mrl.news

Edition 2025.02

tec.nicum

mrl.news remains your compass for change – practical, understandable and future-orientated.

Dear readers,

For many years, mrl.news has been a reliable source of information on the Machinery Directive, the central set of regulations that has decisively shaped the safety of machinery in Europe. However, just like the environment in which machines are designed, operated and networked, the corresponding standards and legal basis are constantly evolving.

In 2027, the current Machinery Directive 2006/42/EC will be replaced in practice by the new Machinery Regulation, Regulation (EU) 2023/1230. At first glance, this change appears to be of a formal nature, but in reality it represents a fundamental change. Like all EU regulations, the Machinery Regulation will apply directly and uniformly in all member states of the European Union without having to be transposed into national law.

We have discussed, weighed up and examined alternatives. And we made a conscious decision: mrl.news remains mrl.news. Because this title stands for more than just an acronym. It stands for expertise, for orientation in machinery law, for a magazine that has for years been reliably informing, categorising and providing impetus.

The new Machinery Regulation brings more clarity and binding force, but also opens up new challenges, particularly with regard to digital safety aspects, artificial intelligence, software and networked systems.

As your partner in all matters relating to machine safety, we will also accompany you in this new era. In this and the coming issues of mrl.news, we will show you in a practical way what is changing for mechanical engineering and component manufacturers. You can find an initial article on this on page 3.

One thing remains unchanged: Our aim is to share knowledge, provide guidance and jointly design safe solutions for people, machines and the future.

Best regards
Your mrl.news editorial team

Legally secure in the future

The Cyber Resilience Act and the new EU Machinery Regulation

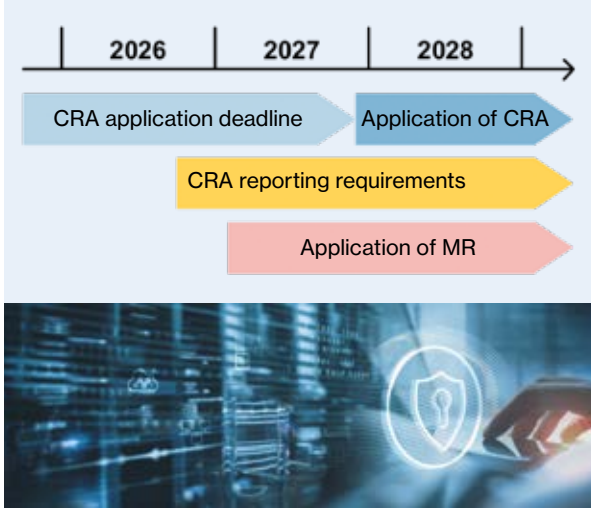
What requirements result from the Cyber Resilience Act (CRA) and the new EU Machinery Regulation for mechanical engineering and component manufacturers?

The new Machinery Regulation (MR), which will be legally binding for all EU member states from 20 January 2027, also regulates the requirements for mechanical engineering resulting from the EU's Cyber Resilience Act (CRA), among other things.

The CRA, which came into force on 10 December 2024, must be applied in full with effect from 11 December 2027. However, there are also reporting obligations regarding vulnerabilities and cyber incidents that begin on 11 September 2026.

The aim of the CRA is to increase the EU's resilience against cyberattacks on digital systems, products and processes (hardware and software). Systems and machines as well as the associated economic processes are already exposed to a variety of attacks via local digital interfaces or IT networks. In mechanical engineering, these attacks often target the integrity and availability of production processes rather than the tapping of data and information from these processes.

The functional safety of machines and systems is particularly vulnerable because safety systems have to switch the machine to a safe state even in the event of minor impairments, i.e. the machine must be shut down. This is why the economic impact of such cyber attacks is so serious.



Obligations of the manufacturer

The CRA obliges manufacturers to develop and manufacture products in accordance with the essential requirements of Annex I of the Regulation.

The essential requirements include (Annex I / Part 1):

- The product may only be placed on the market without known vulnerabilities
- Safe default settings
- The provision of safety updates
- Protection against unauthorised access
- A design with a limited attack surface ("security by design")

In addition, the creation of technical documentation for hardware and software is required, as well as the observance of a duty of care when integrating components purchased from third parties. Of course, this also applies to software modules that are integrated into components or machines.

In addition, manufacturers are obliged to provide continuous vulnerability management. They must close security gaps over the entire product life cycle, but for at least five years. They must also provide software updates for at least ten years.

