfers it to a second gripper attached to a lifting portal, and then returns to the removal position. Meanwhile, the lifting portal lowers and places the gripper with the wire frame to a calculated position above the stack.

The next wire frame is placed on the stack by the industrial robot itself, without being turned over beforehand, so stacking is always in alternating fashion. "Thanks to this procedure, the

longitudinal wires of the wire frame are always on one level, reducing the stacking height," says Pfeifer. "For large quantities, more wire frames will fit on the truck, reducing transport costs for the customer."

Controller for communication and safety

In addition to standard communication, this also applies to safety-related communication. "The robot is also linked to the welding machine in terms of safety, with an emergency stop system and shared protection areas," explains Pfeifer. "They are interconnected using Profisafe." Since the robot has the Safe Operation option – that is, its actions can be limited to certain areas – the operator can also use the controller to block or enable specific traverse paths depending on signaled states of the welding machine. "This makes very flexible safety areas for operators and robots possible," Pfeifer emphasizes.



All images: Krüger Industrieautomation GmbH

“Because there is now very little cabling between Simatic S7-1200 and the robot, engineering time is reduced by about 50 percent.”

Lars Krüger, Chief Executive Officer of Krüger Industrieautomation GmbH

Profinet interface for communication with the machines, including safety functionality – and all this at a lower price than in the past.”

The programmer only has to know one software and programming language and is able to develop standard modules for both controller families. Information about the safety devices can now be easily visualized, and complex wiring for safety communication is no longer necessary. “This shortens commissioning time,” Pfeifer emphasizes. “Simatic ET 200SP input and output modules on each gripper also reduce the amount of wiring we have to do. They collect the signals from the end position sensors on site in order to communicate them further through a single Profinet cable.”

The future: diagnostics via web server

“Support with circuit diagram macros, manuals, and sample projects is exemplary at Siemens,” adds Pfeifer. In the future, he also wants to make use of the web server integrated in Simatic S7-1200 and develop pages for standardized diagnostics. “This will enable us or the customer to do initial diagnostics from home or on the road using a computer or mobile phone.” ■

All information on the safety functions, including emergency stop and safety doors as well as end position sensors, are directly available in the controller and are visualized on a Simatic KTP700 Basic Panel. Pfeifer says: “This allows the customer to quickly diagnose faults all the way down to the channel fault.” The operator also selects the recipes on the panel, depending on the type of wire frame or stack, which are then communicated to the robot via the controller just like the signals from the welding machine or gripper sensors.

Consistency across the board

In previous years, Krüger used a Simatic S7-300 CPU as standard in its robot cells, combined with safety relays or special safety controllers. “Since switching to TIA portal, we have been using Simatic S7-1200F for smaller plants and Simatic S7-1500F for larger plants,” explains Pfeifer. “This is the optimal solution for us: a CPU with



In close cooperation with customers, Krüger Automation builds systems such as robot cells with gripper solutions

➤ [siemens.com/s7-1200](https://www.siemens.com/s7-1200)
✉ matthias.pohl@siemens.com

Tailwind for innovation

SIMATIC S7-1200: Special plant manufacturer Hedrich vacuum casts rotor blades for wind turbines. The company relies on control and automation technology from Siemens for improved product quality.



Innovation leaders know that an inspiring, valuable idea is required for success. The Hedrich Group has developed a process with which rotor blades for wind turbines can be vacuum cast completely for the first time, significantly improving product quality – and Simatic S7-1200 plays a key role.

As the technology leader in vacuum plant manufacturing for electrical applications, the company headquartered in Ehringshausen, Germany, exports more than 90% of its products and is active on almost all continents. The unparalleled experts tirelessly take on new challenges in order to meet individual customer requirements. A few years ago, the growth potential of the wind power market became apparent and they developed an innovative, fully automatic vacuum infusion process especially for casting rotor blades.

“We can completely prevent air and gas inclusions that occur with the conventional method, since the entire process takes place under vacuum,” says Peter Rektorschek, Head of Digital Solutions at Hedrich. “This increases the structural strength of the end product and eliminates costly finishing work to remove remaining cavities.” Their success speaks for itself. “Within just four years, the plant established itself so rapidly on the market that it now accounts for almost 20% of our sales,” notes Marketing Director Sascha Kandler.

