

# MENSCH und AUTOMATION

The magazine for customers of Pilz GmbH & Co. KG Issue 3/2018

**PILZ**  
THE SPIRIT OF SAFETY



## “Adapting technology and its operation to humans”

In an interview, Klaus Baumgartner from Teams Design explains what characteristics are important for industrial operating concepts. **Page 3**

## Old press, new controller

At Seeger-Orbis the operator terminal PMI 6 primo is responsible for control, visualisation and diagnostics on an Erfurt press. **Page 5**

## Closing gaps in security

Safety and security for the Smart Factory require a holistic approach. **Page 7**



# Operating, the smart way!

They have long been part of our daily life: smartphones, which are operated intuitively without the need for instructions, and smart building automation, which is operated via an app while on the move.

These are technologies that are used as a matter of course and that provide people with support. It is not surprising, therefore, that the calls for more usability in engineering are also growing louder. After all, plants are becoming increasingly complex when it comes to their functionality. Interlinked plants and machinery that are combined to create modular systems are a fixed component of the factory of the future, as are mobile applications. The option of remote maintenance, particularly on mobile machinery, and the provision of production and diagnostic data are additional

demands. Despite (or perhaps because of) their complexity, the setup and operation of the systems should be simple and to the greatest possible extent also self-explanatory. This is a challenge for safe machine communication, but user-oriented operating concepts already offer a solution.

### Challenge: safe and user-friendly

An operating concept must be user-friendly in order to ensure functional safety. Once a safety device becomes too complex in terms of handling, there is a risk that it will be manipulated

and thereby defeated. Individual and usable solutions are therefore needed that can be tailored to an application.

The operating concept must be intuitively understandable with a clear design. This not only reduces the required training for the machine operator, but it also prevents incorrect operation and reduces downtimes.

### Operation via touch panel

This type of operating concept includes operator terminals such as the Pilz Machine Interfaces (PMI), which offer all functions for

the creation of ergonomic user interfaces, and web-based visualisation solutions such as PASvisu. Through the close cooperation of control and visualisation, users can easily operate, monitor and diagnose their plants.

Continued on page 2







Dear Readers,

Some amount of design is necessary for a product. The question is: what defines a good design? Is it appealing? Or is there more to it than that?

Housing shape and colour are the most noticeable features of a product design. Whether seen from a distance or hidden behind a control cabinet door, these represent the values that are associated with the Pilz brand. We believe: good design always stems from the application, or in other words the customer benefit. For hardware, this means: simple handling, solid mechanics, long service life. We allow this to guide us during our product design. From the initial sketches to the drafts from our 3D printer and finally during the endurance tests in the test laboratory: in each phase we consider how we can optimise ergonomics and reliability.

Software, meaning a configuration or programming tool, must also be designed such that the user achieves the desired results with as little effort and as few obstacles as possible. A good design helps a user to orient themselves quickly, recognise functions and easily interact with the hardware.

When everything becomes more complex, a successful device and software design supports the user and helps them to maintain an overview.

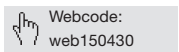
Best regards,

Jürgen Wüllrich, Pilz GmbH & Co. KG,  
Product Development, Senior Manager

## Convenient recipe manager for visualisation software PASvisu

To change parameters on plants and machinery, certain specifications must be complied with. A number of set values must be created, changed and transferred to the controller for this. With the recipe manager from PASvisu software version 1.7, the user is able to do this easily. Corresponding values must simply be stored for the variables and then added to the data records. The data records for the recipes can thus be quickly defined and easily

loaded in the controller runtime. Changes such as cloning, editing or deleting are possible there at any time. In addition, the new software version offers, among other things, the change of language in the event list and event log, as well as the possibility to add your own image material to hardware tiles.



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► 360° Continued from page 1

For this purpose, operator terminals must be integrated into the machine design as the user must maintain the overview of the application at all times. The PMI touch panels are therefore available in various versions and sizes and can be ideally integrated into different environments. Customers who already use their own software can use this in combination with the open hardware platform PMlopen.

### Visualisation with PASvisu

Access to the operator terminals PMIvisu occurs with PASvisu through the use of HTML5 – irrespective of the platform – via almost any end device, such as PC, tablet or smartphone in the respective web browser. This facilitates remote maintenance, which is based on a client-server functionality and thus reduces downtimes. Mobile applications can also be

also establishes new opportunities for diagnostics and maintenance: SDD queries the status information of the connected safety gate sensors, reads out the configuration parameters and visualises actions. If a sensor is defective, for example, the user can immediately locate it and rectify the fault.

