mrl.news

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tec.nicum

tec.nicum grows with the challenges

Internationally, the service business is the fastest growing business segment of the Schmersal Group. Under the tec.nicum brand we offer a comprehensive range of services. With a network of highly qualified specialists, we ensure the best possible support for our customers worldwide.

Demand for services is constantly on the increase. And it's no surprise – the safety of machinery is multifaceted, and manufacturing processes are becoming ever more complex. New technologies and technological concepts, such as Industry 4.0, the Industrial Internet of Things, AI and Machine Learning, are all making their way into industrial production.

Schmersal is taking these developments into account and is repositioning its service business, in terms of both organisation and content, with an expanded range of services. In our interview on page four, Bruno Diniz, Head of Global tec.nicum, talks about the aims of the repositioning.

Of particular interest to our customers are the new modules being offered by tec.nicum: digitalisation and outsourcing (see pages 6/7 and 8). Here, tec.nicum is relying on completely new systems, some supported by software or AI, to not only ensure the safety of people and machinery, but to improve productivity and the environmental responsibility of processes.

We can use a very specific example to demonstrate how this benefits our customers: Schmersal implemented the energy management system EMS 4.0 for a well-known customer in India, which prides itself on its ambitious sustainability goals. The system makes energy consumption in production transparent and provides a comprehensive database for analysing and optimising processes (page 9 onwards).

We also remain very active in our traditional field. In this issue, we're looking at the legal aspects of machine safety (page 14), a new directive on product liability (page 17) and a recent ECJ ruling on the free provision of standards.

In addition, we have also expanded our training programme: for the first time, we are now able to offer Functional Safety Engineer (TÜV Rheinland) training as well as seminars specifically designed for managers (page 18/19).

Happy reading!

Your Editorial Team

Extended offer – global integration

The Schmersal Group restructures its service division / Foundation of tec.nicum – Solutions & Services GmbH

The Schmersal Group is restructuring its service business, which promises great development potential in view of growing demand. The range of safety services offered by tec.nicum will be significantly expanded – particularly in the areas of digitalisation and complete solutions for machine safety – and the global activities and expertise will be more closely integrated.

On 8 April 2024, Schmersal founded tec.nicum – Solutions & Services GmbH as a new subsidiary, which also incorporates omnicon engineering GmbH, which Schmersal acquired in 2019. The new company is based in Kirkel-Limbach in Saarland / South West Germany.