Full automation in the vacuum

First, the raw material (resin and hardener) that is drawn in from intermediate bulk (IB) containers used for the transport and storage of liquid or free-flowing materials is conditioned, degassed, and dehumidified under vacuum in a mixing plant on a fully automatic basis with Simatic ET 200SP as the head controller. The conditioned material is then pumped into a ring line up to 500 meters long, which contains up to eight modular infusion stations for several rotor blade half shells. These so-called Infucubes are each automated with a Simatic S7-1200, which is connected to the head controller and communicates with it via TCP/IP.



Alle Bilder: Siemens AG / W. Geyer

A successful collaboration that will continue in the future: (from left) Jörg Runzheimer from Siemens, Hedrich's Marketing Director Sascha Kandler and Peter Rektorschek, Head of Digital Solutions at Hedrich

“Thanks to Simatic S7-1200 with CPU 1214C, each Infucube operates independently,” explains Rektorschek. “It has valves with appropriate sensors and a softbag set under vacuum as a material buffer that rests on a scale and holds a maximum of 10 kilograms. The half-shell draws the material out of it until it is filled.” Both the sensors and the scale are connected to the controller. Its task is to switch the valves and thus request the material until the first filling is complete and then do so again for a certain residual quantity from the main controller. The main controller stops the process as soon as the mold can no longer accept any more material. It also takes note of the weight of the bag thanks to the scale connected in the same way. Then the operator starts the next Infucube. “Once the half-shell of a rotor blade is filled, it takes about 24 hours to harden, after which it can be shaped or bonded to a second half-shell,” says Rektorschek.





Thanks to Simatic S7-1200 with CPU 1214C, each Infucube works independently

Up to 70 percent less project engineering time

In the first variants of the system, the infusion stations did not yet work with their own controller. There was only the head controller of the mixing plant with decentralized I/Os. "Among other things, the disadvantage was that we could only check the functionality of the infusion stations in conjunction with the running head controller. Now we can distribute the monitoring capacities much better," says Rektorschek. In addition, the number of connected infusion stations had to be known and taken into account during project engineering. "Today we work with a single program version for the main and secondary controllers and only need to adjust the parameters for each plant, shortening the project engineering time by up to 70%.

This allows the customer to easily add more Infucubes to their system or replace defective stations during the process, reducing downtime and increasing availability. They then parameterize them using their central controller and the Simatic KTP400 Basic Panel on the new Infucube. This shows the operator all relevant status information and

process data. They can also enter how full the bag is to be filled towards the end of the process in order to reduce waste, for example.

Standards that span plants and controllers

Hedrich uses Simatic S7-1500 for larger plants in all areas of the company. There were good reasons for choosing Simatic S7-1200 to control the Infucubes: "Both controller families can be programmed using TIA Portal, and almost every program module can be swapped between the controllers as required," explains Rektorschek. "This has allowed me to create standards that we can reuse on both controller platforms. If you also include the onboard peripherals, Simatic S7-1200 is even more cost-effective than a decentralized 'dumb' solution."

Siemens has been a valued partner to the specialists for many years. "Some 70% of our controllers now come from Siemens, along with almost all of our control cabinet equipment, especially since their acceptance among customers is very high," says Kandler. In addition to the technology, he and Rektorschek are convinced by the support and the price-performance ratio, especially since the rollout of TIA Portal. "The easy accessibility of the controllers via remote maintenance is also an important point for us. It is also possible to connect the plants to the IoT operating system MindSphere with ease."

Further tasks for Simatic S7-1200 are already in the works. For one, Rektorschek wants to include this controller in standard modules such as the vacuum pump set in all Hedrich plants. ■

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

✉ burkhard.kolland@siemens.com



All images: Siemens AG

When three become one

With LOGO! 8, multi-phase systems for home automation can be set up in a single configuration that is simple and easy to use.

While three-phase systems are the rule for residential applications, most logic modules on the market require a separate basic unit for each of these phases. In most cases, however, this is not cost-effective because it requires additional space. In this article, we will show you how LOGO! 8 makes it easy to take care of all three phases in a single configuration – creating a user-friendly and uncomplicated setup that also saves space.

