

# MENSCH UND AUTOMATION

**PILZ**  
THE SPIRIT OF SAFETY

The magazine for customers of Pilz GmbH & Co. KG Issue 2/2021



## Machinery Regulation

The draft for the new Machinery Regulation has been published. It will succeed the Machinery Directive.

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## Burn-free baking

The wafer machine specialist Bühler relies on the safe small controllers PNOZmulti 2.

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## En route for success

myPNOZ, the world's first safety relay in batch size 1, impresses customers and jurors.

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## ► All routes lead to safety

In intralogistics, man and automated guided vehicles, i.e. machines, are increasingly sharing working space. Is it possible for safety to stay on track here?

Classic safety can be achieved on factory floors with the physical, static separation of man and machine. In modern industrial environments, however, flexible production processes are replacing rigid production lines. In this context, interest in the use of automated guided vehicles (AGV) or automated guided vehicle systems (the use of several AGVs) in intralogistics is also increasing. With this transition, safety concepts are also forced to change in order to ensure that the interaction between man and machine remains smooth and free of accidents.

For an AGV application to be designated 'safe', various partial aspects must be taken into account and combined to create an overall concept. This starts with the AGV itself, because depending on the area of application the AGV must satisfy specific safety functions for navigation, activation, braking or speed monitoring.

### Safety starts with planning

Various factors must be taken into account during the planning and design stage. What are the structural conditions? How can the safety

distances required by occupational health and safety laws between routes, objects and other vehicles be maintained? How can possible causes for collisions be minimised in advance? Where are additional protective devices such as safety fences and safety gates or sensors such as light curtains needed?

A good first step is most certainly including the topic of safety in the earliest planning for an AGV application. As soon as the first idea for the application has been created, there is a basis for

discussion and a risk assessment can be started. It is also important to bring together all departments from the start. These include in particular electrics, mechanics and occupational safety.

Continued on page 2

# Editorial



Dear Reader,

Intralogistics is once again attracting a lot of attention, and not only because of the COVID pandemic. Whether in the production industry or distribution logistics, requirements for the customisation of products, fast availability and flexibility as well as efficiency have increased sharply.

Without the introduction of flexible automation, very few companies can satisfy these demands. Automated guided vehicles (AGV) are playing an increasing role here. Platform AGVs for transporting pallets and forklift AGVs, which are capable of autonomously performing even complex tasks thanks to intelligent sensor technology, are working hand-in-hand with robots for palletising and sorting. The combination of AGVs with cobots and anthropomorphic robots is resulting in a whole new range of possibilities.

And speaking of sensor technology, this is used to not only make AGVs and mobile robots “smarter” but also safer. Safety is the top priority when man and machine are sharing workspaces. The combination of classic laser scanners, 3D cameras and additional sensor technology, as well as the implementation of the latest safety standards such as ISO 3691-4, guarantee a safe and successful interaction between “Man & Automation”.

Best regards,

Guido Resch  
Chief Business Development and Sales Officer  
Asti Mobile Robotics

► 360° Continued from page 1

## ISO 3691-4 is the normative framework

The normative framework to be able to answer all of the above questions is provided by the new standard ISO 3691-4 “Driverless industrial trucks and their systems” published in 2020. It augments the requirements for safety functions for AGVs and the validation of the automated functions of the vehicles. The standard adopts the methodology of EN ISO 13849 for the determination of the required performance level for the various vehicle monitoring functions, operating modes and brake control. Operators of an intralogistics application are

ment by means of additional safety devices as well as consultancy services up to the Declaration of Conformity for the entire application.

Finally, Pilz advises and supports the user up to the check of compliance with official requirements such as CE marking in Europe or OSHA in the USA for the entire application.

A check of the proper condition and safe function of the AGV including all safety devices must be performed before the initial commissioning and subsequently at least once a year. Pilz can also perform this as part of the complete package.



Safety plays a leading role wherever man and machine share working space. This is especially true for mobile systems. Operating concepts that unite safety and productivity are in demand.

tasked with harmonising the requirements from ISO 3691-4 with their individual application while achieving the highest possible productivity. As a provider of safe automation solutions, Pilz has been monitoring intralogistics for years: based on their many years of experience in industry, Pilz’s safety experts support users right through to international compliance (such as CE marking) and accept responsibility for the safety of AGV applications.