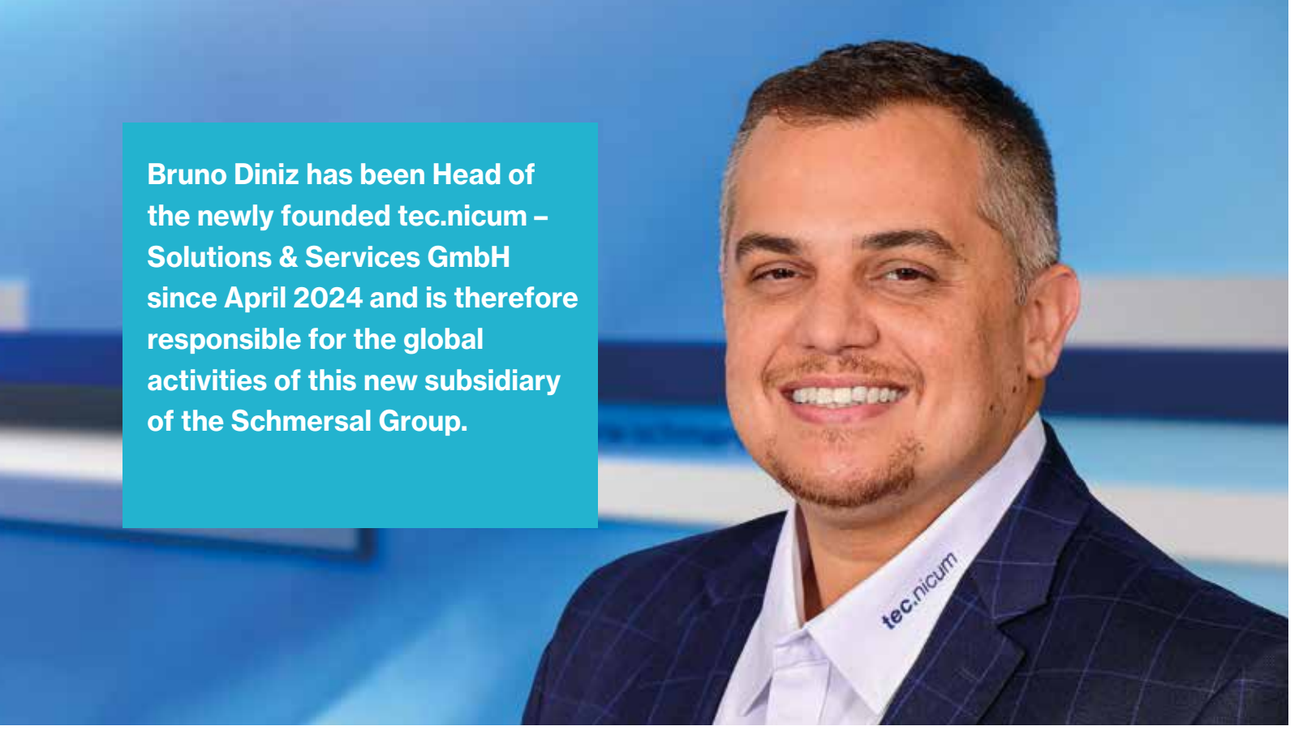
Bruno Ricardo Diniz, who previously led tec.nicum's business in Latin America, now heads this newly founded company and is also Head of Global tec.nicum. The European business of tec.nicum – Solutions & Services GmbH will be supported by Enildo Caetano dos Santos as Business Development Manager and the German team will be handled by Carsten Doll as Site Manager in Kirkel and Tobias Keller as Sales Manager.

"On the one hand, our customers will benefit from our technical expertise, safety knowledge and application experience, all integrated in a global process that takes advantage of emerging technologies such as lidar, augmented reality and digitalisation. For example, to support customers in the Americas, we will draw on the expertise of Brazilian engineers, while in Europe the new company will provide support and in Asia we will draw on the expertise of the Indian team," explains Bruno Diniz. "On the other hand, we will significantly expand our portfolio of safety services and lead the company into new opportunities that it has not yet explored".

The four pillars on which tec.nicum's offering has been built to date – knowledge transfer, consulting, technical planning and execution – will be 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. ■



Bruno Diniz has been Head of the newly founded tec.nicum – Solutions & Services GmbH since April 2024 and is therefore responsible for the global activities of this new subsidiary of the Schmersal Group.

Interview with Bruno Diniz, Head of tec.nicum – Solutions & Services GmbH

“We are the first choice for companies looking for a global partner”

MRL News:
What is the objective of the reorganisation of the tec.nicum organisation?

Bruno Diniz:
The aim of the reorganisation and the founding of tec.nicum – Solutions & Services GmbH is to establish a globally integrated tec.nicum team in order to develop global strategies and coordinate the worldwide activities of the Schmersal Group’s service division. We want to offer a comprehensive global service portfolio that combines knowledge from different locations and at the same time takes local requirements into account. In this way, we are pooling our expertise and resources for the benefit of our customers. For example, we will support our customers in the Americas with the expertise of our Brazilian engineers, the new company in Europe and the Indian team in Asia. We will be able to manage projects with experts from different locations. This strategic realignment will make us the first choice for companies looking for a partner who can support them worldwide and maintain the same quality and safety standards.

MRL News:
Not only will tec.nicum be reorganised, but you also want to expand your range of services. What is the reason for this?

