

# MENSCH UND AUTOMATION

**PILZ**  
THE SPIRIT OF SAFETY

The magazine for customers of Pilz GmbH & Co. KG Issue 1/2021

Read more on pages 1–3.  
Safety in batch size 1 with

**myPNOZ®**  
create your safety



## Customer-focused

In an interview, Thomas Nitsche reports on the know-how incorporated into the new safety relay myPNOZ.

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## A reliable partner

Pilz took over the CE mark conformity assessment procedure for Waldorf Technik, an injection moulding specialist.

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## What happens after Brexit?

Brexit has implications for machine import and export activities. Pilz is supporting machine manufacturers and operators in navigating the changes.

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## ► Custom creations

Could you imagine a safety solution in batch size 1 that the customer can put together exactly in line with their requirements and that can also be easily integrated into their application? With the new safety relay myPNOZ, Pilz has risen to this challenge and designed and launched a brand-new product line based on this Industrie 4.0 philosophy. The innovative highlight of this solution is the fact that users now have a brand-new way of ordering. They ultimately receive their custom product for 'their' safety application – complete with a safety guarantee to boot.

The simple and intuitive online tool myPNOZ Creator is the centrepiece of this innovative ordering method. All users need to do is go to the online tool, which can be accessed through the Pilz website, armed with knowledge of their application's safety level and, where applicable, sensors or actuators. The 'myPNOZ Creator' is a product catalogue, a handy selection tool and an engineering platform all rolled into one, including simulation, documentation and an ordering tool. Thomas Pilz summed up the advantages:

"myPNOZ offers users a brand-new customer experience with respect to choosing, ordering and installing industrial components. With the tool's support, selection and ordering are made easier and sources of error are avoided. This is an extremely important aspect, especially for safety relays designed to protect man and machine."

**myPNOZ: a safety relay and more besides**  
To put it another way, users receive a custom-

made device that's ready for installation. The individual modules of a myPNOZ are assembled at the various Pilz sites around the world, fully in line with customer requirements. The finished myPNOZ is inspected and sent to the customer with an individual label. myPNOZ is still a safety relay at its core, but boasts a modular design. It essentially consists of a head module and a maximum of eight expansion modules and ensures safe monitoring of 2 to 16 safe input functions – emergency stops, safety gates, light

barriers, two-hand IIIA/C controls and enabling switches, to name but a few examples. In that respect, looking at the obvious features, it's almost a normal safety relay. But only almost!

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Dear Reader,

The Industrie 4.0 Working Group of the Industry-Science Research Alliance was established a decade ago in 2011. Like any innovation, Industrie 4.0 is following the hype cycle. In many places, hype was followed by disillusionment – and the realisation that there would be a great deal of work and effort ahead. We're now on what's known as the 'Slope of Enlightenment'. The experiences we've had (both good and bad) enable us to better identify what is required. I believe this includes digitalisation (i.e. the integration of internet technologies) and agility. Because, as product lifecycles get shorter and markets move faster, the way development and customer support are handled has to be different.

But how can these requirements be handled successfully?

Digitalisation requires us to work together! After all, added value is only created through exchange and cooperation. What's more, agility needs commitment! Because it cannot be prescribed; rather, it's a matter of attitude.

So Industrie 4.0 is about taking people with us. People must be capable of bringing technologies and methods to life, otherwise they remain hollow ideas.

Best regards,

Susanne Kunschert  
Managing Partner  
Pilz GmbH & Co. KG

## myPNOZ in the Eplan Data Portal



To make the automation process with the safety relay myPNOZ particularly simple, users can download their safety solution that has been individually assembled using the myPNOZ Creator as an XML file and import it into the Eplan Data Portal. A new Eplan configuration tool is then used to automatically create a system macro using the XML file as a basis. It contains both the modules in the correct combination and the settings, such as start type or delay times. This means

that circuit diagrams and the layout of the control cabinet can be created quickly using the Eplan Data Portal, without any need to select and assemble the modules manually. This file import process means users benefit not only from time savings, but also from the resulting reduction in errors.

Incidentally, Pilz is part of the Eplan Partner Network. The network aims to facilitate systems integration for customers through cross-manufacturer cooperation.



### Internal logic renders programming knowledge redundant!

Pilz has taken lots more steps with myPNOZ. It combines the simplicity of a safety relay with the opportunities that digitalisation has just created – namely, individual production in batch size 1! myPNOZ is a pre-assembled safety relay that is tailored to requirements and characterised by its modularity and flexibility. So it can map a combination logic internally. This logic is also one of the new product's special features: Users don't need any engineering software or programming knowledge. Why not? Because

than just develop a new relay hardware. The general way of handling a Pilz product is also completely new, both for us and the customer. We are not re-inventing the world of safe automation; we are designing it differently, to offer customers greater convenience!"