Vulnerability management includes (Annex I / Part 2):

- The reporting, rectification and documentation of vulnerabilities
- The creation of an SBOM (documentation of the software version history of all components)
- The regular review of cyber security
- Reporting obligations to ENISA and CSIRT (EU agencies)

Reporting obligations in the event of security breaches

To enable users to close a security vulnerability as quickly as possible, for example with a software update, both users and the European Union Agency for Cybersecurity (ENISA) must be informed as soon as an actively exploitable vulnerability becomes known. →

The manufacturer's reporting obligations include (Article 14):

- Notification to ENISA & CSIRT after becoming aware of any actively exploited vulnerability or incident
- Notification with information and, if necessary, corrective measures within 72 hours
- Final report on exploited vulnerabilities and incidents:
  – Description, severity and effects of the attack
  – Possible causes and actors involved,
  – Security updates and provision of remedial measures for affected users

The reporting obligation will enter into force 21 months after the CRA Regulation comes into force, i.e. in September 2026.

Realisation of the requirements of the protection goals and definition of the security level:

To implement the requirements, the machine manufacturer can fall back on different sets of standards.

The normative requirements for cyber security are set out in IEC 62443, among others. It defines protection goals and security levels as well as procedures for realising cyber security requirements for industrial automation systems. Technical requirements for systems (IEC 62443-3-3) and products (IEC 62443-4-2) are assessed in the standard by so-called security levels (SL). The different levels indicate the resistance to potential attackers with different knowledge and resources.

The manufacturer of components and machines must analyse which security level or which security properties a component or machine requires in order to withstand the identified potential attacks.

Based on this risk assessment, suitable control mechanisms must be implemented to provide protection against unauthorised access. These can be authentication, identity or access management systems that ensure the integrity of stored, transmitted or otherwise processed data -– whether personal or otherwise – and protect commands, programmes and configurations against manipulation.

This makes IEC 62443 a good guide for manufacturers and machine operators to effectively implement cyber security.

There is also the IEC 63208 standardisation project for the cyber security aspects of components. The final draft (FDIS) of this standard has been available since May 2025 and is expected to be adopted by early 2026 at the latest.

IEC 63208 takes up the system of IEC 62443 and extends the cyber security requirements to the product area of communication-capable low-voltage switchgear and controlgear. →

EU Cyber Resilience Act (CRA 2024/2847)

Entry into force:	10 December 2024
Start of reporting obligations:	11 September 2026
Binding application:	11 December 2027

EU Machinery Regulation (MR 2023/1230)

Entry into force:	19 July 2023
Binding application:	20 January 2027

IEC 62443 IT security for industrial automation systems (IACS)

Part 3-3:	IT system requirements and security level
Part 4-2:	Technical requirements for components
Date:	2019 / 2020

FDIS_IEC 63208
Low-voltage switchgear and controlgear and their components – Security aspects

Date:	Final draft 2025-05

EU regulations and standards at a glance.

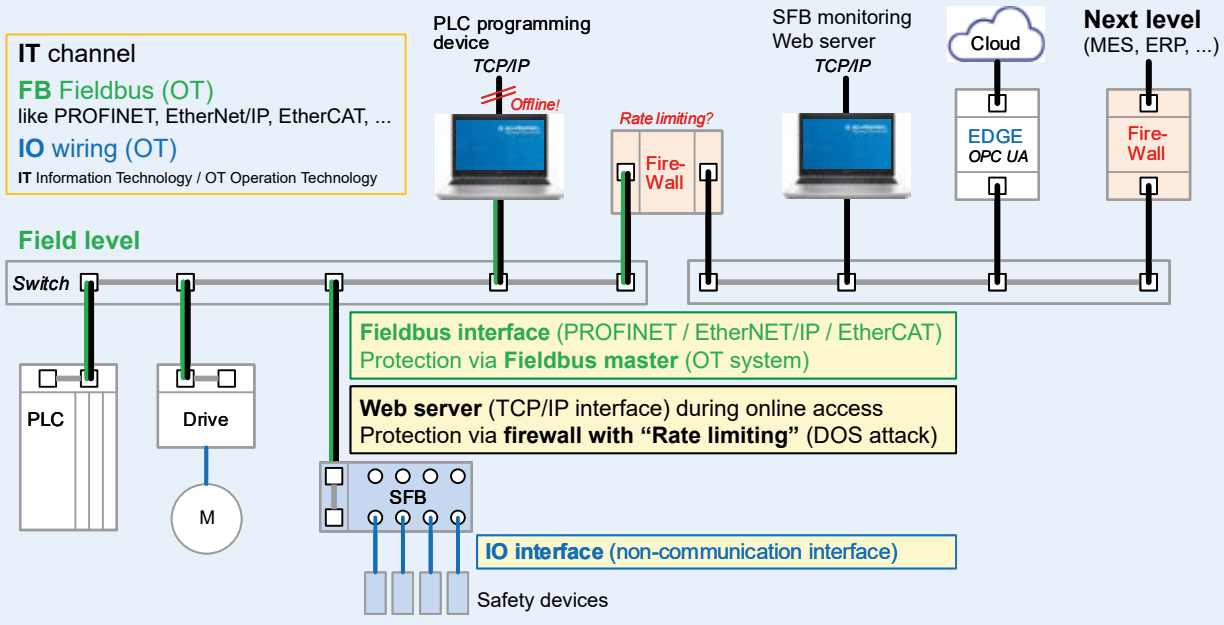
Solutions for mechanical engineering

It is helpful to create a system layout of the machine in the first step in order to analyse the network topology. Here, it is important to consider both the OT area of the machine-related fieldbus systems and the integration of the machine into the IT network of the plant and the production facility.