Bruno Diniz:
We are seeing a clear transformation process in the industry. Digitalisation and concepts such as Industry 4.0 are changing production processes. Therefore, we need to support our customers with new technologies and tailor-made services. One example is the growing proportion of software functionality in devices. The exchange of data and documents with the devices in digital form is becoming more extensive, and we also have to provide our customers with more and more information. In addition, we have found that our customers are not only looking for specific services, such as a risk assessment or a concept for safeguarding an individual machine, but also for complete solutions that take into account and evaluate the entire supply chain. Our customers also include multinational corporations with production plants in various countries and continents, which nevertheless attach great importance to standardised safety solutions and safety standards. In view of these developments in the demand for safety services, we have refocused our strategy: We have expanded our service portfolio, we are offering new technologies such as IIoT and cloud solutions, and we are pooling the resources of our global network. →

MRL News:
What exactly are the new services offered by tec.nicum – Solutions & Services GmbH?

Bruno Diniz:
Basically, we have added two more modules to the four existing service modules of tec.nicum: digitalisation and outsourcing. The digitalisation module is about digital solutions that not only relate to safety technology, but also help customers implement their Industry 4.0 concepts and achieve their sustainability goals. For example, we offer various platforms and systems that enable customers to visualise, analyse and evaluate a wide range of production data. These include video analysis systems that can identify potential risks in real time. We also offer automated quality assurance systems and energy management tools. We are actively developing new software solutions, such as Blue Print, which is already used for risk assessment and which we are gradually expanding. An added benefit of these digital solutions is that they allow people from different locations around the world to work together on a project. This ensures consistent standards and avoids isolated solutions.

MRL News:
And what does the outsourcing module involve?

Bruno Diniz:
With outsourcing, we offer complete solutions – from pre-assembled control panels to integrated safety solutions in which the entire supply chain is analysed. The aim is always to improve and simplify our customers’ processes. For example, by providing support in product development and optimising products through co-design. During the entire product development process, for example, we find improvements or switch to plug-and-play systems so that the delivery and assembly of products is much faster. Last but not least, we also want to help our customers to reduce their operating costs. If desired, order processing can be carried out according to the ‘Engineer to Order’ (ETO) principle, whereby products or components are customised.

MRL News:
What organisational changes have been made?

Bruno Diniz:
tec.nicum is no longer just a business unit, but an independent, wholly owned subsidiary of the Schmersal Group. Our head office is located in Kirkel-Limbach, the headquarters of the former omnicon engineering GmbH, which has been merged into the new tec.nicum – Solutions & Services GmbH. Another office in Germany is located at Schmersal’s headquarters in Wuppertal. Outside Germany, we have central offices in Brazil and India. However, we also have tec.nicum engineers in all our subsidiaries – whether in Belgium or the USA – so that we can work very closely with our customers. We currently have 162 employees worldwide - but I am sure there will be more in the future as we have ambitious goals and I am convinced that our unique service offering will be in high demand. ■

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

consulting
Analysis and documentation
- Technical support
- RISK assessment
- CE conformity assessment
- Evaluation of machines and production lines
- Reports

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’s range of services now consists of six modules. The digitalisation and outsourcing modules are new.

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 lockouttagout procedures (dLOTO) and energy management tools.

Software integration digitalisation: the new service module no. 5 of tec.nicum

tec.nicum develops IIoT solutions for its customers so that data and information from production can be better used to increase the efficiency of machines and systems. The new cloud solution collects data from networked devices, sensors and actuators and analyses it in real time. The results and the recommendations for action based on them are used to optimise the machines and processes. Key approaches in these concepts are condition monitoring, predictive maintenance, the calculation of key performance indicators (KPIs) and energy management. In addition, tec.nicum offers various solutions for the digitalisation of lockout-tagout procedures that protect employees from dangerous energy release. Cloud-based technologies allow users to monitor workflows and data at any time from their desktop, tablet or smartphone.