### Milestone: myPNOZ

myPNOZ is a milestone not only for the market, but also for Pilz in the field of safe relays. The latest safety relay is a cross-company achievement that covers almost all divisions at Pilz. The IT and OT (organisational technology) environments



With the innovative safety relay myPNOZ, Pilz has set a milestone with regard to digitalisation in industry. It enables Pilz to offer customers individual, safe solutions in batch size 1 in line with 'their' specific requirements.

the logical link between the safety functions is defined by the modules' plug-in sequence, selection and parameter settings. To summarise: Pilz is offering a free online tool that makes mapping your very own individual safety logic an absolute breeze.

### The Creator among online tools

But what exactly does this myPNOZ Creator do? This online tool gives the user various options for creating their safety solution. The options include a choice between a logic view and a hardware view. With the logic view, the user (i.e. the customer) graphically defines their safety solution, which the Creator then translates into the ideal matching hardware and its sequence. myPNOZ's modularity and the Creator's intelligence mean they only pay for what they really need for their solution. Additionally, they can simulate their own solution in the Creator and receive comprehensive documentation that's intended as support during the machine commissioning and approval processes.

### Convenience for the customer makes all the difference

If the application's safety requirements change during machine development or over the machine lifecycle, the customer can also flexibly adapt this in the Creator. This is what sets myPNOZ apart from all the other safety relays already available on the market. As Thomas Pilz put it: "For our myPNOZ, we have done more

were and are closely interlinked here to manage the necessary processes – from the customer's individually generated range of functions, to shipping and invoicing.

Nowadays, this personalisation of production is a decentralised process that spans the Pilz Group worldwide. It is ultimately the customer who benefits from this brand-new process and the associated innovative ordering channel, since they receive exactly the safety solution they need – featuring the usual Pilz safety and quality to boot.



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

# “We want our customers to have it easy”

With the safety relay myPNOZ, Pilz is doing more than just presenting a new product; it's also showcasing a digital business model entirely in line with Industrie 4.0. In an interview, Thomas Nitsche, Business Development Team Manager in International Sales at Pilz, explained the influence that practical experience has had on the development of the myPNOZ.

► **Functional safety in batch size 1: What key findings have been incorporated into the development of the safety relay myPNOZ?**

Based on the feedback we gathered from discussions held with customers, it was clear to us early on that the application should take priority in myPNOZ: How can we offer an ideal generic solution for the wide range of applications that safety relays are used in? So the customer was the focal point during the development process, and we incorporated our diverse practical experience too. We didn't just concentrate on use on the finished machine, but rather on how the customer can benefit from myPNOZ throughout the entire process – from machine development, to commissioning and operation on the end customer's premises.

► **And what sets the generic solution apart now?**

The variability and flexibility – myPNOZ can be used to create a multitude of individual safety solutions, all the while reducing the effort required. We want our customers to have it easy: from the design stage and the ordering process with our online tool myPNOZ Creator, right up to commissioning. They receive an individually assembled, preset and tested safety relay that they can install directly. Re-ordering the individual configuration is a doddle using the type code. And it's just as easy to make adjustments to the individual configuration at a later stage. What's more, our consistent approach to digitalisation offers customers potential savings.



► **What are these potential savings?**

With myPNOZ, we want to simplify our customers' work and take as many steps as possible away from them. With the help of the myPNOZ Creator, they put precisely the safety functions they need together. So we can offer the right options here, we've taken a long, hard look at the machine creation and usage process and incorporated our findings into the Creator. Since each customer's safety logic is automatically translated into the appropriate myPNOZ concept, the Creator provides support for application safety design. The individual configuration means that customers ultimately pay for exactly

what they need, not for additional features that aren't of any use to them. All they then have to do is unpack and connect their myPNOZ, without any additional configuration or programming effort.

► **Does this approach bring additional advantages in the use of myPNOZ?**

Modules can be ordered later – to expand the solution, for example. It's just as easy to replace an existing module in the control cabinet. Thanks to myPNOZ's modularity and ability to monitor individual safety zones independently of one another, Pilz is also supporting modular machine or plant design. This is also a huge plus point for industries like the food industry that frequently make adjustments to their production lines, because machines can be quickly and easily adapted to new safety requirements with myPNOZ.

► **So do users still need a standard PNOZ, then?**

Yes, because myPNOZ complements our existing portfolio. For smaller applications with one or