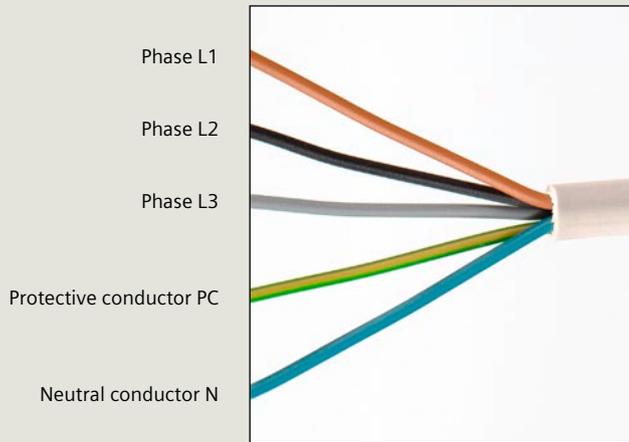


Figure 1

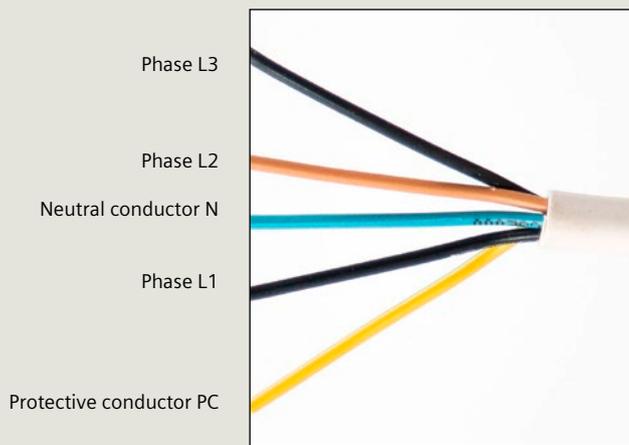


Figure 2

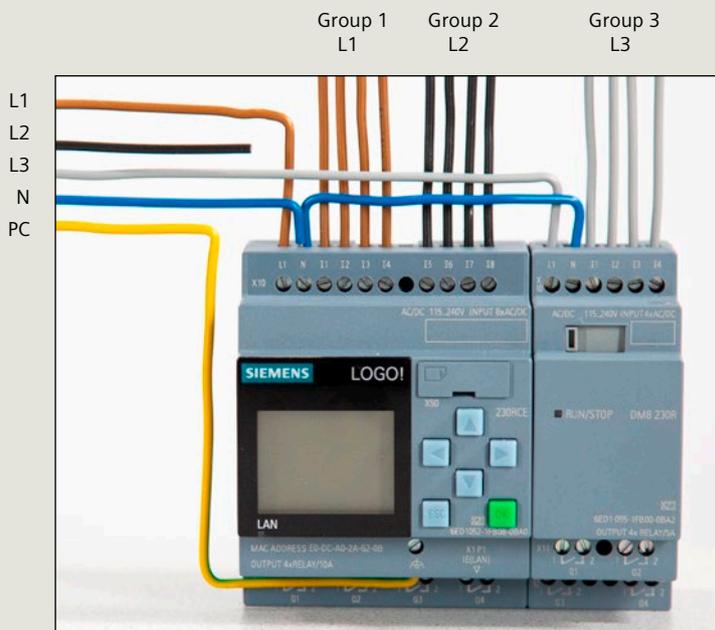


Figure 3

On a typical main distribution board, there is a system with the three phases of L1, L2, and L3. In order to process switching signals from the entire residence, it is often the case that these signals come from all phases. A typical application for this is when you want to use the switches for what is known as a ‘panic circuit’ – all lights inside and outside the house are turned on by several switches at the same time through extended actuation.

We have here used the current color coding of the phases, **Figure 1**, but expressly point out that older color codes, **Figure 2**, are still widely used and that the regulations also differ by region. In addition, only qualified electricians may make changes to the electrical installation.