tec.ps – Product Service System

The tec**.ps** platform is designed to store and visualise factory floor data collected from PLCs, safety controllers and IoT devices. This data is used to provide insight into production and productivity, and to monitor the measurements and calculations required by safety system regulations such as HRN and Time Mission. tec**.ps** uses consolidated communication methods such as MQTT and OPC UA, as well as the ability to integrate with databases and APIs. All collected data is made available and centralised in a dedicated operating station for each client, making the platform a multi-tenant concept.

tec**.ps** complies with international privacy standards. Each user has their own navigation environment, with dashboards designed for quick analysis of the information available. It is also possible to manage customised and standardised alerts, making the tool more versatile.

tec.ssm – Schmersal Smart Machine

Empower control: discover the revolution in monitoring with our tec**.ssm**. We combine all our technologies into a streamlined solution for our customers. Get data, image analysis through AI, energy consumption control, and sophisticated security analysis on a single platform. tec**.ssm**. focuses on the end user, from new purchases to retrofits. We bring new machines and processes up to the technological standards demanded by leading industrial companies. We make Industry 4.0 a reality for our customers, using at least five pillars to modernise solutions. Our engineering team is ready to understand our customers' technological requirements and translate them into simple and effective solutions. →

tec.cvs – Computational Vision Solutions:

If you can see, we can measure. A modular ecosystem of video analytics solutions that integrates information from multiple challenges faced by industries into a single environment. We can measure images, performance indicators, availability, quality and above all the safety of people and equipment.

An IP camera image capture system is used for implementation, and it is even possible to use already installed devices. Processing and decision-making can be done on site or in the cloud, and reports are made available via a customised dashboard platform.

Our product is divided into three different categories:

tec.aira – Artifcial Intelligence for Accident Mitigation

Video analytics system for Safety, Health and Environment (SHE). The system recognises potential risks in real time, through detection and recognition of dangerous interactions between humans, objects and the work environment.

The system detects:

- PPE (Personal Protective Equipment) usage during activities
- Suspended loads proximity and inclination
- Controlled areas access
- Proximity with dangerous objects
- Falls and accidents

tec.saci – Behavioural and Interaction Analysis System:

Video analysis system that recognises human actions on the factory floor, capable of

- Performing real-time chronoanalysis
- Detecting all human actions in the area, segregated by occupational profile
- Evaluating compliance with routines, checklists and setup standards
- Identifying usage patterns and defects in equipment
- Analysing and standardising execution and performance
- Identifying bottlenecks and points of inefficiency

tec.cuca – Unified Characteristics Classifier:

tec**.cuca** is a system capable of recognising various quality standards, extracting information from:

- Format and dimensions
- Counting and losses
- Recognition of visual defects
- Conformity analysis (e.g. holes)
- Pointing out the cause and effect of problems for immediate resolution
- Trend analysis

tec.dloto – Equipment blocking – audited and confirmed by software

The Digital Lockout Tagout (tec**.dloto**) software helps to implement procedures and manage resources in an effective way, eliminating human errors by increasing the availability of information for each piece of equipment and isolation point. The system uses an individual QR code for each piece of equipment to document, through photographs, that all energy sources on the equipment have been locked out using standardised devices. Once the photos have been validated, the maintenance worker or operator is free to carry out the action in a safe and documented manner. The equipment release process follows the same protocol.

tec.ems – Energy Management Solution: Understand the consumption of your equipment or departments in detail

tec**.ems** is a modular energy management solution designed to provide you with complete visibility and control of your facility's energy consumption. Our team is involved from assessment to implementation of the solution.

- The plug-and-play module allows easy deployment and mapping of energy meters via front-end configuration
- Granular reporting of energy consumption to guide energy efficiency initiatives
- Self-powered individual components are designed to maintain communication with the web server in the event of a power failure
- Preconfigurations to send alerts when parameters are out of range
- Insights to provide oversight across assets ■

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 integrated safety solutions.