### Centrally manage data

Intelligent diagnostic solutions thus provide a plethora of data on the status of the safety devices. Smart diagnostics not only shows past data, but also proactively provides data for maintenance and the exchange of a sensor. This results in short downtimes and increased productivity. The more data that are known, the more precise and exact are the diagnostics that can be performed. To ensure that the user does not lose the overview here, clear presentation



Maintain an overview, even as applications become increasingly complex: smart operating concepts support the user and offer diagnostic information for efficient operation.

implemented with this solution. Furthermore, PASvisu offers all Human Machine Interface (HMI) functions that one expects from a modern visualisation software.

### Smart operation of widely networked solutions

Diagnostics and maintenance are also becoming increasingly proactive and user-friendly. An example of this is the safety gate system PSEnmlock, which now offers a variant for series connection and can be used from stand-alone machines up to sprawling interlinked plants. In combination with the Pilz diagnostic solution Safety Device Diagnostics (SDD), gates can be connected via a single-cable solution and individually operated. Unlike other systems, the innovative diagnostic solution can extend for a total of 900 metres, enabling it to connect large high-bay warehouses, for example, via a single-cable solution for the first time. All sensors are managed centrally via a fieldbus module from the diagnostic system. The single-cable solution not only makes the wiring considerably more user friendly, but it

and simple assessment is absolutely necessary. Cloud solutions have also established themselves; these keep the data available centrally so that it can be called up around the world – remote maintenance has become a crucial part of modern automation solutions!

### Clearing the path for “machine learning”

Smart operating concepts for Industrie 4.0 have not even come close to exhausting the possibilities. In future, IIoT (Industrial Internet of Things) gateways will contribute to additional networking of plant and machinery. User administrations are paired with operator panels. Touch panels can be operated with gestures in a similar fashion to smartphones and robots can be taught by the operator via hand guiding. Virtual reality, on the other hand, presents totally new opportunities for modern machine training or remote maintenance. However: The person who is supported by intelligent technologies is always at the centre of the new operating concepts. ◀



# “Adapting technology and its operation to humans”

Interview with Klaus Baumgartner, Managing Partner at Teams Design

► **Mr Baumgartner from Teams Design talks about products with empathy. How empathetic will devices or products be in future?**

Previously the machine world was almost completely separate from the areas in which people move. The separation between these two different areas is being increasingly removed. Current and future assistance systems are moving ever closer to the human world and this is resulting in a “partner-like relationship” between human and cobot. With regard to the machine world, this means that human patterns of behaviour are detected and processed by the machine and the reactions are derived from this. This leads to an impression of empathy. The good thing here: We are able to personally determine how much empathy we wish to bestow upon a technical system.

► **What are the ingredients for user-friendly products?**

It is important that we are as familiar as possible with the different users by means of on-site observation at the machine and that we continuously improve this knowledge. Because this is not a homogeneous group. We differentiate between operating processes during installation and during diagnostics on site at the customer's as well as operation while running. The users have specific expertise and

thus different preferences when operating software and hardware. The more precisely we know the users, the better we can adapt operating processes to these people.

Different methods that are summarised under the term “user experience” help us to continuously improve communication between human and machine.

► **Are there differences with regard to the operation and handling of products from industry or consumer areas? If so, what are they?**

The consumer world is driven by innovation. This must not necessarily be built on existing systems and designed with an aim toward future viability. If there is something new and better, it is not a problem if this requires a complete change of technology. For industrial applications, on the other hand, durability and availability are critical – even just due to the fact that the product cycles are much longer. From the customer's point of view, they expect systems to be compatible, including in the



interface between human and machine. It is also an advantage if you constantly build on existing knowledge.

► **What technologies will be used in future in human-machine interaction?**

Voice control is a hot topic at the moment. This is also because the technology is now so advanced that an industrial application is possible. In terms of robotics, the trend is currently heading toward cobots, which will work in the direct proximity of humans, have tactile abilities and react to touch. In general it is good if you have as many channels of communication available to you as possible that you can use. This redundancy provides more safety for the human-machine interaction.

## Teams Design

Teams Design is an international industrial design company with its headquarters in Esslingen am Neckar. Teams Design currently has five studios on three continents with around 100 employees. Teams Design is among the top 100 agencies in the international creative ranking of the iF Industrie Forum Design and is number 14 among the independent agencies. Currently Teams Design has received over 200 iF Design awards, including for Pilz products. Teams Design and Pilz have been working together for over 45 years.