Different phases can be used on all basic units for 230 V operation. In the following, we will look at the LOGO! 8 230RCE device. On this unit, the eight digital inputs are divided into two groups – that is, two different phases can be connected. The third phase can be connected to an expansion module such as the DM8 230R, **Figure 3**.

However, when connecting different phases to a LOGO! configuration, the following rules must be strictly observed:

- In a group of four inputs, all four signals must come from the same phase.
- LOGO! 230RCE: The power supply of the basic unit must come from the phase of the first group (phase L1 in this case); the second group does not have its own power supply.
- DM8 230R: The power supply of the expansion module must come from the phase of the group (phase L3 in this case).

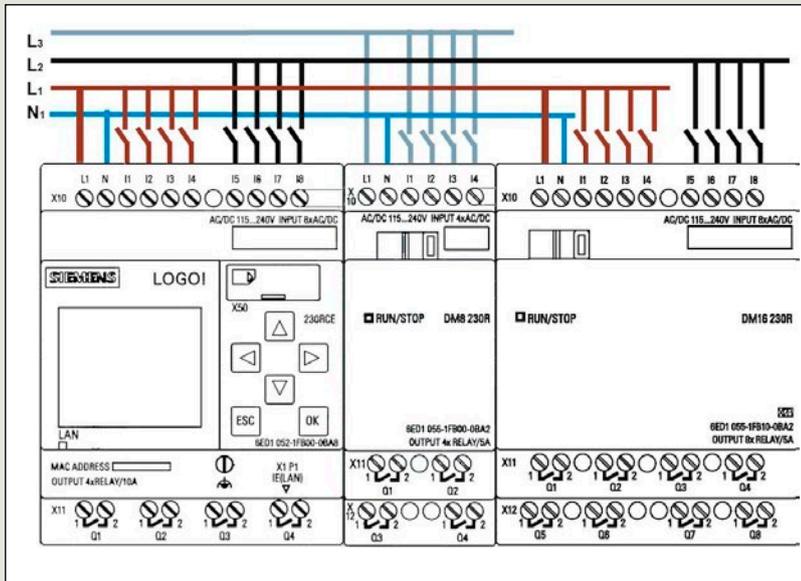


Figure 4

If more input signals are required, the configuration can be expanded further.

Also, an additional expansion module such as a DM16 230R can be integrated, **Figure 4**. The following must be observed:

- The power supply of the additional expansion unit must come from the phase of the first group (phase L1 in this case); the second group does not have its own power supply.

The following applies in general:

- Only apply signals from one phase within a group.
- The order of the phases of the individual groups does not matter.
- The power supply of the module must always come from the phase of the first group of this assembly.

Note: The relay outputs of the 230 V modules are all potential-free. This means that the phases can also be used so that they are mixed on the outputs.



Hidden convenience

LOGO!: Flatlift GmbH automates its lift systems for retractable televisions, projectors and screens with LOGO! 8.

All pictures: Siemens AG / S. Minx

Whether in ceilings or furniture, inside walls or beneath floors, behind pictures, in living rooms or hotel rooms, on terraces, next to swimming pools – or even on luxury yachts – there is practically nowhere that innovative integration solutions from Flatlift TV Lift Systeme GmbH of Worms, Germany, have not been installed. In order to always be able to provide customized, user-friendly solutions for its clients when integrating televisions, projectors, automatically retractable screens or other electronic devices, the company relies on the LOGO! 8 logic module – and its new web server functionality.

Customers want fast, quiet operation

In the installation of electrical lift systems for TVs, monitors and projectors, the logic module serves as the higher-level controller that drives the respective motors and component controls, rotating the screen to a defined end position.

Customers frequently list two main requirements for their systems, explains Flatlift CEO Sascha Rissel. “First and foremost is quiet operation. The emission of noise plays a very important role,” he emphasizes. “Therefore, all components including the motor and gearbox are enclosed to drastically reduce system noise. Additionally, the entire installation is insulated from the furniture or covering with special soundproofing components.”

The second most important issue is the speed at which the screen moves. “Our systems can be extended and retracted at a maximum rate of 30 to 40 millimeters per second,” Rissel continues. Although customers can control how fast their screens retract, the maximum speed preset in LOGO! 8 cannot be exceeded in order to prevent control components and motors from overheating.