It usually makes sense to segment the different network areas and secure them at the transitions with the help of firewalls. In addition, access to the OT area via the IT interfaces for programming and service purposes should be secured and, if necessary, only permitted offline. ■

Udo Weber
Product Manager Safety Technology of the Schmersal Group and member of the DIN Joint Committee "Safety principles – Control systems"

System layout of a machine



The first IO-Link safety products from Schmersal will be available towards the end of the first half of 2026: the RSS362 safety sensor (right) and the AZM42 solenoid interlock (left) – further products such as the IO-Link safety master and the RSS262 sensor are in development.

Safe communication in Industry 4.0

IO-Link Safety: Paving the way for the next generation of safe machines

With IO-Link Safety, a manufacturer-independent, standardised communication system for functional safety is available for the first time. It expands the possibilities of Industry 4.0 with secure point-to-point communication between sensors, actuators and controllers.

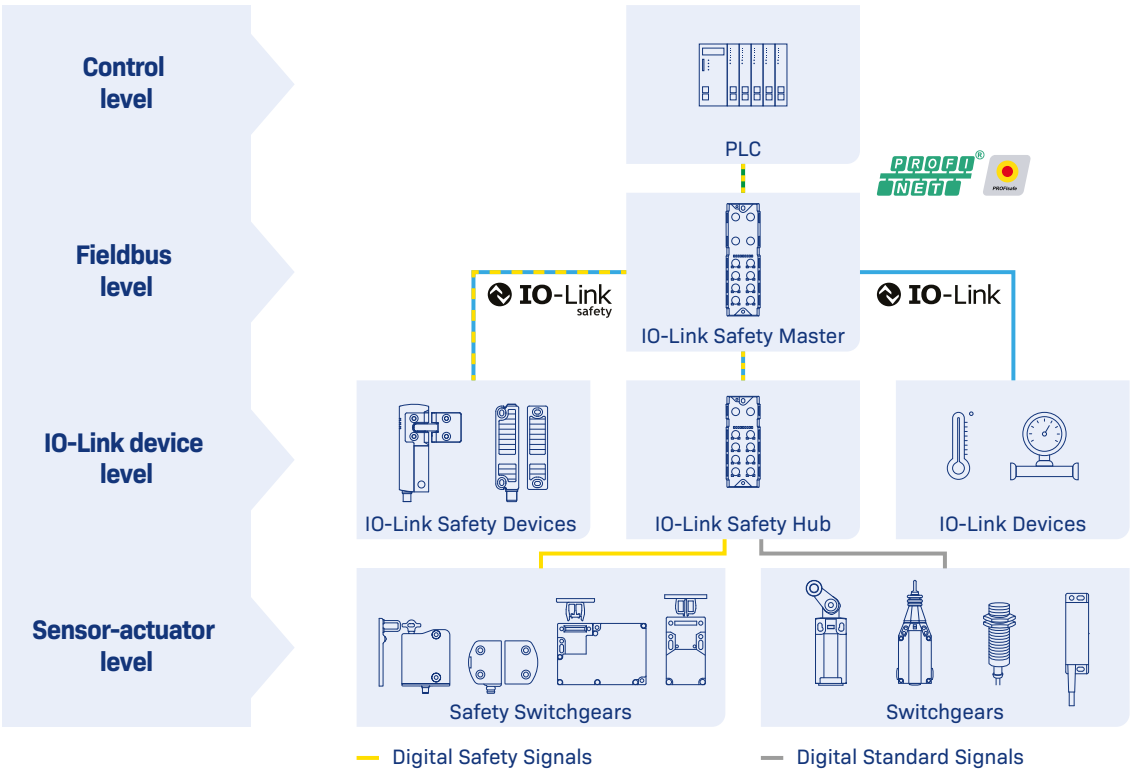
In this interview, Volker Heinzer, Strategic Product Manager at the Schmersal Group, explains how far the technology has come, what opportunities it offers and why it will play a key role in machine safety in the future.