► **Do new operating concepts mean that the person must also adapt?**

No. Our goal is for industrial work to be increasingly oriented toward humans and their logic, so ideally the technical systems and operating processes will be adapted to humans and capable of intuitive use. The following also happens to be true: The more intuitive it is, the greater the general acceptance will be and thus the easier it will be to use it everywhere around the world. ◀

► **Inside SPS IPC Drives 2018: Pilz enables you to experience safe sensor technology**

# Automating with all senses

At this year's SPS IPC Drives in Nuremberg Pilz focused on safe sensor technology. The Pilz Smart Factory brought to life safe sensor technology at the trade fair. This modular production line has been expanded again and it demonstrates Industrie 4.0 in practical use.

The Pilz Smart Factory leads by example: Thanks to decentralised control intelligence, intelligent diagnostics and visualisation, mobile service robotics and Cloud connection, various batch size 1 products can be produced – security included. Safe sensor technology undertakes central tasks: from classic area and zone monitoring and safeguarding of safety gates or human-robot collaborations through to new applications such as quality control, diagnostics or machine operation.

## With the components to become a modular safety gate system

Intelligent and economical solutions are created when individual components are connected to form systems: With the modular safety gate system, Pilz presented individual solutions for safety gate guarding in Nuremberg, which enable fast diagnostics even in the event of an error. The dynamic pressure sensitive mat PSENmat offers control function and monitoring through virtual switches in just one device. Productive area monitoring is performed by the safety laser scanner PSENscan.

## Several Pilz service robotics modules in action

With the Pilz service robotics modules, Pilz expands its robotics product portfolio considerably. Following the building block principle, users can assemble their individual service robot applications.

The Pilz service robotics modules include the manipulator, the control module, the operating module and software modules based on the software framework Robot Operating System (ROS). Potential areas of use for the modules in different applications were presented in Nuremberg: as a dual arm version, as a mobile version together with an automated guided vehicle (AGV), as a pick-and-place application in the Smart Factory and on a hydraulically operated “BabyPress”. ◀

Webcode:  
web167671

Online information  
at [www.pilz.com](http://www.pilz.com)





## In brief ...

### Prestigious award for Renate Pilz

Renate Pilz, the former Managing Director at Pilz, received an extraordinary honour at the Mechanical Engineering Summit. On 16 October 2018, she was presented the "German Mechanical Engineering Award" for her life's work. This is the first time that the expert jury has distinguished a woman with the award.



Claus Wilk, chief editor of "Produktion", emphasised the company culture of respectful cooperation in his speech along with the innovative strength of Pilz. The name Pilz has always stood for technology that is ahead of its time. The Mechanical Engineering Award is handed out annually by the German trade newspaper "Produktion" to a selected entrepreneurial personality.

## ► Inside New qualification as "CECE – Certified Expert in CE Marking"

# CE marking at the highest level

The training offer from Pilz is supplemented by an additional TÜV-certified qualification:

"CECE – Certified Expert in CE Marking" provides expert knowledge on the path to CE marking.

The new qualification "CECE – Certified Expert in CE Marking" provides the necessary knowledge for performing CE marking on new, existing or modified machines in accordance with the applicable legislation and standards. The programme is thus of particular interest to machine manufacturers, importers and integrators as well as those involved in the CE process on the operator side. The training covers the complete CE marking process for all types of machines – based on a virtual machine model, the path from the risk assessment to the application of the CE mark is clarified. Participants profit from years of practical experience on the part of the trainers and can directly implement the knowledge gained in practice thanks to the detailed application examples and participation in the practical workshops within the training courses.

### Recognised worldwide

The qualification is internationally oriented. This means that the Pilz subsidiaries worldwide train the participants in the relevant local language and on the same level. After completion of the training program, the participants take a multiple-choice test.



If the test is passed, the participants receive the globally recognised TÜV NORD certificate of "CECE – Certified Expert in CE Marking".

### Setting company standards

The qualification is not just an advantage for individual people: Companies active on the international level can establish the qualification as a standard within the company. They thus

achieve a uniform level across all locations with regard to the CE marking process whilst taking into consideration the relevant standards and directives.

## ► Inside New qualification concept from Pilz

# Further education with a system

Pilz has developed a new qualification concept for professional advancement in the area of machinery safety and automation. The result is a training programme that meets the individual requirements for supplementary qualification in companies.

Pilz thus offers training delegates around the world everything from fundamentals to TÜV-certified qualification with expert status. The content and structure of the training courses are organised

such that interested parties can plan their personal qualification path: The concept enables an introduction at your individual level and further training up to the desired degree of qualification.

One special feature of the training programme is that it is internationally harmonised: Pilz offers the various levels and qualification paths around the world to the same standard and in the local language.