Also, as a result of the new web server functionality of the current LOGO! 8 version, every application can be controlled at the push of a button – or even from a smartphone or tablet.

Tailor-made, mobile, secure

“The web server in particular offers many possibilities,” Rissel notes with enthusiasm. The free LOGO! Web Editor tool allows users to create custom websites with their own images and icons. The process is both easy and intuitive, requiring no knowledge of HTML. Since each logic module has an Ethernet interface, several applications within a LAN network can be interconnected and centrally controlled by Wi-Fi. With LOGO! Soft Comfort, the Wi-Fi connection also allows software updates to be easily installed without standing directly at the controller.

“Safety functions are also very important to us,” Rissel affirms. Accidents can happen quickly if someone reaches into the shaft at an inopportune moment, such as when the lid is closing or a screen is moving down. In these instances LOGO! evaluates the signals from suitable barrier rails and sensors, and as soon as an obstruction is detected, the lift stops immediately and receives a control signal to move in the opposite direction. This

active pinch protection prevents hands and fingers from getting caught and injured.

Numerous advantages

“We have been relying on LOGO! since 2011. The latest version in particular offers numerous advantages to us and our customers,” explains Rissel. He and his team were particularly impressed by the easy programmability, user-friendly menu navigation and simple network integration with its new web server functionality. Flatlift technicians write the programs themselves using LOGO! software. “We also developed macro modules – UDFs, user-defined function blocks – which help us in situations such as warranty cases, where we need to understand how often a customer has operated the system or whether parameters such as duty cycles and duty ratios have been adhered to,” explains Rissel. Compliance with the time periods defined for the duty ratio are just as important as speed limitation if you want to keep motor and control system components from overheating and damaging the system. In order to maintain this compliance, time functions are programmed that limit screen movement.



In addition to defined movements, the logic module also controls the electrical lift systems' various safety functions for TVs, monitors and projectors

The company works with local partners to provide on-site system installation at the customer's location. “These local partners are often already familiar with LOGO! control systems from Siemens and thanks to the simple menu prompts of LOGO! 8 they can quickly and easily adjust the settings and parameters on site, precisely adapting them to the respective requirements,” says Rissel. ■

➤ [siemens.com/logo](https://www.siemens.com/logo)
✉ burkhard.kolland@siemens.com



Reliable remote monitoring

LOGO!: Siemens' automation solutions are helping water management company Belleaqua to provide the utmost reliability in their systems.

At first glance, the Flemish town of Wuustwezel is a quaint, bucolic Belgian municipality a stone's throw from the Dutch border. But there's a small firm tucked away in the suburbs that is operated by acclaimed water management pioneers. When Belleaqua was founded in 2002, water management regulations were not very strict – little importance was placed on wastewater management and its subsequent environmental implications. Laws were vague, and solutions in place were rudimentary; sanitation was almost an afterthought.

Then Belleaqua came along. Founder Jean-Pierre Depauw had previously owned a construction company and saw first hand that there was huge potential to make water management systems more dependable, reliable and environmentally-friendly. Depauw explains: "When water came into a tank, the tank had to be watertight. But there were hardly any regulations as to what the tank should look like, and no guaranteed technical specifications."

Siemens AG / S. Minx

» LOGO! 8 is a good and reliable product – it's the best solution for us.«

Jean-Pierre Depauw, Founder of Belleaqua



Siemens AG | S. Minix

Revolutionizing water management systems

Belleaqua realized that they could create secure water tanks that meet the highest standards and regulations, and set about creating water management solutions that met the Flemish organization VITO's (Vision on a Technology for a Better World) CERTIPRO certification. "We had the first certificates on the Belgium market for a concrete wastewater system. The only thing that we wanted to do was optimize all the time, to make sure that the product is a golden product," states Depauw. Moreover, the company was able to offer an attractive all-in-one solution – manufacturing, installing and maintaining water management systems.