A new standard for safety and communication

IO-Link Safety builds on the proven IO-Link technology and transfers its principles to the area of functional safety. This creates a uniform standard at the lowest automation level for the first time, which facilitates the integration of safety-related components. "IO-Link Safety is of great importance to us, as it is a key technology for the future of machine safety," explains Volker Heinzer. In an increasingly networked and automated industry, it is important to design security solutions that are flexible, scalable and data-capable. The decisive advantage: IO-Link Safety creates transparency right down to the field level. Sensors and actuators can not only transmit safety-relevant signals, but also exchange additional diagnostic data and parameters. This opens up new possibilities for maintenance, condition monitoring and process optimisation – a real step towards "Safety meets Smart Factory."

Standardisation at an international level

An important milestone was the standardisation of IO-Link Safety in IEC 61139-2. This specifies that the system fulfils the highest safety requirements up to PL e (EN ISO 13849-1) or SIL 3 (IEC 61508/62061). "The release of the first version of the IO-Link Safety Extensions in 2017 paved the way for manufacturer-independent safety solutions," says Heinzer. Until then, the safety sector was strongly characterised by proprietary interfaces. IO-Link Safety creates a common basis on which devices →



Schematic representation of an IO-Link safety system architecture.

from different manufacturers can work together interoperably. This means that in future, users will be able to flexibly combine security components from different providers without having to commit to a specific system. This not only makes machine safety more efficient, but also more economical and future-proof.

Added value through bidirectional communication

Bidirectional communication is one of the key advantages of IO-Link Safety. While conventional safety connections usually only allow simple signal transmissions, IO-Link Safety enables a two-way exchange of information. This means that controllers can not only receive data from sensors, but also send back parameters, commands and configurations. “This significantly improves the diagnostic possibilities,” emphasises Heinzer. The communication capability of the sensors and actuators also opens up new fields of application, such as predictive maintenance or process monitoring. Another practical advantage is the reduced installation effort. Instead of eight-core cables, three-core standard cables with M12 plugs are often sufficient for IO-Link Safety. This reduces material and installation costs, avoids wiring errors and speeds up commissioning. This means a noticeable increase in efficiency for machine manufacturers.

Integration into the world of Industry 4.0

IO-Link Safety is not just a safety solution, it is a key element of the digital transformation. The technology fits seamlessly into modern Industry 4.0 environments in which data is collected, analysed and used across all levels. “The ability to obtain additional information from the field level leads to greater flexibility and transparency in production,” says Heinzer. This makes IO-Link Safety an enabler for smart, adaptive manufacturing processes that can dynamically adapt to production requirements.

Challenges on the way to practical suitability

In addition to the many advantages, Heinzer also sees challenges: “We have to ensure that the entire ecosystem of IO-Link and IO-Link Safety remains interoperable.” This applies to both device development and system integration. Implementation requires a deep understanding of the technology and initially entails additional development work. Companies that have no previous IO-Link experience must be prepared for a certain amount of rethinking. “There may be higher initial costs at the beginning,” Heinzer admits, “but these are quickly amortised through long-term savings and efficiency gains.” →

Schmersal launches the first IO-Link safety products on the market

Good news for all users: Schmersal will soon be presenting the first two IO-Link safety products – the AZM42 solenoid interlock and the RSS362 safety sensor. This makes the company one of the pioneers of IO-Link safety integration and emphasises its leading role in functional safety. Both devices extend Schmersal's IO-Link safety installation system for industrial safety applications and offer bidirectional, safe communication via a 3-wire cable. This allows safe applications up to performance level e, category 4 or SIL 3 to be realised – with a high degree of flexibility and simple integration into existing systems.

AZM42: Solenoid interlock with digital added value

Even in its original version, the AZM42 solenoid interlock is one of the most compact and powerful safety solutions for mechanical engineering. In the new version, the distances when using two devices mounted next to each other have been reduced even further and the interlocking and guard locking function up to PL e, Cat. 4, SIL 3 is located in one device. The IO-Link safety interface extends the guard locking with numerous Industry 4.0 functions. In addition to the familiar safety functions, the AZM42 now offers real-time status and diagnostic data, including information on the supply voltage, temperature and quality of the RFID signal. The system also counts door opening and locking cycles and recognises, for example, if the distance between the sensor and actuator is exceeded.

AZM42

RSS362: Safety sensor with intelligent diagnostics

With the RSS362, Schmersal is now launching the IO-Link safety-capable version of the already successfully introduced, contactless, RFID-based safety sensor. Here, too, the distances between two devices have been significantly reduced. The familiar safety functions continue to take centre stage, supplemented by a comprehensive package of diagnostic and operating data. The RSS362 also provides information about the number of switching cycles, information about the supply voltage, the temperature and quality of the RFIS signal as well as the alignment of the sensor to the actuator. This data can be transferred to the control system via IO-Link safety communication and used there for a wide range of tasks, such as predictive maintenance.