## Safety with everything that includes

Building on this, Pilz offers a special range of services for manufacturers and operators of AGVs. It includes not only comprehensive consultancy services for safe operation but also a conformity and acceptance test of the AGV at the manufacturer’s and/or operator’s site. Training courses are also available, if required.

In the first step, Pilz experts provide support during the risk assessment and perform a factory acceptance for the AGV at the manufacturer’s site if required. At the user’s site, this is followed by a final risk assessment of the AGV taking into account the entire environment of the application.

During the subsequent safety validation, the focus is on installation and integration of safety components for the AGV such as scanners or encoders, planning and activation of safety fields/zones, safeguarding of the AGV’s environ-

For the long-term development of knowledge, there is also training available to users about safe operation of an AGV application. In addition to the normative bases, various safety devices or technical functions of an AGV are also included in the training contents.

Pilz’s range of services is rounded out by a comprehensive product portfolio, for example in the area of safe sensor technology. From safety switches and safety gate systems to optoelectronic sensors such as safety laser scanners or new safe radar technology.

Safety results from combining the appropriate technology, an understanding of the correct application and the normative framework. This type of holistic approach to the AGV application allows for the perfect harmonisation of safety and productivity. ◀

## An overview of ISO 3691-4

ISO 3691-4 is relevant for both AGV manufacturers as well as AGV users. It defines the requirements for safety functions for AGVs and specifies how the automated functions of the vehicles are to be validated. It specifies the required performance level for the vehicle monitoring functions, various operating modes and the brake control. The main focus of the standard is the correct definition of the zones in which the AGV

is used, for example in the production hall or in storage logistics. Corresponding warning and safety zones must also be defined here, for example, which lead to e.g. a speed restriction of the AGV. Any remaining residual risk for the application must be countered with corresponding information and training of the users. ◀

Webcode:  
web226591

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

<https://www.pilz.com/en-INT/trainings/articles/226591>

# Changes to the Machinery Directive

The European Commission published a draft for the new Machinery Regulation in mid-April. Klaus Stark, Senior Manager in Innovation Management at Pilz and Head of the "Safety Systems in Automation" Technical Committee of the ZVEI, explains what is different in the draft compared to the current Machinery Directive (MD).

► Mr Stark, the application of the currently valid MD 2006/42/EC has been mandatory since the end of 2009. How has the Directive proven itself in practice?

In 2016 the EU Commission performed a public consultation about the Machinery Directive among all entities active on and participating in the market. The consultation came to the conclusion that the Machinery Directive is generally relevant, effective, efficient and coherent and provides the EU with an added value. It also showed, however, that specific improvements and simplifications are necessary with the goal of ensuring better legal clarity, simplification and adaptation to technical progress. Recommendations for a potential revision were derived as well.

► This has now resulted in a draft for adapting 2006/42/EC. What exactly do the next steps look like?

Correct. There is a 55-page draft for the new EU Machinery Regulation that is being discussed by the Council of Europe and the European Parliament. The member states must agree to the proposal from the EU Commission. Due to the

number of topics, the interests and the inclusion of the countries, experience dictates a period of at least one year is to be expected. Because this revision is a Regulation, it will then become a directly applicable law in all EU member states as soon as it is published in the Official Journal of the EU.

The current draft stipulates an application deadline of 30-months after the regulation comes into force. A transitional period of several years is necessary to ensure that all actors on the market can adapt their processes and content accordingly. Another point concerns the harmonisation. If the existing Directive is replaced by a new Regulation, it is possible that the stand-



► What changes can users expect compared to the current Machinery Directive?

Key changes concern the inclusion of functionally safe software. Software for safety functions should be treated as a safe component with all rights and obligations. According to the current draft, security is no longer an option but rather a "must". Beyond the existing security standards, it defines special requirements that must be included in processes and systems. A positive development is that the topic of "Significant changes" has been included in the Machinery Regulation.

Our concern is achieving a workable enhancement of the Machinery Directive and contributing our relevant expertise as a company. The current draft still contains a number of "bumps" that need to be smoothed out. We therefore consider it of the greatest importance that all affected parties promptly look into this and articulate their points of view and interests via their associations, e.g. VDMA or ZVEI.

ards that previously implied a presumption of conformity are no longer "valid". The harmonisation would have to first be "re-established" again.