The company was soon supplying water management solutions to a variety of customers all around Belgium. Ranging from clients such as logistics firms looking for a secure way to dispense of industrial wastewater, to entire communities wanting to ensure a positive environmental impact to single, private homes in rural areas, Belleaqua grew rapidly. In most cases, the clients chose Belleaqua because of their promise to deliver an end-to-end solution. Depauw explains: "The companies selling wastewater systems are manufacturers, but they don't install the systems and in some cases they don't make the components. We wanted to provide everything from one source, and have a company that gives a complete solution, not just a product."

One of the first communities to use Belleaqua's submerged aerated filter was Bierbeek, a Flemish municipality that installed several hundred wastewater systems. They had tested 24 different systems and selected Belleaqua to provide the solution.

Remote monitoring with LOGO!

However, if the company was going to endure, Belleaqua needed to prove the systems' reliability – and this is where Siemens LOGO! comes in.

Implementing a programmable logic controller (PLC) to monitor water management systems at a distance was key to establishing Belleaqua's reputation. The company wanted to be able to solve any potential difficulties before the customer was even aware that there was an issue. Depauw elucidates: "We have thousands of installations that are monitored from here. Our clients can let go – we take care of everything all by ourselves. If we can't solve it from afar, we can organize a technician who goes to fix the problem. Before the customer experiences difficulties, we have already anticipated them and told the client that there is something wrong." Belleaqua operates a service center seven days a week, offering service desk support 8am-5pm, and after-hour support for emergencies.

Implementing a reliable PLC

Nonetheless, the remote monitoring is dependent on a reliable PLC. Belleaqua's old solution was proving to be inadequate and options were limited. Depauw is thrilled that Siemens was able to supply a controller that offered more. "At a certain point, we weren't able to move on with our old solution, it didn't have enough possibilities. Not to mention we were having quite a lot of difficulties with the communication modules in our previous solution, and we often had to replace them, which cost a lot. At Belleaqua, our clients pay one lump sum a year, and the rest is on us. So it's important for us to have reliable components – we need the best air pump, best wastewater pump, and the best PLC."

LOGO! is installed in the wastewater system's control unit, and it detects

faults and provides information as to water quality. Depauw explains: "With LOGO!, we can see how much oxygen is in the water, if we need more or less aeration and so on." The PLC issues fault levels that provide information as to how serious the fault is (from power failure to loss of pressure) and whether a technician is required. If required, the urgency is determined, thanks to LOGO!, and a technician is assigned for repairs.

LOGO! also controls wastewater flow and the aeration times of the unit and aeration is a vital part of the biological wastewater treatment system. Belleaqua uses naturally-occurring microorganisms to break down wastewater contaminants, and these require oxygen to survive.

Cost savings from a reliable Siemens solution

With Siemens LOGO! 8 and the CMR2020 communication module, Belleaqua is confident that it can drastically reduce unnecessary outings for repairs. "We did a lot of tests before we chose Siemens, and the test results proved performance and reliability 100% of the time. That 100% gave us a lot of confidence in the product, and that's why we decided upon LOGO! 8 – Siemens had a good, reliable product, and it was the best solution for us," effuses Depauw.

And while LOGO! and CMR2020 have just been introduced, Depauw is convinced that the Siemens solution will help the Flemish company to grow even further: "We have found Siemens reliable. We don't have a single LOGO! that hasn't replied or gone wrong – compared to the previous PLC, where we had been having difficulties, so this is great." ■

➤ [siemens.com/logo](https://www.siemens.com/logo)
✉ marc.berckmoes@siemens.com

For a polished game

LOGO!: SwissSonic GmbH from Speyer, Germany, manufactures and markets cleaning systems for golf clubs. Their reliable control is handled by logic modules.



Alle Bilder: Siemens AG / S. Mrix

Elitist, expensive, stuffy: golf is a sport that suffers from many prejudices. However, in recent years, the face of the German golf industry has changed radically, and the era of golf being an elite sport for the wealthy is over. A younger crowd has been showing enthusiasm for this game – due largely to an increase in the number of public golf courses along with less expensive memberships – and it is increasingly becoming a sport of the masses.