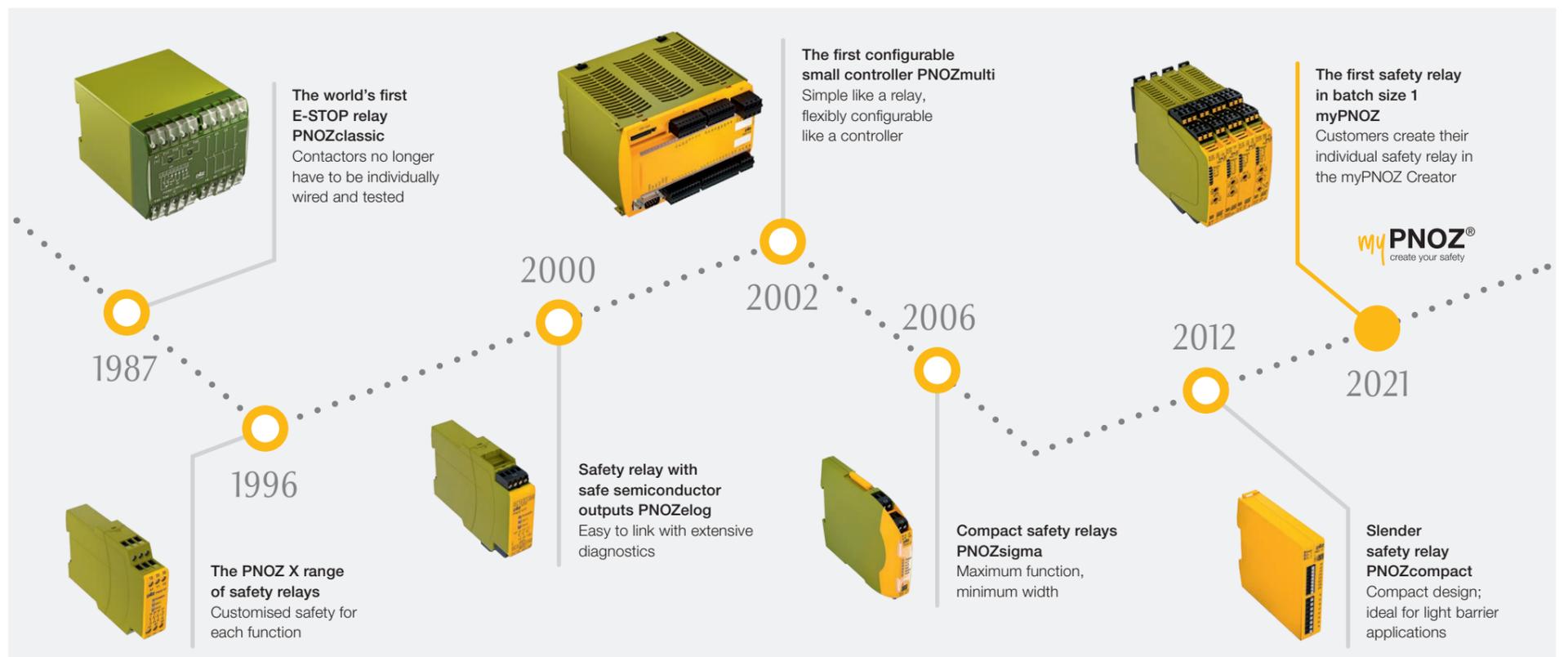
two safety functions, using a safety relay such as the standard PNOZ is still the obvious choice. Meanwhile, for complex applications with more than 16 safety functions, users have many options with the configurable small controller PNOZmulti 2 or our automation system PSS 4000. myPNOZ is right in the middle – it's for small to medium-sized applications with two to 16 functions. This allows us to provide each and every customer with a safety solution that's the perfect size to suit their purposes.

► **How is myPNOZ distributed around the world, and how do you ensure that availability is guaranteed globally?**

Our subsidiaries are linked to the Pilz production network and our IT network. This means they can assemble the individual myPNOZ systems on site with the highest quality following receipt of the order and based on the customer's specifications. We've already had our experts throughout the Group undergo advanced training, so we can ensure the same standard worldwide and thus provide the best on-site support possible.

► Inside Expertise with safety relays

## From the classic to batch size 1



## In brief ...

### Flexible further training



Particularly when times are tough, further training plays an important role, because regular training courses are essential – especially in the area of machinery safety – if you are to stay up-to-date. The Pilz Academy is presenting a comprehensive international programme of training courses in 2021. Thanks to suitable entry levels and qualification paths – ranging from basic knowledge to expert training in selected specialist areas – it offers the ideal course for every interested individual. Pilz has added new training courses to its training portfolio for 2021, offering selected topics as online training sessions in addition to the face-to-face seminars. To ensure that attendees can prepare in the best way possible, they will receive all the documents digitally before the seminar and can actively participate in the training course by means of exercises and rounds of questions during the online training. Pilz's training courses can be booked individually, and as in-house sessions on companies' premises too.

You will find more information on the website at [www.pilz.com/training](http://www.pilz.com/training)

### Award-winning: Social values at Pilz Korea



When we fulfil social responsibility and promote social values, this is referred to as 'creating shared values' ('CSV' for short) in specialist circles. The Porter Prize for Excellence in CSV is awarded annually in South Korea to honour companies that combine social values, corporate social responsibility and philanthropic activities in their everyday business. Pilz Korea was yet again the worthy winner of the Porter Prize, because Pilz identifies and represents social values with its vision of safety for both man and machine. The Pilz Korea team working under General Manager Peter Jeong Hun Kim won over the jury for the third time, so Pilz will now be added to the Porter Prize Hall of Fame. This extraordinary feat is one that only eleven companies have achieved so far – Pilz is one of three companies not headquartered in South Korea.