RSS362

Like the AZM42, the RSS362 also supports bidirectional secure communication – the controller can therefore also send configuration data, parameters or commands securely to the sensor. This allows new actuators to be taught-in without the need for physical intervention. Thanks to the implemented data storage function, device configurations can be automatically saved for both devices and restored when they are replaced. This significantly simplifies maintenance. Offline configuration and parameterisation also makes it possible to prepare devices on the PC in the office – a real advantage in maintenance and series production.

Heinzer: "With these two products, we are demonstrating that IO-Link Safety is not just a theoretical concept, but has already arrived in practice." →

In addition to the familiar safety functions, the AZM42 now offers status and diagnostic data in real time.

Practical applications and added value for the operator

The integration of IO-Link Safety in safety components opens up new possibilities for operators and machine builders. Access to additional data allows maintenance intervals to be adjusted dynamically, sources of faults to be identified more quickly and unplanned downtimes to be avoided. In addition, IO-Link Safety facilitates the standardisation of system architectures and fast commissioning. The modular design means that security solutions can be expanded more flexibly in future – a decisive advantage in view of increasingly complex production environments.

Future prospects: IO-Link Safety as an industry standard

The market for IO-Link is growing rapidly – over 500 companies worldwide now belong to the IO-Link consortium, including many leading automation providers. "Just as IO-Link itself has grown exponentially in importance in recent years, IO-Link Safety will also play a central role in the next generation of safe machines and systems," Heinzer is convinced. For Schmersal, this means continuous further development, close cooperation within the IO-Link consortium and a consistent focus on data-based safety technologies. With the AZM42 and the RSS362, the company is one of the first suppliers to bring IO-Link safety-capable devices into series production – and is thus sending a strong signal to the market.

Conclusion: Safety is becoming digital, networked and intelligent

IO-Link Safety marks a turning point in industrial safety technology. The standardised communication path combines functionality and safety on one platform and creates the basis for intelligent, self-monitoring systems. This results in clear advantages for machine manufacturers and operators: lower installation costs, greater transparency, faster diagnostics – and previously unrivalled flexibility. "IO-Link Safety will play a central role in the next generation of safe machines and systems – and Schmersal will be at the forefront," concludes Heinzer, emphasising the company's determination to actively shape this technological change and drive forward innovative safety solutions. ■

Volker Heinzer
Strategic Product Manager Industrial Communication Systems and Industry 4.0 at the Schmersal Group

Tested product safety

Market access for safety switchgear in South Korea: The KC certification

Korea Certification (KC) is a central instrument for ensuring product safety in South Korea. It is mandatory there for many electrical and electronic devices. KC certification is also mandatory for some safety-relevant products such as emergency stop buttons, guard locking devices, safety controls or safety relays under certain conditions and ensures that products function safely and reliably in accordance with Korean standards. The applicable national regulations are partly derived from the international IEC standards. However, there are some special features of the Korean standards that differ from the IEC regulations.

The Korean Agency for Technology and Standards (KATS) is responsible for implementation. KC certification was introduced back in 2009 with the aim of consolidating numerous different test marks in South Korea under a standardised system.

Further special requirements apply to foreign manufacturers: An authorised representative based in Korea must be appointed and some technical documents must be available in Korean.

Each manufacturer must check in detail which certification scheme is to be used for which products. Products that have KC certification must be labelled accordingly. In addition to the “KC” certification label, each manufacturer receives a certificate number, which must also be affixed to the product. ■

The certification process is carried out as described below:

1. **Application** to an accredited testing centre in Korea.
2. **Submission of technical documentation,** e.g. circuit diagrams, parts lists, risk analyses and test reports (CB scheme reports can be partially recognised).
3. **Type tests are carried out** in accredited Korean laboratories.
4. **Initial inspection of production** (mandatory for initial applications).
5. **Issue of the certificate** and publication in the KC database.

Dipl.-Ing. (FH) Jörg Eisold
Head of Standards, Committees and Associations Work, K.A Schmersal GmbH & Co. KG

The logo for the KC certification.

The manufacture of tools and special-purpose machines for welding plastics has been Tiepner GmbH's area of expertise for over 40 years.

Fig. 1: *The compact system produces ID cards from laminated plastic, which are used as customer cards, ID cards or cheque cards, among other things. On the left is Christian Höltge, Managing Director of Tiepner GmbH.*

Playing the right card
Machine safety in special machine construction

The operators of Tiepner's fully automated (special) machines are always well informed about both the process and the operating status in the safety circuit. This is ensured by safety doors that provide a clear view of the respective station and – on the latest machine – illuminated door handles that use colour to indicate, for example, whether the door is released for opening. A safety field box simplifies communication in the safety circuit of the machine, which produces up to 15,000 plastic ID cards per hour. Tiepner is thus utilising two of Schmersal's latest innovations – and is completely satisfied with the result.