Serial solutions
outsourcing: the new service module no. 6 of tec.nicum

The specialists at tec.nicum analyse the entire supply chain and are therefore able to offer integrated solutions. They provide support in product development and the optimisation of products through co-design. The customer benefits from simplified processes and reduced costs.

On request, orders can be processed according to the "Engineer to Order" principle, whereby products or components are designed and produced according to customer specifications. In this way, tec.nicum provides customers with customised solutions that are tailored to their individual order requirements. This is made possible by efficient software and error-free digital processes. If required, tec.nicum provides the user with products as ready-to-connect plug & play systems.

Upon request, tec.nicum can also develop complete safety solutions for companies – from the design of safety systems and practical implementation to 24/7 process monitoring, monitoring of safety functions and trouble shooting.

The outsourcing service offers the resource that allows Schmersal to be engaged to develop improvements in a production process or in an industrial line or installation. Leveraging our expertise as a company specialised in solutions for safety and automation systems. ■

Supply models

The outsourcing delivery model offers complete solutions that integrate several aspects:

- Simplification of customer processes; cost reduction in administration; development support
- Product improvement through co-creation and engineering integration; cost and inventory reduction
- Panel: Provides control panels designed for a wide range of applications (e.g. safety panels, distribution, air conditioning, pumps, agricultural panels, etc.)
- Material kits: Provides plug and play solutions, ideal for existing installations. (e.g. preassembled kits: panel plus field items such as buttons, sensors, safety switches; we also have mechanical solutions such as customised plating and protection)

Energy management as an IIoT solution
Goal: optimisation of energy consumption in production

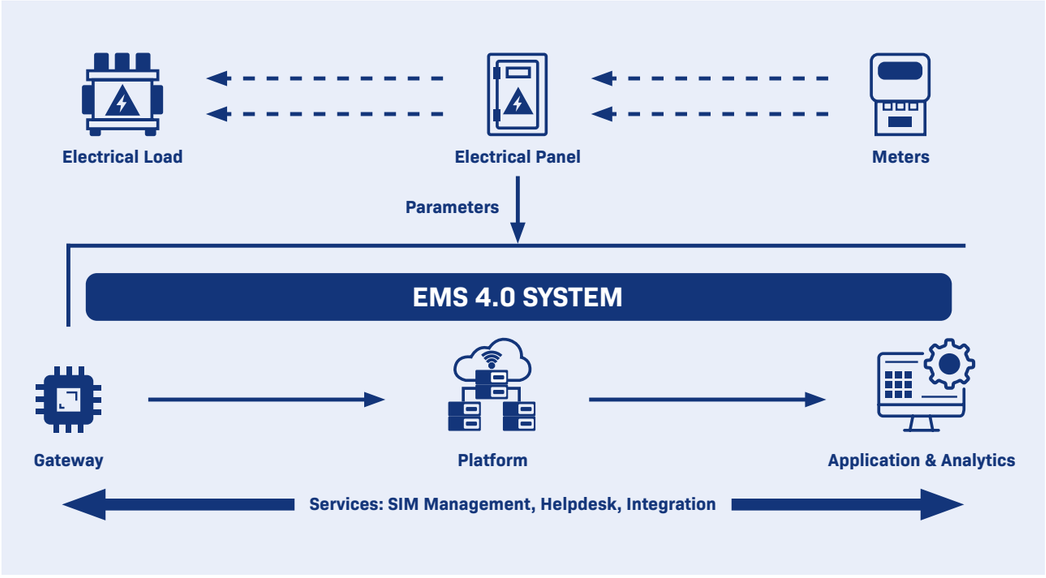
digitalisation is an important new pillar in tec.nicum's expanded range of services, with which we want to support our customers in transformation processes in production in the future. This includes newly developed software solutions as well as new digital technologies such as IIoT applications and energy management systems. MRL News will certainly be presenting some of these innovative systems and solutions here in the future – we would like to start with the energy management system. One of the first users of the "Energy Management Solution" as an IIoT application is the Indian production facility of an international manufacturer of household appliances.