## ► Inside Certifying components and systems with a safety function

# Becoming and staying certified

As a developer and manufacturer of safe automation technology, Pilz is legally obligated to minimise risks during use of its products and to align its activities with the current state of the art in technology. After all, the safety of man, machine and the environment is what truly matters.

National and international standards such as EN/IEC 62061 and EN ISO 13849, which are harmonised under the Machinery Directive 2006/42/EC, define the specifications to be observed. The Product Compliance Team based at Pilz's headquarters in Ostfildern ensures that around 2 000 certified products comply with the legal standards and regulations, as well as requirements that extend beyond them, to maintain the certification. Each product usually has several different certificates at any one time, and they have to be kept in line with one another. There are also new products, such as the safety relay myPNOZ.

### Getting a product certified

The team works closely with Product Management and Product Development, as well as the external 'notified bodies' to cover the certifications for the national and international markets. Pilz works with over 20 organisations worldwide in the field of inspection and certification to meet the various legal regulations and requirements. There are several steps to a certification project. A distinction is made between a fundamentally new product with new technology and a variant of an existing product. The safety relay myPNOZ, for example, was based on a new technology

Certified products <b>&gt; 2000</b>	Certificates per product <b>1–7</b>	Notified bodies <b>&gt; 20</b>	Standards, directives, etc. <b>§</b>
Production plants <b>5</b>	Production site audits <b>&gt; 60 per year</b>	Subsidiaries <b>42</b>	Industries, markets 

platform, which is why the external testing organisation was involved in the concept phase at a very early stage.

### Market-based and industry-based requirements

Once the development process is complete, each product is sampled by the inspection authority and subjected to extensive tests. The certificate is issued once the tests have been successfully passed. Additional product certification is required to place products on the international market. Certain industries (such as the railway, lift or fuel technology industries) in turn require compliance with industry-specific requirements. A certificate confirms that the product conforms with the standards specified in such requirements. Products have to be recertified, and certificates renewed, at regular

intervals. Another step is regular inspection of type-compliant product manufacturing by the certifying bodies on site in the factories. Over 60 of these external audits are conducted at Pilz every year.

The effects that modifications to standards and new legal requirements have on products have to be continuously assessed, and appropriate measures have to be initiated. "This is how we ensure that our vision is put into practice and that our products make the world a little safer every day," summed up Jürgen Kitzing from the Product Compliance Team.

## ► Inside Pilz – offering added user friendliness from May with the new e-shop

# Focusing on the user

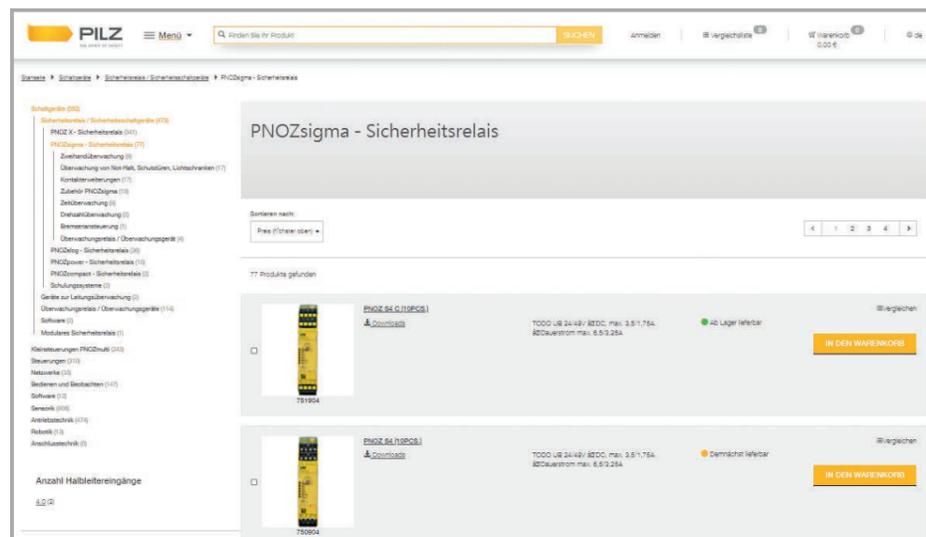
Get to where you want to be with just a few clicks: Pilz's e-shop will have a new look and feel from May onwards. The new design makes the processes of finding information and placing orders even more intuitive for users.

"Our customers expect us to provide a clear and intuitive e-shop, just like what they're used to in the private sector. Particularly in our sector with solutions that require explanation, we are now providing a platform that allows better guidance and configuration," explained Jens Kopf, E-Business & Tools Team Manager in International Sales at Pilz. This is precisely why Pilz is pushing ahead with its sales approach, which

involves expanding digital sales channels worldwide. By technologically improving the shop, Pilz will also be perfectly prepared for future digital projects. But what does that mean for customers? As usual, users will find detailed information and documentation about Pilz's solutions. Another practical feature is the fact that invoices and quotations from previous orders are easy to find.