The customers of Tiepner GmbH in Dietfurt/Upper Palatinate do not put all their eggs in one basket. On the contrary: with a single Tiepner system, they produce or process a five-digit number of plastic cards per hour, which are used universally as ID, chip, ID card, cheque or customer cards and are made of different plastics – mostly PVC or polycarbonate.

15,000 ID cards per hour

Tiepner recently planned, built and delivered such a system, which produces cards in the standard ID format fully automatically **(see Fig. 1).** The starting materials are laminated sheets that are fed into the system. The bows are first separated at various stations, then aligned and their strength checked. This is followed by a station that punches out three cards with standardised dimensions from the basic corpus. The individual cards are placed in one of several magazines. In this way, the system produces around 15,000 cards per hour – with or without a chip, in series or personalised.

Apart from removing the magazines, the machine works automatically, i.e. without the need for an operator to intervene. The operators have a clear view of each individual station, and the safety doors – with large viewing windows – are each secured by a solenoid interlock.

New operating system

This concept is standard for all Tiepner machines, as is the fact that the safety switchgear and control units on the safety guards are sourced from Schmersal. Tiepner was one of the first users of a new generation of operating systems for the latest system presented here. Managing Director Christian Höltge **(see Fig. 1):** "Shortly before we began designing this special machine, Schmersal had introduced a new series of door handles with illuminated handles that signal the operating status of the machine. Because we attach great importance to transparency at the human-machine interface, we immediately liked this series. It fits well into our operating concept." →

Door handles that light up in different colours

The new series is the DHS door handle system **(Fig. 2)**, which combines the functions of a robust door handle with the display of various machine statuses: The door handles light up over a large surface area in up to seven colours. The user can configure the assignment of colour and function themselves.

Fig. 2: *The door handles of the DHS system light up in up to seven colours over a large surface area, indicating the operating status of the safety guard.*

Tiepner uses the system to signal for example whether the safety guard can be opened. And if the control unit detects an irregularity, the safety guard at which it was detected is displayed in colour.

In addition, each door handle in the DHS series is equipped with a pushbutton whose function can also be freely assigned – for example with a reset function or a request to open the safety guard.

Transparency at the safety guard

From the user's point of view, the door handle system simplifies machine operation. The user knows where he is – for example, which operating mode (set-up or jog mode) the machine is currently in. Tiepner has configured the system so that he can also use the pushbutton to enquire whether the solenoid interlock has released the door, i.e. whether he can open it. This eliminates the need to fit additional door handles and indicator lights.

Combination with compact solenoid interlock

The entire door handle system is designed for integration into 40 mm profile systems – and it can be used as a unit with the AZM40 solenoid interlock. Tiepner uses precisely this combination and can thus realise the central functions of machine safety and the human-machine interface – position monitoring of the safety guard, interlocking / guard locking / opening of the safety guard and information about the operating status – in one compact unit **(Fig. 3)**.

Fig. 3: *The door handles can be combined as a unit with the compact AZM40 solenoid interlock.*

Tiepner's design engineers and the users of the first machine equipped with this system are completely satisfied with the new system. Christian Höltge: "The operator is always well informed: Can the safety gate be opened? At which door has the control unit detected an irregularity? This creates transparency."

A separate control panel from Schmersal's BDF 100 series is also used for additional operating functions **(Fig. 4)**. The BDF 100 series includes a selection of control panels for additional functions. They can be installed with little effort where they can be reached quickly if necessary – also as a separate emergency stop button. **(Fig. 5)**. They are also very compact and fit perfectly on the 40 mm profiles of the machine enclosure.

Fig. 4 left: *A separate control panel from Schmersal's BDF 100 series is used for additional operating functions (top in picture).*
Fig. 5 right: *The separate emergency stop button, also from the BDF 100 series, is mounted where it is in the field of vision and can be reached quickly in case of an emergency.*

Premiere for the Safety Fieldbox

At the level of safety-related communication, Tiepner is using the Schmersal Safety Fieldbox for the first time **(see Fig. 6).** The universal device interfaces for eight-pin M12 plugs can be used to integrate electronic and electromechanical solenoid interlocks, sensors, control panels, light curtains or switches into the safety →

Fig. 7: *As a specialist in the production of plastic cards, Tiepner also designs and builds more complex systems that take over upstream process steps such as the production of the laminate, which consists of up to eight layers.*

circuit. Solenoid interlocks or safety light curtains only require one M12 slot.

Control panels with an emergency stop function and up to three non-safe command and signalling devices

Fig. 6: *The Safety Fieldbox simplifies the integration of safety switchgear into the safety circuit*

can also be connected directly to a port on the Safety Fieldbox without additional hardware. The data is transmitted to the control unit via a secure Ethernet protocol. This creates a good basis for the modularisation of safety technology – also from an economic point of view, as this universal device interface is more cost-effective than individual devices with a bus interface.