► Panorama Draft for the successor to the Machinery Directive published

## Draft for new Machinery Regulation has been published

The Machinery Directive 2006/42/EC is the central legal basis in Europe for every company that designs, builds or sells machines. But even machines that are imported into the European judicial area have to meet the requirements of the Machinery Directive. The currently valid Machinery Directive 2006/42/EC was published in 2006 and must bindingly be applied since 2009.

The EU Commission regularly checks the regulations and directives to ensure adaptation to new requirements and developments. The Machinery Directive is being updated to further increase the safety level, to better take into account security aspects and to reflect technological developments such as Industrie 4.0 or AI technology.

### Artificial intelligence integrated

At the same time as the Commission's draft of the Machinery Regulation, a separate draft of an EU regulation about artificial intelligence was also published. This is intended to cover all products with AI and its use. No additional safety requirements should be needed; these should simply be specified more precisely. The reasoning is that the effects of AI functions have already been covered by existing conformity assessment procedures and the definition of the intended use.

### Current state of the draft

After the deadline for comments, the planned changes are to be discussed in accordance with the co-decision procedure in the Council of Europe and the European Parliament. A rough estimate assumes one to two years of deliberation and, after approval, a transitional period of several years. The EU regulations about artificial intelligence will at the same time be negotiated in accordance with the co-decision procedure.

How to deal with the standards harmonised under the Machinery Directive 2006/42/EC has not yet been conclusively decided. And neither has which of the recommended updates will actually be included in the new EU Machinery Regulation.



Webcode:  
web848151  
Online information  
at [www.pilz.com](http://www.pilz.com)

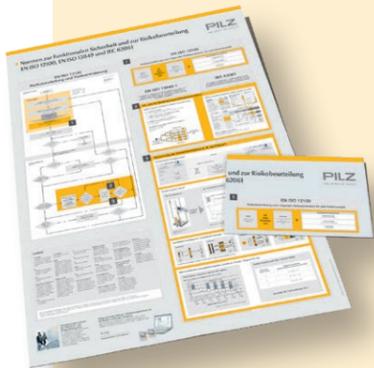
## In brief ...



### Standards on functional safety and risk assessment

“Functional safety” means that safety depends on the correct function of a control system. Risk assessment plays a central role here with regard to the requirements for functional safety. The standard EN ISO 12100 specifies which steps must be taken into account during risk assessment and risk reduction for machines. The assessment and verification of safety functions is handled by the standards EN ISO 13849 and EN/IEC 62061. A prerequisite here is that the required technical protective measure is dependent on a control system. The risk assessment then results in the requirements for safety integrity (PL, SIL). The new poster from Pilz already reflects the current status of the revised IEC 62061, including an example calculation. It can be downloaded at the following webcode.

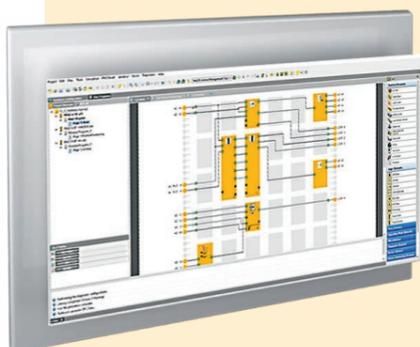
Webcode: web8428611



### The All-rounder – software tool PNOZmulti Configurator

To be able to safely monitor and control machines with the small controllers PNOZmulti, the software tool PNOZmulti Configurator is used to create the underlying user program. Everything is controlled in one software tool: from hardware selection and configuration of the safety functions to documentation and commissioning. In combination with the web-based visualisation software PASvisu, convenient diagnostics are also possible, which guarantees short downtimes. The software has a wide range of functions and commands so that even large-scale projects can be implemented. Version 10.14 is currently available for download on the Pilz website. The demo version can be downloaded free of charge.

Webcode: web2253441



► Panorama Electrical, hydraulic, pneumatic – calculation of the SIL is changing

# Revision of the standard IEC 62061

The new version of IEC 62061 was published in April 2021. EN/IEC 62061 represents a sector-specific standard under IEC 61508. It describes the implementation of safety-related control systems on machinery and examines the overall lifecycle from the concept phase through to decommissioning.