The e-shop will present product features more clearly in future. Pilz attached a great deal of importance to usability first and foremost to improve the user experience. So users can flexibly adjust the search using new filter functions, enabling them to find the perfect product for their application. What's more, the improved search function offers an auto-complete feature that shows users matching keywords. Operation on mobile devices is also optimised by the responsive design. This meets customers' requests for barrier-free access to the Pilz e-shop while on the move. The e-shop's availability has been improved at the same time. If there is maintenance work scheduled on the Pilz website, the product catalogue will still be available to customers. Users around the world will therefore benefit from Pilz's redesigned e-shop.

The Pilz e-shop will be directly accessible from May onwards at [www.pilz.com/eshop](http://www.pilz.com/eshop).



The new Pilz e-shop offers improved operation and a user-friendly search function.

# A reliable partner

The CE mark documents the fact that a plant complies in its entirety with the requirements set out in the Machinery Directive 2006/42/EC. The necessary risk assessment and validation process requires a high level of technical expertise, which is why the injection moulding specialist Waldorf Technik is relying on Pilz.

Waldorf Technik GmbH specialises in customer-specific automation solutions for the handling of injection-moulded parts for the med tech and healthcare sectors. The plants manufacture products such as pipette tips, blood tubes and cuvettes and are made up of a large number of intelligently linked production, assembly, handling and inspection units. Modular plants such as these have very particular safety requirements. In addition to the typical hazards that arise from driven axes, handling units and robotic units, the interfaces between the individual plant modules in particular present a wide range of potential hazards. The plant manufacturer has to assess the risk for each individual case and implement measures to reduce the risk – without compromising on productivity.

## Compliance with the Machinery Directive

Manufacturers are obligated to conduct the conformity assessment procedure on their machinery. By doing so, they are confirming that their machines or plants meet the health and safety requirements set out in the Machinery Directive. Strictly speaking, Waldorf Technik is a manufacturer of partial machines that – in theory – would only have to issue declarations of incorporation. But if stand-alone machines that are already CE certified (like the injection moulding machine in this case) are joined together with other modules to form an entire set of machines, the conformity assessment procedure (including CE marking) must be carried out for the plant as a whole. “Our customers are increasingly asking us to carry out the conformity procedure and CE marking,” remarked Simon Hall, Project Management Team Leader at Waldorf Technik. “Expert support is absolutely indispensable if you want to complete this process – which not only requires technical expertise, but also an in-depth understanding of the standards – quickly and properly from a legal standpoint!”

## Pilz accepts responsibility

“Pilz carried out the complete conformity assessment procedure for us: starting with the risk assessment, the safety concept and safety design, to the safety checks and measurements required with the validation and finally issuing the EC Declaration of Conformity,” explained Mr Hall. Pilz has decades of experience in the field of



The injection moulding automation plant's servo-driven transfer gripper.

machinery safety, so it has the know-how needed to carry out the necessary steps for CE marking. During this process, Pilz accepts responsibility for the conformity assessment procedure and confirms compliance with the Machinery Directive by way of its signature as authorised representative on the Declaration of Conformity.

## CE certification – one step at a time

Since fundamental decisions about building a safe and user-friendly machine are made during the design stage, it is advisable to seek expert advice early on. During the risk assessment, an illustration as to how risks can be reduced or even eliminated is provided for each potential hazard situation. This forms the foundation of the safety concept. This is where the harmonised standards – that are listed under the Machinery Directive and must be verified using computational methods – come into play. In addition to the risk assessment, the scope of services involves preparing the verification and validation documents, including the operating manual. Finally, all the safety-related measures are checked and tested on the finished plant as part of the validation process.

The special challenge at Waldorf Technik lies in

the fact that third-party machines also have to be included and their interfaces tested. If the plants are assembled and commissioned for the first time on the customer's premises, the final inspection is also only carried out there. “Pilz gives us the guarantee in each and every case that our customers will receive safe and easy-to-operate plants. At the same time, we

can rely on the fact that we've got qualified consultants available at all times to guide us successfully through the project,” remarked Simon Hall with a satisfied smile. ◀

## Three minutes with ...

# ... Jochen Bauknecht

myPNOZ System Product Owner

► **Complex functionality, simple commissioning. Sounds contradictory, doesn't it?**

It does, but it's not. The example of the safety relay myPNOZ shows that the module arrangement alone can create a simple and quick-to-grasp logic – with zero programming knowledge or high wiring costs. And modularity offers advantages. If it turns out that a safety function is missing, the corresponding module can be retrofitted without any need to adapt software.