In larger systems, several interconnected field boxes can also simplify safety-related communication.

Ready for connection with pre-assembled cables

For Tiepner, installing the safety switchgear on this system was particularly easy. Christian Höltge: “We specified the cable lengths when we ordered, and Schmersal supplied the pre-assembled cables straight away. This saved even more time, and the installation of the field box itself also required very little effort.”

Conclusion: complete solution for machine safety

Tiepner has therefore opted for a complete solution for machine safety in the design and manufacture of this machine with the DHS series. The specialist in the manufacture of plastic ID cards also uses the DHS series, an innovation from Schmersal that ensures transparency at the safety guard, and the Safety Fieldbox simplifies communication in the safety circuit and the installation of safety switchgear. ■

A specialist for ID card production

Tiepner GmbH also designs and manufactures much larger systems than the one described here. They are used to produce the laminate from which the cards are punched **(see Fig. 7)**. Up to eight sheets of polycarbonate or PVC as sheet or roll material are first prepared individually and fully automatically, trimmed if necessary and then stacked. Cameras support stack formation, which also depends on the exact alignment of the print. Then the individual cards are punched out. Tiepner also manufactures separate and extremely compact machines specifically for this operation – as described here.

Highest requirements

NEW SAFETY LIGHT CURTAINS / GRIDS WITH ATEX CERTIFICATION (FOR ZONE 1 / 2G AND ZONE 21 / 2D)

Schmersal has extended its range of optoelectronic protective devices to reliably safeguard access points in potentially explosive atmospheres. With the new EX-SLC/SLG440 series, safety light curtains and safety light grids are now available in an Ex version. This allows the highest safety standards to be combined with proven quality.

There is an increased risk of explosion in numerous production areas, for example in the chemical industry, in refineries or in paint shops where flammable coating materials are processed. Dust can also pose an explosion hazard in industries that process bulk materials, such as the feed or recycling industry, sawmills or grain processing plants.

The **SLC/SLG440** safety light curtains and safety light grids have now also been developed in an Ex version for these demanding areas of application. The opto-electronic protective devices can be used in particularly explosive gas and dust atmospheres in zones **1 and 21** to protect hazardous areas.

EX-SLC440 safety light curtains for finger, hand and body detection

- ATEX-certified for 2G / D, Zone 1 / 21
- Finger and hand protection with 14 mm and 30 mm resolution
- Body protection for limbs with 2 to 4 beams
- Range: 0.3 to 20 m
- Dustproof
- Suitable for outdoor use
- Protective housing with metal caps
- Easy installation and handling with low weight

ATEX CATEGORY			
Zone 1 Gas	**Zone 21** Dust	**Zone 2** Gas	**Zone 22** Dust
2G	**2D**	**3G**	**3D**
✓	✓	✓	✓

Order brochure or view online


excellence in safety

tec.nicum is the Schmersal Group's business unit for solutions and services related to machine, plant and occupational safety.

Schmersal restructured its service business in 2024. The range of safety services offered by tec.nicum has been significantly expanded – particularly with regard to digitalisation and complete solutions for machine safety – and the global activities and expertise have been more closely integrated.

In April 2024, Schmersal founded tec.nicum – Solutions & Services GmbH as a new subsidiary, which also incorporated omnicon engineering GmbH, which Schmersal had already acquired in 2019. The headquarters of the new subsidiary is located in Kirkel-Limbach, Germany.

The four pillars on which tec.nicum's offering was previously built – academy, consulting, engineering and integration – have been supplemented by two more: digitalisation and outsourcing.

digitalisation: tec.nicum is increasingly offering newly developed software solutions, such as a new tool for carrying out risk assessments, as well as new digital technologies such as cloud solutions, IIoT applications, digitalised lockout-tagout procedures and energy management tools.

outsourcing: tec.nicum offers companies the opportunity to completely outsource all tasks related to machine safety, from the planning and installation of control cabinets to the design of holistic safety solutions.
tec.nicum provides the user with ready-to-connect plug & play solutions.

Thanks to its worldwide consultancy network, tec.nicum services are available around the globe. tec.nicum provides customers with competent, product- and manufacturer-neutral advice and supports them in the safety-related design of their machines and production lines.