This new IEC 62061 is not just an update of the existing standard. The standard is no longer limited to electrical systems, but instead can now be used for all types of technologies such as hydraulic or pneumatic systems. Other important changes include:

- Changed methodology for defining the required safety level (PL or SIL)
- The need to create a specification of the safety requirements
- The option of using devices that were developed in accordance with other standards
- More details on safety-related application software as well as modified requirements for safety software depending on the complexity and the selected programming languages
- The option of using subsystems that were developed according to IEC 61508 in the new IEC 62061



Important information: the new version of IEC 62061 (issue 2021) has not yet been published as a harmonised EN standard under the Machinery Directive in the Official Journal of the EU. The harmonisation is expected in the near future, however. The current harmonised EN 62061 version is from 2015.

### Existing safety concepts under scrutiny

Plant and machine builders should reassess existing safety concepts with regard to the modified risk classification of the standards. In certain cases, this results in greater flexibility with regard to the risk parameters to be assumed. Whether this affects previous safety assessments must be checked on a case-by-case basis.

Webcode:  
web843081

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

<https://www.pilz.com/en-INT/support/knowhow/law-standards-norms/functional-safety/en-iec-62061>

► Inside New version of the web-based visualisation software PASvisu

# Open for all visualisation tasks

Gain a quick and comprehensive overview of a plant: Pilz offers the web-based visualisation software PASvisu for just this purpose. In the new version v1.10, PASvisu now also supports the Modbus/TCP communication protocol that enables fast connection of controllers and other industrial components.

PASvisu enables the quick and optimum configuration and visualisation of various automation projects. Data from different sources can thus be visualised in one project. The software consists of the configuration tool PASvisu Builder and PASvisu Runtime.

### Easy use in existing machinery

In addition to OPC UA, the new version v1.10 now also supports the Modbus/TCP protocol. OPC UA is a standard for data exchange between applications from different providers. Modbus/TCP is a Client/Server architecture for communication. This enables a simple exchange of process data between PASvisu and almost every control system. In addition, data from various controllers can be shown simultaneously in one project – including diagnostic options. This openness renders changes to the existing automation infrastructure unnecessary when used. In other words: PASvisu can be used on already existing machinery with existing controllers. Even the use via virtually every end device, such as HMIs (human machine interfaces) already installed in the machinery, external PCs or tablets is possible.

### More security in data communication

The “secure” Client/Server connection is also new. All of the data traffic between PASvisu clients, Builder and the server is now completely encrypted. The data from the PASvisu server is thus safely transferred to the plant visualisation on site. The user authentication was also enhanced: only authenticated Clients can log in

at the PASvisu Server. This prevents manipulations and ensures safe data transfer in the entire visualisation project.

Webcode:  
web1504301

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

<https://www.pilz.com/en-INT/products/software/visualisation-software/pasvisu-hmi-software>



The web-based visualisation software PASvisu can be used with almost all control systems available on the market thanks to the Modbus/TCP interface.

# Burn-free baking around the world!

The Austrian wafer machine specialist Bühler relies on the burner version of the safe small controllers PNOZmulti 2 for the safe control and monitoring of its ovens.

Whether wafer blocks or waffle cones, industry insiders claim that every second industrially produced wafer is baked with a 'Franz Haas' wafer machine from the company Bühler that was developed in Leobendorf in Lower Austria. All customer-specific plants must offer high flexibility and primarily meet country-specific safety standards.

At the end of the 1940s, company founder Franz Haas invented the first wafer machine, which was followed by a number of innovations. Since 2018, the company and its subsidiaries around the world belong to the Swiss Bühler Group. The central element of any wafer production line is the oven, which can be up to 35 m long depending on the product and the plant configuration. It is heated by gas-fired long pipe burners. Wolfgang Grassberger, who is responsible for machinery safety in the "wafer" division at Bühler, explains: "The most important task of the burner control is monitoring the extinguishing of the flame and immediately and safely interrupting the gas supply if necessary," so that in the worst case an explosion does not occur. A challenge, as the monitoring is a complex sequence of steps from a control standpoint. It starts already with the ignition process that itself includes almost 20 individual steps.

## The hot favourite among the controllers

Since the early 2000s, Bühler has been implementing the functional safety of its machinery with the safe small controllers PNOZmulti compliant with SIL 3 and PL e and the next generation PNOZmulti 2 from Pilz. Bühler appreciates the flexibility that the configurable small controller allows with its numerous expansion modules and varied configuration and communication options, including the diagnostic functionalities. "It is particularly advantageous for us that Pilz has created its own TÜV-certified burner software block that we can use flexibly for our various customer-specific machine configurations," stated Grassberger. The burner version of the PNOZmulti 2 is completely responsible for the tasks of the previously separate burner controls. "We can thus standardise the complete safety technology of our machinery, meaning functional safety and burner control, with a single system," is how Wolfgang Grassberger summarises the main benefit.