### On one level globally

Small organisations can thus easily bring their employees to the same state of knowledge everywhere in the world. Large companies can implement complete further training programmes with Pilz, thereby systematically advancing their employees as well as implementing qualification standards across the company.

In practice, the concept comprises four different levels for each subject area with increasing complexity of the content and which build on one another in terms of content.

### Level for level up to expert status

The "Introduction" level training courses do not require any special prior knowledge in the respective subject area. Participants receive an introduction to the topic, after which they have a good overview and can then specialise further. On the "Fundamental" level, Pilz provides all the relevant fundamentals with which the participants obtain good technical understanding.

For the "Advanced" level, participants should already have good prior knowledge and experience in a subject area. Here you can deepen your knowledge and expand your professional skills in key areas. The "Expert" level is intended for taking the step to becoming an absolute expert in a subject area.

Additionally, all the "Expert" level qualifications are confirmed and certified by an external test organisation. In addition to the training courses on different levels, Pilz also offers specialised courses in several areas that provide a deeper look into a certain topic, such as safe human-robot collaboration for example.

Pilz offers interactive training on all levels in accordance with the latest educational concepts. In addition to machinery safety, automation and technology, the training courses also cover current topics from alternative subject areas.

"Further training is a never-ending process. We have observed that the significance of continuous further training and personnel development continues to grow in companies as well. This is where our concept fits in. Progressive, modular and totally individual," explained Andreas Schott, Head of the Pilz Academy.





# Old press, new controller

With a retrofit, presses can be rendered more powerful and at the same time safer. Pilz has put an Erfurt press at Seeger-Orbis through an extensive rejuvenating treatment. This included: the new operator terminal PMI 6 primo for machine control, visualisation and diagnostics in one system.

If the basic hardware components at the core are okay, it is always worthwhile to update the electrics and control and safety technology! Older presses can thus be brought back up to the current state of the art at a reasonable price/performance ratio.

## Complete offer for presses

The engineers from Seeger-Orbis GmbH & Co. OHG were faced with the challenge of modernising an Erfurt press from the 1980s. The company, with headquarters in Königstein/Taunus, develops and produces a wide range of fasteners, supporting and adjusting washers, circlips and snap rings for different application areas in the automotive sector as well as in engineering.

“Our cooperation with Pilz has been established for many years. We also got to know Pilz as a complete supplier with the compelling range of services for press retrofit,” states Dirk Schmiedel, Head of Maintenance at Seeger-Orbis.

## More performance, safety and efficiency

With up to 30 strokes per minute and semi-automated feed and removal devices, the aged Erfurt press manufactures circlips of various sizes. Before the conversion, a pneumatically driven feed inserted the rings and a gripper rail transported the blanks through the tool. “The primary goal was increasing the availability and efficiency of the press, making it easier to operate and increasing the work safety,” states Dirk Schmiedel. Generally the press valves and other hardware wearing parts had to be replaced. “The electrics of the machine, which were still primarily based on contactor and relay technology, as well as the automation and the safety devices of the protective hood and protective window in particular required up-to-date solutions,” adds Dirk Schmiedel. The ability of the protective hood and window to be moved independent of one another and for service and setup purposes was to be retained. As part of the retrofit, both were replaced and equipped with coded safety switches PSENcode from Pilz. An installed operating mode selector switch ensures that the operating mode of the press is clearly selected.

## Servo drives replace pneumatics

The drive concept is also new: The pneumatic parts feed was replaced by a higher performance and safer version driven by an electric motor. The servo amplifier PMCprotego D serves as the drive controller for the servo motor. This moves the linear cylinder and thus triggers the feed of the gripper rails. An asynchronous motor drives the actual press in combination with PMCprotego D. The plunger safety is guaranteed via two press safety valves that are safely operated and monitored via the press blocks from the software platform PAS4000. The automation system PSS 4000 is used as a safety controller that works in parallel. Configuration and programming can be performed quickly and intuitively via PAS4000.