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The range of services offered by tec.nicum comprises six segments: academy (knowledge transfer), consulting (advisory services), engineering (technical planning), integration (execution and implementation), digitalisation (software solutions and new digital technologies) and outsourcing (complete solutions).

academy

Education centre

- Training courses
- Customer-specific trainings
- In-house seminars
- Certified courses (mce.expert and FSE)

consulting

Analysis and documentation

- Technical support
- Risk assessments
- CE conformity assessment
- Evaluation of machines and production lines
- Technical documentation

engineering

Planning and design

- Technical project planning
- Conceptual project development
- Electrical and mechanical design
- Executive project management

integration

Practical application

- Turnkey approach
- Installation
- Retrofit

digitalisation

Software integration

- tec**.ps** (Product Service System)
- tec**.ssm** (Schmersal Smart Machine)
- tec**.cvs** (AI and Computational Vision Solutions)
- tec**.dloto** (Digital Lockout Tagout)
- tec**.ems** (Energy Monitoring System)

outsourcing

Serial solutions

- Plug & Play products
- Engineer to Order projects
- Systems and cabinets

tec.nicum

tec.nicum academy

The seminar programme 2026

The tec.nicum academy offers a comprehensive training and seminar programme on topics relating to machine and plant safety.

Visit us at **www.tecnicum.com** and find up-to-date detailed information and booking options for all seminars and special events.

We would be happy to organise a customised in-house seminar tailored to the individual professional interests of the participants on the date of your choice.

We will be happy to advise you personally.
Get in touch!

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Seminar topics	Wuppertal	Wettenberg	Kirkel	Online	Inhouse
Law					
NEW Machinery Regulation 2023/1230 **(Compact seminar)**	2026-04-23 2026-11-19	2026-05-21	2026-02-12 2026-11-23	On request	On request
NEW Machinery Regulation 2023/1230 **(Intensive seminar – 2-day seminar)**	2026-06-16 to 2026-06-17 2026-10-20 to 2026-10-21	2026-03-10 to 2026-03-11	2026-03-16 to 2026-03-17 2026-08-31 to 2026-09-01	On request	On request
Basics of occupational health and safety for managers	2026-10-22	2026-05-20	2026-05-07	On request	On request
Legal aspects of machine safety for managers **(1/2-day seminar)**	–	–	–	On request	On request

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Seminar programme 2026 (continued from page 17)

Seminar topics	Wuppertal	Wettenberg	Kirkel	Online	Inhouse
Standards – Regulations					
Risk assessment to EN ISO 12100	2026-01-15	2026-08-25	2026-05-04	On request	On request
Risk assessment for machinery and equipment in accordance with the Industrial Safety Regulation	2026-06-23	2026-10-13	2026-03-18 2026-11-24	On request	On request
Technical documentation / Operating instructions	2026-07-21 to 2026-07-22	2026-10-14 to 2026-10-15	2026-02-09 to 2026-02-10	On request	On request
Application of EN ISO 13849-1 and introduction to SOFTEMA	–	–	–	On request	On request
Application of EN ISO 13849-1 and introduction to SISTEMA and validation	2026-10-07	2026-02-11	2026-05-06	On request	On request
NEW Electrical equipment of machinery to EN 60204-1 (VDE 0113-1) **(2 days)**	2026-08-11 to 2026-08-12	–	2026-03-03 to 2026-03-04	On request	On request

Seminar topics	Wuppertal	Wettenberg	Kirkel	Online	Inhouse
Qualification courses with a special qualification					
Qualification as a TÜV-certified “Machinery CE Certified Expert® – mce.expert”	2026-10-27 to 2026-10-30	2026-01-27 to 2026-01-30	2026-07-13 to 2026-07-16	–	On request
Basic course Safety Officer **(2 days)**	2026-06-08 to 2026-06-09	2026-08-04 to 2026-08-05	2026-06-30 to 2026-07-01	–	On request

Seminar programme 2026 (continued from page 18)

Seminar topics	Wuppertal	Wettenberg	Kirkel	Online	Inhouse
Application					
Fundamentals of safety technology – guards and protective devices	in planning (i.p.)	i.p.	i.p.	On request	On request
Safety-orientated design of battery production systems	i.p.	i.p.	i.p.	On request	On request
Automated guided vehicles and their integration into the production environment	i.p.	i.p.	i.p.	On request	On request
Safety in integrated robot production systems	i.p.	i.p.	i.p.	On request	On request
Human-robot collaboration	i.p.	i.p.	i.p.	On request	On request
Electrotechnically instructed person (EUP)	2026-07-23	–	2026-02-11	On request	On request
Lockout / Tagout (LOTO)	2026-06-24	2026-03-12	2026-05-05	On request	On request
Crane operator qualification (floor-operated cranes)	–	–	–	–	On request
Safe conversion of machines and systems	2026-06-18	2026-05-19	2026-07-02	On request	On request
Mental health in the workplace	2026-08-26	–	2026-02-24	On request	On request

Seminar topics	Wuppertal	Wettenberg	Kirkel	Online	Inhouse
Products					
Fundamentals and inspection of opto-electronic safety devices in accordance with BetrSichV (seminar objective: qualified person)	i.p.	i.p.	i.p.	i.p.	i.p.

(as at November 2025)
Further seminar dates will follow. You can find the current overview at www.tecnicum.com/academy

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