## Communication friendly digital interfaces

Another important aspect: PNOZmulti 2 can be conveniently connected with higher-level



The ovens in wafer machines are heated by long pipe burners.

automation environments via the communication modules available for all common fieldbus and Ethernet systems. Because Bühler delivers production lines around the world, the requirements for the different markets must be taken into account. Wolfgang Grassberger: "Implementing the complete safety technology with Pilz technology and completely independently of the standard automation has a lot of advantages for us. The most important benefit, however, is that we can use the technology uniformly around the world because Pilz also takes care of the international certification for burner management."

## Also 'on fire' for retrofit

Another area of application for the new burner version in the retrofit field is as a replacement for older burner controls that are not bus capable. PNOZmulti 2 is also suitable here because the configurable safe small controller can be flexibly adapted in terms of hardware and software with its modular system and its versatile configuration software. Several long-serving burner controls from existing installations have already been replaced with PNOZmulti 2: "Our plants are often in operation for decades. Two topics here are the availability of spare parts and the safety aspect. For this reason, modernisation with current safety technology is absolutely logical and is therefore a continuously growing field for us," explains Grassberger.

Up to six burners are currently monitored and controlled independently of one another – in the past each burner required its own control.



Together with Pilz, Bühler is already working on further modernising the automatic burners: it should then be possible to separately control up to 24 individual burners.

Webcode:  
web225263

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

<https://www.pilz.com/en-INT/products/small-controllers/configurable-control-systems>

## Three minutes with ...

# ... Bernd Müller

## Industry Manager Robotics

### ► There have been changes to Pilz's robotics range. Could you explain these?

The new "Robotics by Pilz" range was expanded over the last years to include new services, such as for Human-Robot Collaboration, and new products, such as the service robotics modules. Based on the developments in the market for lightweight robots that are distinguished by increasingly cut-throat competition and growing pressure on prices, we have decided to discontinue activities for our internally developed manipulator.

### ► What does Pilz's robotics range look like?

Our range consists of the following modules: services for robotics applications, a broad portfolio of sensor technologies, drive and control technology for robot systems as well as software packages and services for the Robot Operating System (ROS). Our approach is to offer the customer generic solutions for specific challenges in stationary and mobile robotics.

### ► What role will intralogistics play in your offer?

The need for mobile robot applications in the industrial and non-industrial environment is growing. Our focus within intralogistics is on automated guided vehicles. With our holistic approach of standard-based knowledge, appropriate products, solutions and comprehensive services, we provide optimum support to users from intralogistics.



The most important task of the burner control is monitoring the flame and, if it goes out, immediately safely interrupting the gas supply. The burner version of PNOZmulti 2, as the safety component, performs the monitoring.

## In brief ...

### Machinery safety after Brexit – a concise review

Brexit has been reality since the beginning of 2021. The biggest changes in the area of machinery safety affect the conformity assessment procedure with which manufacturers confirm that the plant and machinery meet all required health and safety requirements. In the United Kingdom, following Brexit the CE marking will be replaced by the national UKCA marking – “United Kingdom Conformity Assessment”. For years, Pilz has supported machine builders in international conformity assessment procedures. The experts from Pilz have always worked closely with Pilz subsidiaries in the target countries in this regard. If necessary, Pilz can act as the authorised representative and support customers in the process for obtaining the CE or UKCA marking. The regulations that now apply when placing machines on the market in the UK have been summarised by Pilz in a compact flyer that can be downloaded at [www.pilz.com/brexit](http://www.pilz.com/brexit).

Webcode: web226801

► Panorama New modular safety relay myPNOZ for Industrie 4.0

# Batch size 1 en route for success!

It only “came to light” in the world’s market, so to speak, at the beginning of February this year, but it won over customers practically overnight: myPNOZ, the world’s first safety relay in or from batch size 1, is equally well received by customers and jurors.