► **What is the challenge for product development?**

You need a good online tool for a modular product like this. Since we don't have a separate programming tool, we had to think beforehand about which customer requirements needed to be reflected in our online tool myPNOZ Creator. In addition to empirical values, customer feedback was incorporated into the development too.

► **And how is a product that's simply installed using the Plug & Play approach developed?**

First of all, the foundation is formed (i.e. the hardware is created), which is the same for all safety relays myPNOZ. This is followed by the individual functions, which we develop in close coordination with Product Management and Customer Support. And the process simply continues like that in myPNOZ's case, because we're constantly developing new functions!



By affixing the CE mark, the manufacturer is confirming that the machines or plants meet all the necessary health and safety requirements set out in the Machinery Directive 2006/42/EC.



## In brief ...



### Modification of standard for electrosensitive protective equipment

The EN/IEC 61496 'Safety of machinery – Electrosensitive protective equipment – Part 1: General requirements and tests' standard has been revised. The most important changes are listed below:

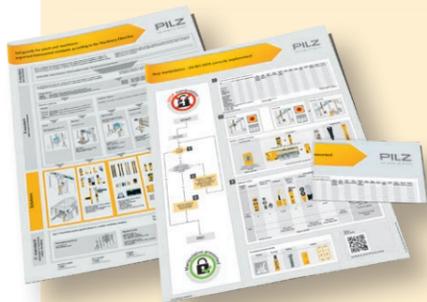
#### Inclusion of Type 3 light barriers

The standard establishes a link between type classes of electrosensitive protective equipment (ESPE) and the Safety Integrity Level (SIL) or Performance Level (PL) according to ISO 13849. Only Type 2 and Type 4 were included in the standard previously. Now, Type 3 for applications up to PL d has been added. Pilz is already complying with this modification to the standard and offering a standard-compliant, affordable solution with light barriers PSENopt II Type 3.

#### Inclusion and specification of test procedures

For the protective equipment to be certified against the standard, it must be subjected to various tests. The standard now also includes information about which tests have to be carried out and which values have to be met in the context of these tests to obtain certification. Detailed information about the modifications can be found at [www.pilz.com](http://www.pilz.com) using the following webcode.

Webcode: web83347



#### Standards at a glance

Clear presentations of complex standard-related topics: Pilz's new posters provide an overview of 'Protective measures for machines and plants – important harmonised standards in accordance with the Machinery Directive' and 'Stop manipulation – EN ISO 14119 implemented correctly'. The 'Protective measures' poster presents the A, B and C standards relevant to machinery safety and provides a condensed overview of safety-related products that permit implementation in line with the standards. The 'Stop manipulation' poster provides at-a-glance support for selecting the suitable interlocking device either with or without guard locking, which must be taken into account in all stages of the machine's life (according to EN ISO 12100). Manipulation must be prevented with all protective measures whether a machine is in automatic mode, set-up mode or alternative operating modes.

The posters are available to download from [www.pilz.com](http://www.pilz.com) using the following webcodes:

- ▶ web226790: Protective measures for machines and plants
- ▶ web180590: Stop manipulation

## ▶ Panorama Important information to bear in mind when importing or exporting machinery post-Brexit

# Brexit: ensuring that machinery safety remains unaffected

Now that the transition period is over, the question on machine manufacturers' and operators' lips is: 'What impact will Brexit have on the topic of machinery safety?'

The United Kingdom left the European Union on 1 February 2020. A transition period remained in place until the end of 2020. But there were far-reaching changes at the start of this new year. Under the current regulations, the CE mark and EU conformity assessment may be used until 1 January 2022 (subject to certain conditions) when machines or machine components are placed on the UK market.

The British government is currently working on establishing a national conformity assessment procedure. A new conformity mark – the 'United Kingdom Conformity Assessment', or 'UKCA' for short – will be introduced for this purpose. The new procedure refers to national UK legislation rather than EU directives. If changes to EU law take effect during the transition period, the UKCA mark will become mandatory during the transition period. Only the UKCA mark will be recognised after 1 January 2022.

Pilz experts provide support with the change processes that need to be implemented as part of Brexit for certification, the CE or UKCA marking of products and machinery, and placing machines, plants and used machine compo-



The Brexit transition period is over: Pilz is providing support with all issues relating to machinery safety.

nents on the market in Great Britain or Northern Ireland. They are working closely in this respect with the Pilz subsidiary in the UK, which is acting as an authorised representative and can provide expert support in the process of obtaining UKCA certification.

What consequences does Brexit have specifically with respect to placing goods on the UK market? And, on the flip side, what about finished goods from the UK entering the EU market? What do I have to consider when using Pilz products? Pilz has set up a web page to provide detailed answers to these and other questions. The web page is continually being updated:

[www.pilz.com/brexit](http://www.pilz.com/brexit)

## ▶ Profiles Pilz Netherlands offers over three decades of automation expertise

# The innovation experts

Always up-to-date with the latest developments and trends: Pilz's subsidiary in the Netherlands has been on site since 1990. While it initially focused on products, some three decades later the company (based in Vianen) has grown into a service and market-focused organisation that employs 60 members of staff.