Gentle but thorough cleaning with ultrasound

SwissSonic GmbH of Speyer recognized the potential of golf as a sport back in 2003 and began developing and marketing ultrasonic cleaning systems for golf clubs about 15 years ago. The idea came about because it was clear to Frank Becker, authorized representative and one of the founders of the company, that “only if you have perfectly clean clubs can you play an exceptional game.” This means that the clubs must be cleaned after each round so that crucial parameters such as the direction and speed of the ball can be controlled. However, using a coarse scrubbing brush each time results in constant wear on the surface of the golf club – which also changes its characteristics. Becker thus relied on a very specific method of cleaning in the development of his systems. “The advantage of using ultrasound for this is that it is not a mechanical cleaning process and is therefore much gentler.”

Sponsors wanted

Since the first SwissSonic cleaning system was built in the early 2000s, neither the principle nor the appearance of the machine has changed much. It has only been upgraded through the addition of a top unit with an integrated display screen. What’s special about SwissSonic’s business concept? The systems, with or without a display, are free to use for golfers and golf courses and financed exclusively through advertisements. In the case of the cleaning systems with a top display, the advertising features a two-fold benefit: the sponsor can



LOGO! has been integrated in over 30 of SwissSonic’s cleaning systems – ensuring clean clubs and satisfied players

present its products during the cleaning process, while the golfer is entertained during this waiting time and can read the latest news from the news ticker on the screen. A total of 100 systems with a display and around 150 standard cleaning systems are currently in use on golf courses throughout Germany.

Like the systems themselves, the electronics of the cleaning devices have seen little change over the years and microvibrations generated in the machine by the ultrasound still pose great challenges to the system’s elec-

tronics. Up until last year, a control system specially developed for SwissSonic had been reliably performing all cleaning systems tasks. However, after 15 years of operation, the microprocessors in the controller could no longer be used due to their age and exposure to ultrasound. A replacement was required, and LOGO! 8 was chosen for its cost-effectiveness, ease of use and flexibility. Reinhard Weyermann, head of Planning & Development at SwissSonic, explains: “When the controllers failed last year, we looked at several solutions, including LOGO!. The logic module was ulti-



LOGO! 8 scored several points at SwissSonic. Alongside scalability, its simple programming and user-friendly operation were impressive

mately the most convincing due to its price-performance ratio." Since then, the defective cleaning systems at SwissSonic in Speyer have been gradually upgraded to the LOGO! 8 24CE. The logic module provides all control functions for the systems, including regulation of the water bath temperature and control of the ultrasound.

Just right

LOGO! 8 scored points with the company for its numerous advantages, as Weyermann explains. "In addition to the many options offered by the logic module itself, there are ten different expansion modules, allowing us to enjoy a great deal of flexibility. It's also very easy to use and program." In February 2017, he started to familiarize himself with LOGO! and was able to convert the first systems by June 2017. Siemens Support was able to assist him with any issues and questions, and the control system ended up being the perfect solution for SwissSonic's purposes. "The LOGO! configuration could be precisely adjusted to our devices. And all previously installed connections could continue to be used after LOGO! was installed, so we didn't have to replace a single cable."

LOGO! has now been installed and is running smoothly in more than 30 cleaning systems, which is why the company is planning to retrofit another 100 to 200 units. In the coming year, SwissSonic also plans to develop a next generation of machines for the international golf market. Among other things, in addition to a display it will also include a built-in touchscreen, providing golfers with interactive entertainment during the cleaning process. ■