No matter if the “Industry Oscar” Hermes Award or the German Innovation Award: both immediately acknowledged the new personalised safety relay as an innovative product with which users can easily “create” their individual safety solution in line with Industrie 4.0 – because: programming knowledge is not required when creating using the online tool myPNOZ Creator. The Hermes Award jury distinguished the myPNOZ as a system that is, “ready for installation and completely customised, an efficient and safe solution for mechanical and plant engineering as well as other sectors”. The German Innovation Award also confirmed the level of innovation and selected myPNOZ and Pilz as “Winners” in the “Electronic Technologies” category. For the jury, made up of independent experts from various disciplines such as industry and science, user centricity and added value compared to previous solutions were criteria that myPNOZ fulfils.

### Already impressive before entering the market

Initial customer feedback confirmed this “theoretical” jury opinion: “As an innovative company, we are always operating close to the state of the

art. We wanted to try out myPNOZ immediately once we heard about it,” states Andreas Dorer, technical manager at the Austrian company Micado, who was already impressed before myPNOZ was officially launched. The timing could not have been better for the company located in East Tirol, which is active in the sectors of product development, tool and device construction and automation technology. Micado was in the process of developing a safety concept for an inline measurement station that is in future to be used in several of the customer’s factories around the world when the launch of a new safety relay from Pilz was announced. myPNOZ didn’t only offer Micado exactly the functionality that was required for its application, but it also impressed the company with other customer-friendly features: the pre-configured and ready-to-install delivery. All this even before the official launch. This scored serious points for the company, which was then also the first to order a myPNOZ



safety relay from Pilz Austria. For Pilz this was a wonderful endorsement by a customer of their newest innovation from Ostfildern.

[www.mypnoz.com](http://www.mypnoz.com)

Webcode: web224965

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

► Profile Brexit represents a major opportunity for Pilz UK

## Island entrepreneurs

For over 30 years, Pilz has had its own subsidiary in Great Britain. Pilz Automation Technology is located in Corby in Northamptonshire and has always had a focus on services and training. After Brexit, Pilz’s expertise is particularly in demand.

Pilz UK was the first company in Great Britain that offered consultancy and training on the topic of machinery safety and is still today focused on strengthening its service portfolio and expanding its training programme. The Pilz subsidiary is strengthening the area of Engineering in particular in order to be able to offer customers complete automation solutions.

In line with Brexit, a new marking for the machinery safety sector was also introduced by the government: the CE marking is being replaced by the UKCA marking. Support within the framework of this marking, services and PUWER

assessment (Provision and Use of Work Equipment Regulations – the national implementation of the European Use of Work Equipment Directive) are highly sought after. Just recently Pilz was commissioned with determining the status of safety at all locations of a large steel producer. Following this, Pilz then performed risk assessments at selected locations, developed safety concepts and performed technical updates.

Pilz UK consistently seeks to cover new topics in order to be able to always offer its customers the best possible support. This currently includes the topics of cyber safety and industrial security, for example.



### “We offer professional service”

Steve Farrow, General Manager of Pilz UK, regarding the situation after Brexit and the support offered in the machinery safety sector.

#### ► How has the situation been in the United Kingdom over the past months?

Farrow: There was intense uncertainty in our country until Brexit Day on 1 January, 2021. It was a very difficult time for the economy as a whole. This led to substantial inventories being built up for various goods, for example. Clarity was only achieved step by step, such as in customs matters. It took until the end of the first quarter until we could once again speak of regulated workflows.

#### ► There is now clarity for the topic of machinery safety as well.

Exactly. The United Kingdom has established its own national conformity assessment procedure. A new mark – the UKCA mark (United Kingdom Conformity Assessment) – was introduced for this purpose. It will replace the CE mark on 1 January, 2023, following a transitional period.

#### ► What does that mean?

Apart from a very few exceptions, all companies that previously confirmed the conformity of their products with the required health and safety requirements by means of a CE marking should now use the UKCA marking, both on the product and in all technical documents. UKCA is based on similar requirements as CE marking. However, companies may need a so-called type examination certificate from a UK “Approved Body” to confirm UKCA conformity. Otherwise it is possible that machines without a UKCA marking that are imported into the United Kingdom are detained by customs.

#### ► And Pilz UK provides support here?

Correct. Together with the Pilz International Services Group, we can provide comprehensive support to companies who wish to import or operate new machines in the United Kingdom. Our ambition is to offer professional service, from training, inspection and documentation to the cyber-secure retention of documents.