## Look and drive

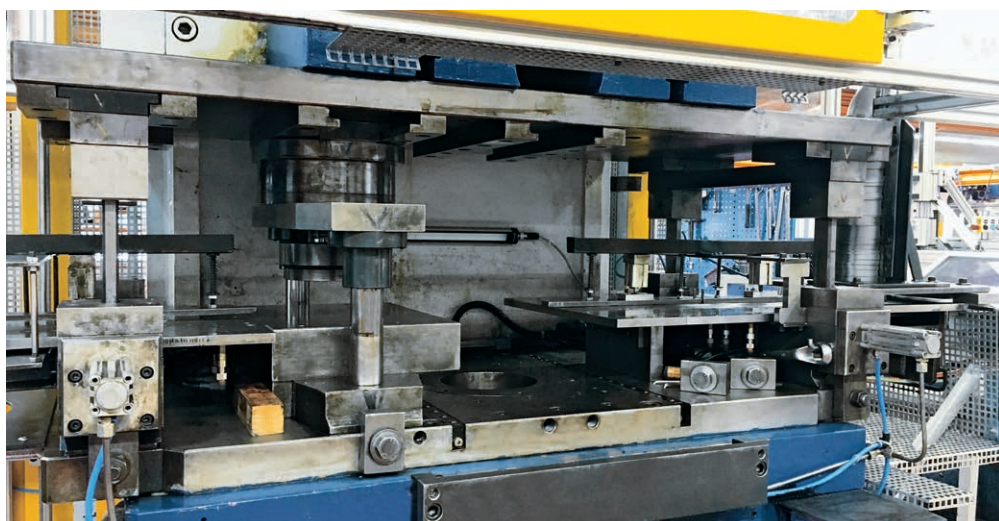
The press retrofits from Pilz now also include the integration of the Pilz Machine Interface PMI 6 primo: the new 6-series control system has a PLC in accordance with IEC 61131 3. Equipped with motion and CNC functionality, PMI 6 primo is responsible for the complete automation within a plant including drive control, visualisation and diagnostics.

Up to 64 axes can be linked flexibly to form a kind of electronic main shaft and simple CNC tasks can be managed. The multifaceted and flexible control system supports common master/slave communication interfaces and in future will support PROFINET as well. All technical processes can thus be easily operated, professionally controlled and observed.

## Compellingly short standstill

The unproductive modernisation phase of the press did not last long: Thanks to careful planning and preparation, the conversion phase including commissioning only took 18 working days. The Erfurt press is currently back up to the state of the art and produces circlips on the assembly line.

“Pilz, the complete supplier, supported and convinced us with their competence and experience in every aspect of the planning and implementation,” stresses Josef Abeling, Managing Director of Seeger-Orbis. ◀



Before the retrofit: The “old” Erfurt was still primarily based on contactor and relay technology. Automation as well as safety devices of the protective hood and window required up-to-date solutions.



After the retrofit: The panel version of the Pilz motion control range PMI 6 primo offers professional control, visualisation and diagnostics in one system.

## Three minutes with ...

# ... Michal Nevěřil

General Manager of Pilz Czech Republic and Slovakia

► Pilz Czech Republic has developed a solution for the monitoring of machines. What does it involve?

Correct. We want smarter control of access to and monitoring of machines. To achieve this, we developed a complete solution. This is based on our safe operating mode selector switch PITmode in combination with the IIoT gateway Revolution Pi, which provides data about the machine via mobile communications. The first systems have been installed for pilot customers and are working under real conditions.

► What are the benefits of the application?

The special feature is that the solution works for every manner and type of machines. No matter how old the machine is. It is essentially “ready to use”. On the one hand, the customer can decide – and monitor – who works with the machine and who has which authorisations, and can do so centrally for the entire machine ensemble. Each operator is issued the machine enables that correspond to his or her skills and qualifications so that there is a high degree of protection against unintentional actions and manipulations and the information is secure.

At the same time, the customer can inspect and monitor important machine parameters on the control level. Based on the real data, he can thus constantly optimise the operation of the

machinery. It is a piece of Industrie 4.0 that we have implemented here.

► To what extent does the application follow the trend toward better human-machine interaction? The interaction is made considerably easier because it is more transparent and granular. After all, an intelligent safety concept must ultimately offer both the highest amount of latitude and creative leeway as well as the greatest possible degree of safety.



The access to the machine or the process is critical here. This was previously often regulated through organisational measures alone. With the definition of safe operating modes, the requirements for operator safety, process reliability and availability can be harmonised.



## In brief ...

### Automation system PSS 4000:

#### M12 connection for railway technology

Based on the automation system PSS 4000, Pilz has developed a special variant for the railway industry: PSS 4000-R. Two new control head units with M12 interfaces are now part of the railway range of the automation system: a head module with PLC functions as well as an I/O head module. Both are suitable for application conditions in accordance with the railway standards 5012x. Suitable I/O modules with railway approval are available for safe digital and analogue signal processing. The -T(temperature) type I/O modules can be used for the extended temperature range -40...+70 °C for non-safety-related signal processing. Safe signal transmission is thus also guaranteed under adverse conditions!