➤ [siemens.com/logo](https://www.siemens.com/logo)
✉ josef.ploch@siemens.com



All images and graphics: Siemens AG

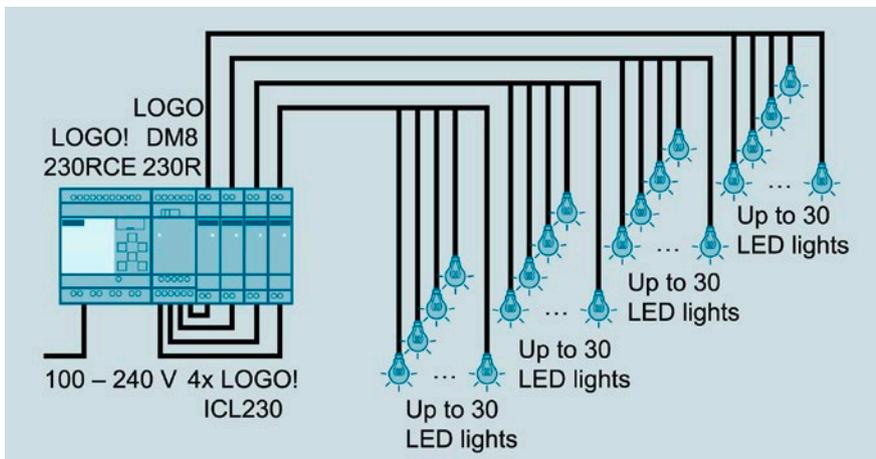
Small device, big impact

With the Sitop inrush current limiter LOGO! ICL230, you can prevent failure of switching modules due to extremely high inrush currents – and increase their service life considerably.

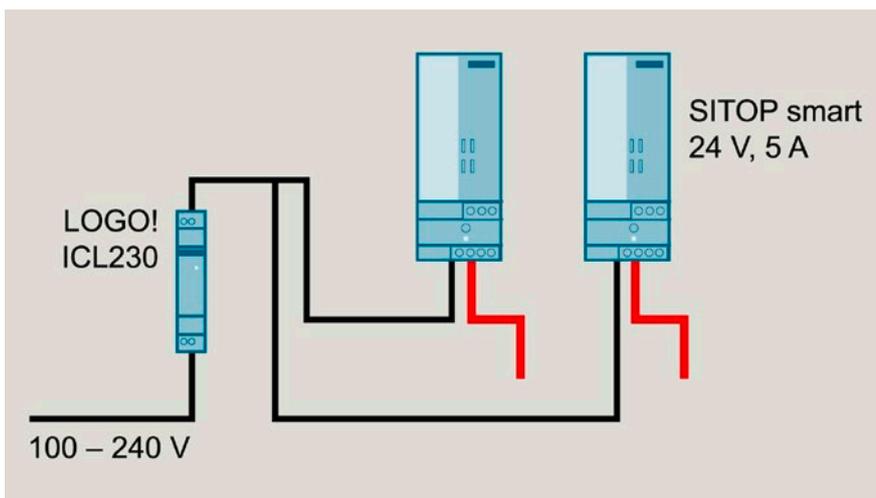
In large building complexes, using LED lamps is a particularly good idea from an energy standpoint. Using a central circuit for these light sources is also

required for large rooms or corridors that need illumination. The starting current of LED lamps is extremely high, and most switching modules are not designed for this. But with a small but powerful module – the Sitop inrush current limiter LOGO! ICL230 – you can still achieve a normal service life with these switching modules.

LOGO! ICL230 also reduces the inrush currents of any 230 V AC voltage system devices to 10 A, such as in the case of downstream switched-mode power supplies. Particularly when several 230 V devices are switched on simultaneously, the inrush current limiter prevents unintentional tripping of the upstream fuse. It should be noted that the sum of the rated continuous currents should not exceed 5 A. ■



Safe switching of LED lamps with high inrush currents



Inrush current limitation that is always precise

New features:

- Maximum service life of current-sensitive components (e.g. relays) through limitation of the current in each switching operation
- Upstream circuit breakers do not trip unintentionally when the system is switched on
- The step profile of the LOGO! ICL230 housing fits into any sub-distribution board

Published by
© Siemens AG 2018

Digital Factory
Gleiwitzer Straße 555
90475 Nuremberg, Germany

For further information please visit:
siemens.com/go
siemens.com/s7-1200
siemens.com/logo

Article No.: DFFA-B10553-00-7600
Dispo 06307

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

Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions only form one element of such a concept.

Customer is responsible to prevent unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place. Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit siemens.com/industrialsecurity.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under siemens.com/industrialsecurity.

ET 200, S7-300, S7-1200, S7-1500, SIEMENS LOGO!, SIMATIC, SIMATIC HMI, SITOP, STEP, TIA, TIA Portal and Totally Integrated Automation (TIA) are registered trademarks of Siemens AG. Any unauthorized use is prohibited. All other designations in this document may represent trademarks whose use by third parties for their own purposes may violate the proprietary rights of the owner.

Follow us:
twitter.com/siemensindustry
youtube.com/siemens