# Stationary and mobile applications

If persons must frequently enter the danger zone or material must be fed, optical sensors are suitable for safeguarding with protective devices. These include radar systems as well as laser scanners and light curtain optoelectronic sensors. With the safe radar system PSEnradar, the safety laser scanner PSENscan and the light curtains PSENopt II, Pilz can offer “tailor-made” support to users.

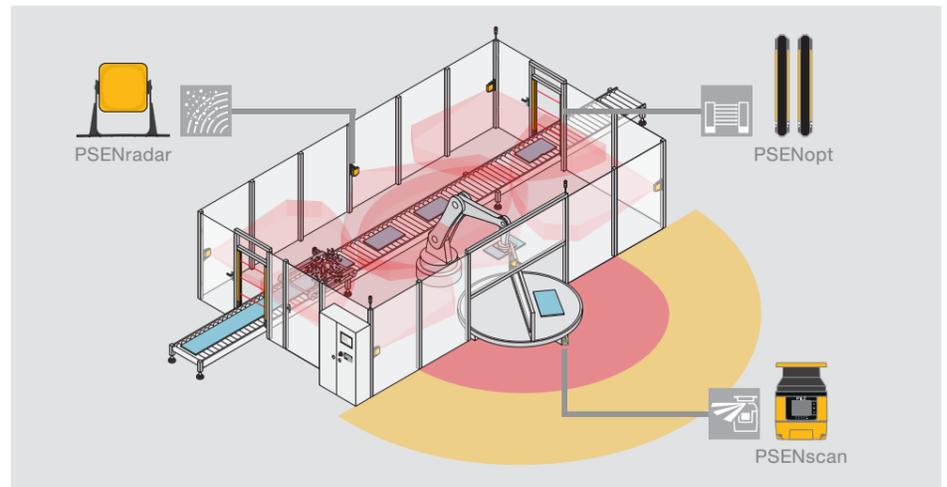
As a general rule of thumb: whenever optical methods can be used well and the environment is relatively clean, scanners or light curtains are a good choice. The radar sensor, however, is not only suitable for rough environments with contamination and dust, it is also the ideal protective measure in environments with extreme temperature differences and weather conditions.

The use of radar technology should also be taken into consideration if the goal is to detect objects in a three-dimensional space, such as protection against encroachment from behind. Light curtains or light barriers and scanners safeguard two-dimensional surfaces such as access points and floor areas. Light curtains detect static obstacles, while scanners are used for safeguarding and dynamic navigation of mobile applications such as with automatic guided vehicle systems. The safeguarding in the case of the latter also covers static application ranges – key phrase: access control or

even protection against encroachment from behind. A radar sensor can do this as well, though. Which once again illustrates: for each individual case there are several criteria that decide which type of protective technology can and should be used.

## Need for protection and precision are decisive

Safety light curtains are used primarily when barrier-free safety solutions must be implemented because processes are not 100 % fully automatic and operators have to intervene in the process through an open access point. If an intervention point or access point to an application is to be monitored safely, with high resolution and with short reaction times, they are the correct choice. If entire areas are to be safeguarded with different protected fields, however, the scanner technology is suitable as it can also offer



Safe all round

precision with regard to the edge sharpness. It is generally the case that scanners detect every type of object. Radar sensors, however, detect material-specific objects – water and metal and movements – that it reacts to.

the production task: suitable safeguarding decreases production risks and increases productivity!

Webcode: web187956

When to use which type of sensor depends primarily on the application situation. But no matter

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

## ”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 ...



**PNOZmulti 2**  
APPLICATIONS

### ► These tortilla chips are delicious. Do you like these Mexican snacks too?

Certainly, but did you know that they are actually an American invention? In the early 1900s, tortilla chips were already being offered in restaurants in Southern California.

They were made from leftover tortilla dough.

### ► And how do you know that?

We recently retrofitted the production lines of the Belgian snack food manufacturer Poco Loco. Manufacturing snacks actually requires a complex interlinked production process. In the beginning, ingredients like water and flour are mixed to form a corn dough, which is guided through presses and rolled to the correct thickness by rollers. At the same time, the chips are cut out. After the drying process, the chips are fried and seasoned.

### ► That sounds like it has some really high safety demands ...

Yes. The plant sections were previously designed as individual units with their own emergency stop circuits. This resulted in time-consuming troubleshooting, which stopped a large portion of the production. The plants were modernised to increase the efficiency of the production lines and optimise processes.