Webcode: web8485

### Informative introduction to PROFIsafe

A total of 40 participants from the network of PROFIBUS user organisations were guests at the "PROFIsafe Workshop" at Pilz in Ostfildern on 18.09.2018. The one-day event was aimed at interested machine builders and device manufacturers as an introduction to the PROFIBUS and PROFINET technology. Pilz explained the "requirements for functional safety in automation" in a presentation. Twelve companies from the network took advantage of the "microfair", an accompanying exhibition, to introduce themselves.

### "Safety & Infrastructure" ...

... was the main topic of the research platform SmartFactory KL at SPS IPC Drives 2018. In practice the focus was on TSN (Time-Sensitive Networking), access devices for communication networks (edge devices) and safety over the new mobile communication technology 5G: the TSN demonstrator illustrated the advantages of these technologies using a cable cutting procedure: two motors, controlled synchronously, guarantee regular feed of the cable to be processed. Simulated overloads show how the process reliability is guaranteed through prioritisation of the control signals. Edge devices highlight the opportunities for the smart upgrade of brownfield systems. And the new mobile communication technology 5G is used to demonstrate communication solutions for a transportable robot. The transmission of the safety packages based on PROFIsafe is of particular interest here.

[www.smartfactory.de/en/](http://www.smartfactory.de/en/)

► Panorama Agile production processes require new safety architectures

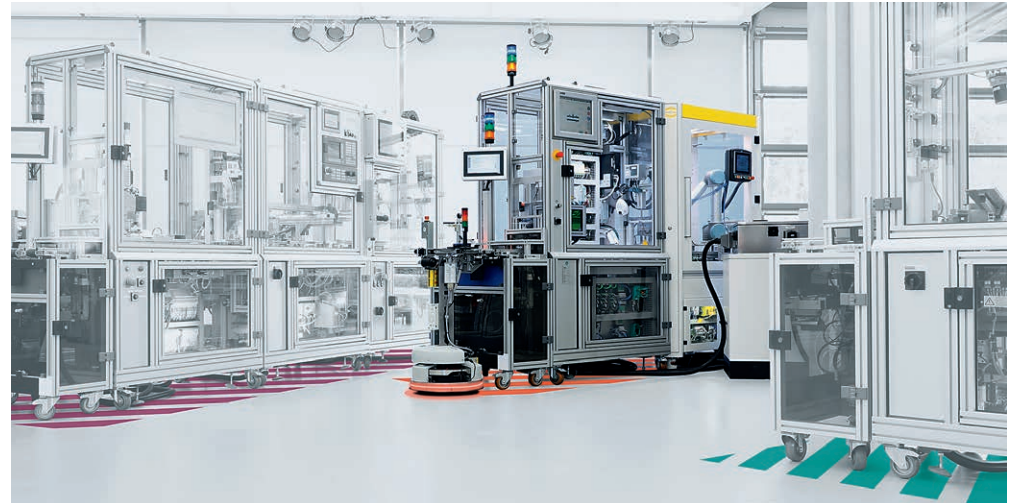
# The future of safety

Agile methods are required to implement flexibility, variant management or even batch size 1 in the Smart Factory. This brings major challenges with it in practice, for example in terms of safety.

After all: a process must be followed for every machine based on the Machinery Directive (MD) from risk analysis through to CE marking, with the respective necessary measures and documentation. This procedure is designed as a "pre-process"; this means that the machine can only properly and legally begin operation after this is successfully completed.

In Working Group 1 "Smart infrastructure" of the research platform SmartFactory KL, experts from Pilz and other companies and organisations are delving into the topic of "Safety in modular Industrie 4.0 production plants". The objective is a plant structure that enables flexibility and changeability through modularisation, among other things. Inherently safe modules are equipped with conventional functional safety. There are still dependencies between the modules, however. In addition, a new safety architecture is necessary in modular systems that also supports unknown modules.

In a white paper, the working group described a concept for automatic certification of Industrie 4.0 production modules. According to this, machines and machine modules can be introduced into production or removed from it at runtime without impacting the rest of a plant.



The required safety-related parameters are negotiated, configured and approved virtually automatically based on the introduced safety profiles.

Changes to the combined machines are accepted as safe in accordance with the MD if the individual components have the expected safety profile for the overall protective function. The safety functions are described in this safety profile. At the same time, all safety profiles from all combined machines must be implemented. If machines are combined that have not yet

implemented the required profiles or if these profiles are outdated, a manual re-evaluation must be performed. This is stored in the administration shell as an interface between the digital world and the real shop floor and is available to the machine group in future.

The white paper is available online:  
<https://smartfactory.de/en/downloads-whitepaper/>

► Profiles Portrait of the Pilz Mexico subsidiary

# Staying safely "on the ball"

The "Ambassadors for Safety" are taking on a leading role for greater machinery safety.