The task was clearly defined: The Indian plant of a global household appliance manufacturer had set itself clear targets for overall equipment efficiency (OEE) and also for the energy efficiency of its production. Each year, energy consumption was to be reduced by 2 to 5% in relation to production volume, with a corresponding positive impact on the site's CO_2 emissions (which were also accurately recorded). A comprehensive, IT-based solution was required that would provide full transparency of the current status, while also enabling the recording of Key Performance Indicators (KPIs) such as OEE. Thirdly, the database should be used to document progress, including for international ESG reporting (ESG = Environmental, Social und Governance)

Extended range of services

The site managers approached the IIoT team at the Schmersal Global Competence Centre, which is also based in India, with this request. At first glance, this might not seem the most obvious choice. After all, Schmersal is known worldwide as a specialist in machine safety and as such is very much at home in areas such as digitalisation, connectivity, sensor networking, data analysis and edge computing. But energy management? The answer to this question is a clear "yes": this is precisely part of the expanded range of services that Schmersal's global service division tec.nicum now offers worldwide.

The request from the household appliance manufacturer – with whom Schmersal's Indian subsidiary has a good working relationship – came at just the right time. It offered the Schmersal Global Competence Centre the opportunity to implement the new energy →



Key parameters from electricity meters are captured and passed on for further processing. EDGE gateways collect data on all parameters to be sent to the platform. The data is further stored and processed on our IIoT platform to be sent to our EMS 4.0 application.

management system in its own country for the first time.

EMS 4.0: Recording and managing energy consumption company-wide

With the “Energy Management Solution 4.0”, EMS, Schmersal and the software developers of the IIoT team at the Schmersal Global Competence Center have developed a modular solution that makes energy consumption in production transparent and provides a comprehensive database for evaluation and optimisation.

The plug-and-play module of this solution makes it easy to set up and assign energy meters with its front-end configuration. The dashboard visualises the consumption of all systems and their evolution. Diverse evaluation functions allow detailed reports to be generated on energy consumption, even according to individually defined parameters. Limit values can also be defined, and the user receives an (alarm) message if these are exceeded.

This also provides the user with a solid basis for energy efficiency initiatives. The user can test and evaluate the effectiveness of individual measures and prepare the data for CSR reporting, which is already mandatory for larger companies throughout the EU. And since the calculation of KPIs is also part of the IIoT concept developed by tec.nicum (as well as condition monitoring and predictive maintenance), energy efficiency can be directly included in the calculation of OEE.

Consistent execution – from analysis to implementation

It was precisely this solution that the IIoT experts at Schmersal implemented for their customer in India. First, the individual requirements were defined together. Then they adapted the software to these requirements and selected the appropriate hardware. In the final step, the complete solution was implemented and handed over to the user “ready to use”.

Hardware: Fail-safe edge solution

When selecting the hardware components, care was taken to ensure that they could maintain communication with the web server for a defined period of time even in the event of a power failure. Data from machines and drives, collected by energy meters and other sensors, is first collected at the edge level, i.e. in the immediate vicinity of production, where it is analysed in real time. 4G Modbus IoT gateways are used for this purpose.

This means that the user always has access to very up-to-date data, which can also be used directly to control energy supply and generation (solar systems, generators, etc.). At the same time, comprehensive reports are generated, documenting the progress made in reducing energy consumption and CO_2 emissions, among other things.

Transparency and reliability: improvements on many levels

The white goods manufacturer is fully satisfied with the solution: It has significantly reduced the time and effort required to record and analyse energy consumption and has significantly improved its OEE performance. Operational reliability has also been greatly improved, as critical energy consumers and generators are monitored very closely. The same applies to the energy distribution systems. Irregularities are largely detected in real time and immediately reported to the person responsible, e.g. by SMS.

The benefits of digitalisation: merging energy and production data

Transparency goes so far as to track the energy consumption of each product manufactured – individually for each appliance that leaves the production line. To do this, energy-related data must be correlated with production data. This is also ensured by the IIoT platform developed and provided by tec.nicum.