### ► And what's the solution now?

The configurable safe small controller PNOZmulti 2 now ensures that errors can be directly located and immediately rectified. All safety functions can be easily configured via the PNOZmulti Configurator. In the event of a fault today, only individual production stages are stopped while the rest of production can efficiently continue. This ensures that chips are always fresh and delicious when they are bagged.

## ► Panorama UL certification for Type 3 safety light curtains PSENopt II

# The first in the world

Safety light curtains PSENopt II Type 3 are currently the world's first UL certified Type 3 safety light curtains. The certification confirms that the Pilz light curtains meet all national safety standards of the United States and Canada. This is particularly beneficial for machine builders who export to those markets.

PSENopt II Type 3 safety light curtains have now successfully completed the certification process of UL International Germany, the German branch of the American test organisation Underwriters Laboratories (UL). UL certification supports companies or users with introducing products and systems into the North American market. This benefits the end user, as commissioning can take place more quickly.

With the safety light curtains, launched in 2016 as a global innovation for this safety category, applications with safety category Performance Level d (PL d) or SIL CL 2 can be easily implemented.

The light curtain range PSENopt II from Pilz help to safeguard interventions in the production process. The light curtains provide finger, hand and body protection in accordance with EN/IEC 61496-1/-2 “Safety of machinery – Electro-sensitive protective equipment”, depending on the requirement. They are the only light curtains on the market with a shock resistance of 50 g and can therefore also be used in robot applications, with packaging machines and with presses.

Together with control engineering from Pilz, light curtains PSENopt II represent a safe and economical overall solution for all sectors and application areas.



The world's first UL-certified Type 3 safety light curtains PSENopt II.



PSENopt II:

Webcode: web150418

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

EN/IEC 61496-1/2:

Webcode: web83347

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

## Safe data communication with SecurityBridge



The application firewall SecurityBridge checks the data traffic between the PC and controller and reports unauthorised changes to the control project. In this way it protects against network-based attacks and unauthorised access. SecurityBridge now also guarantees monitoring of data communication for network subscribers outside of the Pilz product range. It can thus be even more flexibly integrated into existing automation networks. With

the new "package recording" function, data communication between subscribers from the protected and unprotected network can also be recorded. That saves valuable time during diagnostics of the data traffic. With role-based user management, unauthorised access is prevented and the system is protected against tapping and manipulation.

Webcode:  
web188268

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

## Strong bolt to prevent manipulation



The safety bolt PSENbolt is now offered in new versions for combination with the mechanical safety gate system PSENmech with guard locking. The complete solution comprises a mechanical bolt, handle and new safety switches that can be combined flexibly. Both standard versions and versions with integrated key are now available. These make it possible to lock the bolt in the open position so that the gate cannot be locked again

from the outside. This prevents an unintended restart of the machine, for example during maintenance work. The user benefits from increased safety, protection against manipulation, high availability and thus economy of the plant.

Webcode:  
web150411

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

## Pilz Education Systems: new modules



Pilz Education Systems PES are modular training systems for practical teaching in companies with apprenticeship programs, schools and universities. They simulate the functioning of a plant or machinery. The "Conveyor" training system is new in the actuator technology area. It uses a realistic depiction of a conveyor system with a drill as a machining station to teach everything about intervening in a danger zone. With great practical rel-

evance, apprentices and students learn about the mode of operation and application of optoelectronic protective devices as well as the programming and commissioning in accordance with EN ISO 13849. The "conveyor" control panel is part of the Pilz Education Systems (PES), which comprises many modules, and is made up of various safety and automation functions. They can be combined with each other in various ways.

Webcode:  
web193919

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

## Safe radar solution PSENradar now also for robotics



Pilz is expanding its safe radar solution PSENradar to include an additional sensor: the new radar sensor PSEN rd1.2 can be used for the safety category Cat. 3/PL d and can thus also safely protect robot applications. Together with the equally new analysis unit PSEN rd1.0 I/O PS ETH, which additionally has both an Ethernet and a Profisafe interface, it is now even easier to integrate the safe radar system into existing applications. This opti-

mises commissioning. The PSENradar can be used in all applications where optoelectronic sensors can no longer guarantee functionality. Particularly in rugged application conditions such as woodworking or heavy industry, together with the configurable safe small controller PNOZmulti 2 it offers a safe complete solution – including conformity assessment.

Webcode:  
web199914

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

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