Different safety requirements apply for industry around the world. Mexico is an example of a country with great potential for safe automation. This is because the guidelines for machinery safety are currently not strict here. As "Ambassadors for Safety", the Pilz subsidiary is therefore on site advocating practical standards for the protection of humans and machines. Some companies have already recognised the advantages of safe automation: renowned international customers who are present in Central America receive advice and support from Pilz Mexico.

How do we convince more local companies of the great importance of machinery safety? Pilz Mexico offers a comprehensive range of training courses and presentations on machinery

safety that is based on international standards and examples from industry. The safety ideas are thus transported to the customer and the way is paved for a safety culture. The Mexican subsidiary would like to be seen as a reliable partner for safety and automation with its appropriate products and comprehensive range of services.

This subsidiary has represented Pilz in Mexico since 1999. The Mexican customers are served from its headquarters in Tlalnepantla, outside of Mexico City, and representatives in Monterrey, Queretaro, San Luis Potosi, Ciudad Juarez, Silao and Puebla. This year alone, the team led by Samuel Cruz Flores, General Manager at Pilz Mexico, has been able to acquire new customers for safety and automation from the



metal, food & beverage, chemical and pharmaceutical industry. The local availability of spare parts must be guaranteed for Mexican customers as well as a supplemental training offer.

There is currently a particularly high demand for consultation for human-robot collaborations, CE marking and retrofits, meaning the reworking of plants and machinery including their automation and safety functions. Pilz Mexico wishes to assist the customer along the entire lifecycle – from the idea of automation through to the implementation of the project. The team is working together to achieve this goal. "There is currently a demand for solutions that can be flexibly adapted while satisfying the high requirements for productivity partnered with low levels of maintenance work. Intelligent diagnostic tools are considered a technological advantage," observes Samuel Cruz Flores.

And what are the goals of our Mexican colleagues? The signs point to growth! "With our experience and our knowledge within machinery safety," states Samuel Cruz Flores, "we wish to position Pilz among the top five automation suppliers on the Mexican market." To achieve this, the subsidiary is investing in qualified personnel and building up their presence throughout the entire country.



# Closing gaps in security

The following is also valid in the Smart Factory: Safety measures must not impair the productivity of plant and machinery. That calls for a holistic approach to safety & security. Pilz shows how this is possible in the “Security” white paper.

New strategies for the safety of plant and machinery must take into account both security (IT security) and safety (machinery safety) because ultimately safe operation can only be ensured if the corresponding data is transmitted reliably.

The same applies for both security and safety: even the best hardware or measures are worthless if they are not implemented or, worse still, are deliberately defeated due to a lack of understanding or ignorance. Technical measures alone are not sufficient – they must be accompanied by organisational measures such as handling instructions, procedures and training.

In the “Security” white paper, experts from Pilz have compiled central aspects of security and introduce solution approaches for practical applications.

The following questions will be answered:

- What is security and what influence does it have on safety?
- What significance does security take on in automation?
- What types of threats are there?
- How can security be assessed?
- What security strategies are there and how can they be implemented?

The white paper is available for download free of charge at:

Webcode:  
web188331

Online information  
at [www.pilz.com](http://www.pilz.com)



► Panorama SPS Automation Middle East in Dubai for the first time

## Hello Dubai!

Pilz is also positioning itself as an expert for safe automation in the Middle East.

SPS IPC Drives in Nuremberg is Europe's leading exhibition for electrical automation. The exhibition group celebrated a world premiere this year: Following offshoots in Italy, India and China, SPS Automation Middle East took place in Dubai in the United Arab Emirates for the first time from 18 to 19.09.2018.

Pilz was there as an exhibitor from the very beginning under the motto “We automate. Safely.”! Visitors were able to learn about the system solutions and services from Pilz at the exhibition stand. During discussions with potential customers and possible partners in the region, the Pilz experts managed to gain a comprehensive impression of the market and the opportunities in the Middle East.

Pilz products are already established here because some of Pilz's international customers are active in the Middle East and machines built in Europe make their way to the region. SPS Automation Middle East is a good platform for further increasing the prominence of the Pilz brand and to delve deeper into the topic of safe automation in the region. There is major potential in the food & beverage, packaging, process industry and transport and logistics sectors, for example for Pilz sensor technology and services.

Based on the positive results and the feedback from visitors, Pilz will also exhibit at the second SPS Automation Middle East in Dubai in 2019 and further strengthen its presence in the Middle East.