The collegial working environment at Pilz Netherlands fosters fresh ideas.

And the key to its success is specialisation. "We have set up separate business units for our focus areas: bridges / locks, railways and industry. This approach means we closely monitor the market, and it enables us to address customer queries in a more targeted manner," explained Jan Tournois, General Manager of Pilz Netherlands. Pilz Netherlands' customers appreciate this focus and the trusting cooperative relationship. The high quality standards that the subsidiary applies to all customer projects are also demonstrated by its certification to the international standard ISO 9001, which Pilz Netherlands achieved last year.

future, the subsidiary expects to continue winning tenders and projects in the infrastructure sector, including for locks, bridges and, of course, railway projects. The three largest ferries on the North Sea Canal (which are the responsibility of GVB Veren B.V., an Amsterdam-based municipal transport company) are one example of an infrastructure project. The ferries date back to 1930 and are being replaced by electric powered variants. In this project, Pilz is responsible for the control system used to manage the movable bridge decks on the three ferries.

The subsidiary's training courses are yet another shining example of its expertise. As part of the

#### Pilz on the railways and the waterways

Due to Pilz Netherlands' wealth of experience in the railway sector, the Rail Competence Centre was also established in the Netherlands in 2019. Its expertise is incorporated into all the railway projects that Pilz manages around the world. In the near

digital transformation and increasing man-machine collaboration, Pilz is supporting a project that focuses on retraining measures for specialist teachers. They learn the basics of collaborative robots and automated guided vehicles (AGVs) with the help of augmented and virtual reality. Pilz Netherlands is offering these training courses in cooperation with the Robotics Institute at Delft University of Technology and the SAM XL research centre.

#### Sustainable teamwork

But Pilz Netherlands isn't just taking responsibility for its customers. The subsidiary's employee focus has also been recognised several times over, as it has been crowned winner of the 'Top Company' Award. In addition to innovation, sustainability plays an important role too. That's why a wildflower meadow was sown near the office to provide a habitat for bees. In cooperation with local apiarists, employees can train to become beekeepers. So Jan Tournois' team is growing even better together, with a view to continuing to offer their customers new ideas.

# Managing guard locking – the right way

According to ISO 14119 'Safety of machinery – Interlocking devices associated with guards – Principles for design and selection', an interlocking device must prevent a machine's hazardous movement as long as the movable guard, such as a safety gate, is open.

This means that the hazardous machine movement stops immediately when the safety guard is opened and that restarting is also prevented for as long as it is open.

## When is 'only' an interlocking device with guard locking suitable?

An interlocking device with guard locking is considered if the machine still poses a danger following the stop command. That is, when it has a time lag – as is the case in machines with rotating blades or oscillating wheels and in robots. The guard is only unlocked when the machine is in a safe state or has stopped completely. The safety gate can only be opened when the machine no longer poses any danger.

## When process protection? When personal protection?

Different functional principles can be used with

respect to safe guard locking depending on the application. The fundamental question here is: Should the operating personnel be protected in addition to the process? For pure process protection (i.e. preventing unintentional interruption of the production sequence), guard locking according to the open-circuit current principle is sufficient. The guard locking is held in place by a magnet – the magnet is deactivated again for unlocking. This is a functional principle offered by the likes of the non-contact safety gate system PSENSlock. It combines safe safety gate monitoring with an integrated electromagnet and thus offers safe position monitoring with process guard locking in a single system.

## Entry requires additional protection

If operating personnel can – or must – enter the machine, and if there are dangerous overrun movements that could result in injury, personal

protection must be taken into account in addition to process protection. Here, safe guard locking that complies with EN ISO 13849-1 is necessary. The selection of the appropriate interlocking device is then based on the performance level (PL) determined by the risk analysis. Safe guard locking can be achieved by means of the closed-circuit current principle in this case. Unlike the open-circuit current principle, a spring is used here to activate guard locking, while a solenoid coil is used to open the guard locking. The mechanical safety gate system PSENmech from Pilz provides safe guard locking such as this up to PL c, with fault exclusion up to PL d.

## Bistable as a principle

In addition to the closed-circuit current principle, Pilz also uses the bistable principle in its safety gate portfolio. This two-channel guard locking

control ensures safe guard locking. Fault cases such as a short circuit are recognised thanks to this control, which can prevent unintentional opening of the gate even in the event of a fault. At Pilz, this principle is implemented with the safety gate system PSENmlock, which provides safe interlocking and safe guard locking up to PL e.



## Apropos ...

With Mat P. on his automation tour

Whether he's dealing with applications from the fields of packaging, automotive, traffic engineering or 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

### ► So, what was that 'red-hot' assignment you wanted to tell me about?

I recently visited ArcelorMittal, the world's leading steel producer, with my Belgian colleagues. Several annealing furnaces and an annealing and finishing plant are used there to provide steel strip coils with an oxide layer during the 'hot rolling process'. At the start of the process, the furnace is heated to 1,200 °C! The steel sheet's mechanical surface properties are improved in several work steps.