## Apropos ...

With Mat P. on his automation tour

Whether he is dealing with applications from the fields of packaging, automotive, traffic engineering, metal processing – as an expert, Mathias P. travels the world with automation solutions by and for Pilz. He often talks to his wife about his experiences...



**PSS 4000**  
APPLICATIONS

► I recently saw a report on television about wind farms in the middle of the ocean. I am still wondering how they lay the cables to them.

This is not particularly easy at sea because the geological make-up of the sea floor alone is so varied.

This is why cable carousels weighing tonnes are used for laying cables in combination with clamping devices and winder drives. The company Blue Offshore offers system components for this that can be used to prepare individual solutions.

► Many things must be observed here.

All system components must be designed such that they can be transported disassembled on a normal container ship and quickly assembled on site. Pilz worked together with Blue Offshore in 2017 to overhaul the control technology of this type of cable carousel. This is a real heavyweight with an unladen weight of 600 tonnes, a diameter of 23 metres and a capacity of up to 5,000 tonnes!

► Truly a colossus! Safety must be guaranteed in operation as well, however.

For Blue Offshore, the protection of the operator was a central focus during the general overhaul. To increase safety, the equipment is now only operated from the operator's cab. If a problem occurs, the systems come to an immediate stop and the control system indicates the fault. Among other things, the controller PSSuniversal PLC – part of the automation system PSS 4000 – now ensures that an acoustic warning signal sounds 10 seconds before the carousel starts up. A light signal also indicates whether workers are permitted to enter the cable carousel or not.




# Easily control and visualise drives



The new operator terminals PMI 6 primo have PLC, motion and CNC functionality. They are responsible for the automation, including motion management, within a system and ensure increased production quality and higher cycle counts thanks to increased performance. The processor and memory are powerfully equipped and thus offer a corresponding basis for automation tasks.

Control of the entire machine is possible, as is control of complex sub-

sections under a higher level PLC. The visualisation of drive projects is performed via PMI 6 primo touch screens that are equipped with a user-friendly visualisation and are thus compatible with every common HMI software. A PMI Assistant is available, making it even easier to install the software packages. PMI 6 primo is equipped with a Soft PLC in accordance with IEC 61131, Version 3.5.

 Webcode:  
web150595

Online information  
at [www.pilz.com](http://www.pilz.com)


# New generation with more performance



Pilz is bringing the new generation of Pilz motion control systems PMCprimo C2 onto the market. Thanks to increased performance, they offer higher cycle counts and thus better production quality.

In addition to the encoder input, a wide number of interfaces such as EtherCAT Master, digital inputs/outputs and a USB interface for data import and export ensure a high level of flexibility. PMCprimo C2 is equipped with a powerful 1.3 GHz processor. Users benefit from fast commissioning

times thanks to programming with Soft PLC in accordance with IEC 61131. The upgrade to version 3.5 of PLC means they now have access to all the benefits of object-oriented programming. Thanks to the integrated real-time task (processing time 1 ms), users now also have the scope to implement high-performance applications such as path interpolations.

 Webcode:  
web150507

Online information  
at [www.pilz.com](http://www.pilz.com)


# New types for body protection



With a protected field height of up to 1500 mm, light curtains PSENOpt II, in addition to finger and hand protection, are now suitable for body protection up to the highest safety category PL e.

With a shock resistance of 50 g, PSENOpt II are extremely robust with regard to shocks, vibrations and collisions. This ensures the availability of the machine even in extreme environments. The light curtains with body resolution are suitable for ranges of up to 50 m.

Users are free in the physical arrangement of the light curtains because the coding means that they do not interfere with each other, even in close proximity. This is particularly important if the transmitter of the first pair of light curtains emits beams in the direction of the receiver of the second pair of light curtains. In this case, the light curtain pairs can be configured with different beam codes. The coding is integrated into all light curtains PSENOpt II.

 Webcode:  
web150418


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# Digital motor feedback



The purely digital motor feedback protocol HIPERFACE DSL is now available for the servo motors PM Ctendo SZ. It uses a minimum of connection cables between the frequency converter and motor feedback system. So the servo motors PM Ctendo SZ support the trend towards a single-cable solution within the drive technology. Not only do they save costs, they also occupy less space and involve less installation work. The PM Ctendo SZ servo motor can be used in any application: regardless

of whether the focus is on dimensions, dynamics, controllability or the feedback systems. The synchronous motors are particularly suitable for on-board axes and for installation in confined spaces. Precise motor synchronisation, due to low cogging torques, provides constantly high process quality. Pilz drive technology provides users with overall solutions for the safe, energy-efficient automation of drives.

 Webcode:  
web150384

Online information  
at [www.pilz.com](http://www.pilz.com)

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