### ► I'll bet special safety solutions are used at such high temperatures ...

Yes, exactly, and there wasn't an ideal solution until now: ArcelorMittal regularly had to contend with failures and downtimes because fault diagnosis was very time-consuming. One challenge was the frequent shutdown of the 30 start-up burners that ignite the 50 main burners. If the furnace's temperature drops below 760 °C following downtimes, these main burners are used to restart the furnace. This is where Pilz came into play to ensure continuous production.

### ► And what's the solution now?

The previous burner control module was replaced by the automation system PSS 4000, and the specifications were transferred to the controller PSSuniversal PLC. The burner management software package from Pilz makes implementing programs for controlling different burner types a breeze and executing safety functions extremely simple. An efficient visualisation system, which displays the status of the burners and thus enables quick troubleshooting, was installed too. The plant is now running without experiencing any major faults.

► Inside Pilz is presenting myPNOZ at Hannover Messe Digital Edition

## Customisation in focus

As a virtual platform, Hannover Messe Digital Edition brings together the pioneers of the digital transformation. Visitors to Pilz's virtual exhibition booth can look forward to customisable system solutions relating to digitalisation, Industrie 4.0, safety and industrial security.



In keeping with the key theme – 'Industrial Transformation' – the new safety relay myPNOZ from Pilz will be the focus of this year's Hannover Messe (12 – 16 April 2021). With the new ordering process using the online tool myPNOZ Creator, Pilz is offering customers the opportunity to put together a safety relay that's the perfect match for their application. It's a successful combination of digitalisation and Industrie 4.0,

presented by the Pilz experts at the industry's top digital event.

## Implementing machinery safety – the flexible way

Additional innovations from the field of safe automation will be on show at the virtual exhibition booth. For efficient safety gate protection, Pilz will use the new add-ons for the modular safety gate system to demonstrate that safety and industrial security requirements can be implemented individually and in line with the application. Pilz will also be showcasing its machinery safety innovations. Thanks to new modules, for example, the configurable small controller PNOZmulti 2 offers more options for flexibly implementing applications in the field of fuel and drive technology.

You will find more information about Pilz's presence at the trade fair at [www.pilz.com/hm](http://www.pilz.com/hm).

## Emergency stop on conveyor belts



Pilz is now offering the safe rope pull switch PSENrope mini to provide affordable and reliable protection for a wide range of applications involving conveyor belts, e.g. in the packaging, automotive and textile industries, or at airports. The operator triggers the mechanical emergency stop function simply by pulling the rope or pressing the integrated emergency stop button. With a rope length of up to 30 metres, even extensive applications can be secured with just a single rope pull switch. This means the user saves costs and also receives a safeguard that's convenient to operate.

The compact PSENrope mini requires very little space for installation. What's more, the variants with a straight or an angled head offer flexible assembly. The robust metal or plastic housing to IP67 is what sets the rope pull switch for both indoor and outdoor applications apart. If concealed installation of the PSENrope mini is required due to the machine design, the user can select the variant with an integrated reset button.

Webcode:  
web150404

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

## Efficient axis monitoring



The safe motion monitoring modules of the configurable small controllers PNOZmulti 2 are used for monitoring drives. The expansion module PNOZ m EF 1MM2DO for monitoring an axis' safety functions is new and suitable for applications up to PL e in accordance with EN ISO 13849-1 or SIL CL 3 in accordance with EN/IEC 62061. The module has two safe semiconductor outputs and a cascading input.

Configuration is carried out in the software tool PNOZmulti Configurator. An independent module program (mlQ) is created for each module for

directly controlling the safe digital outputs. This allows a rapid response time to motion events, such as overshooting of the maximum speed, with shutdown of the outputs under 12 ms. Reports are output when the parametrised limit values are exceeded and PNOZmulti 2 triggers a safe and reliable reaction in the event of a fault or if protected areas are violated.

Webcode:  
web225352

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

## Added functionality for burner applications



For the base unit of the configurable small controller PNOZ m B1 Burner for safely controlling and monitoring furnaces, the expansion module PNOZ m EF 4DI4DORD is now available with four safe, diverse relay outputs and four safe inputs. The diversity means a high safety level up to PL e can be achieved. So Pilz is offering a suitable module for PNOZmulti 2 to control a burner's safety valves, for example.

The software tool PNOZmulti Configurator enables users to configure a wide range of burner applications with ease. This is precisely why the

Configurator has the burner element function block, which simulates the extended functionality of a configurable electronic automatic stoker. Additional safe digital modules, such as the safe analogue input module, can be used depending on the application. PNOZmulti 2 can thus be efficiently used in almost all areas of burner management and also reliably controls plant-dependent safety functions.

Webcode:  
web22535

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

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