Good internal cooperation

When adapting the energy management system to the customer’s requirements and throughout the entire project phase, the engineers at tec.nicum worked closely with the IIoT team at the Schmersal Global Competence Centre (SGCC) in Pune, India, which took the lead on this project. Sachit Mohan, Team Supervisor – IIoT Specialist at SGCC: “We complemented each other well and both contributed our expertise – from infrastructure planning to component selection and implementation.”

Perspective: Safety-as-a-Service as an IIoT application

The backbone of the comprehensive energy management system described here is a robust IIoT platform that ensures reliable communication between all the participants involved (from sensors and visualisation systems to gateways, servers and the cloud). This platform, developed by tec.nicum, has already been proven in other applications.

The experts at tec.nicum are already working on the next step: in the future, safety-relevant data will also be collected, transmitted and analysed via such a platform. This will create the conditions for completely new, comprehensive services – and for a new business model: “Security as a service”. ■

The IIoT solution ‘Energy Management Solution’ creates the conditions for optimising energy consumption in production.

The UK had previously stated in 2023 that it would retain CE marking for 18 directives. The CE marking is now set to be recognised for a further three directives.

UK to recognise EU conformity assessment procedures in the long term

New memorandum of understanding from the UK's Department for Business and Trade

The UK's Department for Business and Trade (DBT) announced last year that the CE marking would be recognised indefinitely for UK market access for a total of 18 directives and legal acts. These include the Machinery Directive, the ATEX Directive, the EMC Directive, the RED Directive, the Lifts Directive, amongst others. As the recognition does not apply across the board for all directives, it is advisable to check the DBT's website for information about which directives are affected.

This year saw a new memorandum of understanding from the DBT, announcing recognition of the CE marking for a further three directives, including the RoHS Directive. EU Directive 2011/65/EU limits the use of certain hazardous substances in electrical and electronic devices. The following should be noted for the RoHS: The intention is to continue to recognise the RoHS for products that adhere to the maximum values in Annex II of EU-RoHS 2011/65/EU. For products with an exemption, the EU requirements and CE marking will continue to be recognised if there is a comparable exemption in GB RoHS (2012).

Another important element of the announcement is the recognition of the EU conformity assessment procedure for the 21 legal acts, for which the 'Fast Track' procedure is being introduced. Under this voluntary procedure, the UKCA marking can be used to evidence compliance with either UKCA or EU product requirements in the UK. After completing the conformity assessment procedure (EU or UKCA), the UKCA marking can be applied, and the requisite UK Declaration of Conformity issued. In that case, EU directives can also be cited in the list of legal acts relevant to the product.

Product markings are also set to be simplified, with essential marking able to be applied to the product itself, on a sticker, on accompanying documents or on the packaging. The option for digital marking, such as with a QR code, is also due to be introduced. The legislation is due to come into force in spring 2024. ■

Jörg Eisold
Head of Standards,
Committees and Association Work

Are standards soon to be available free of charge?

Recent ECJ ruling leaves many questions unanswered

In case C-588/21 P, the ECJ ruled in the last instance that harmonised European standards are part of EU law and must, therefore, be made freely available at no cost. Developing standards is a lengthy and expensive process. To account for this, standardisation work has thus far been refinanced by licence fees, which are paid by those who use the standard. Experts are now concerned that without this funding option, standardisation work could come to a standstill, and with it the entire system of European standardisation.

Before the procedure was introduced in 1985 by then Commission President Jacques Delors, businesses, when developing their products, had to be familiar with and comply with the technical regulations of all European countries. For SMEs, this was all but impossible. The development of shared standards helped to simplify business relationships in Europe considerably.

But it is far from clear whether all European standards will soon be available free of charge. In its ruling, the ECJ concludes that the requested harmonised standards are part of EU law and that there is an overriding public interest that justifies their dissemination. The ruling does, however, leave room for interpretation. The case, which was brought before the court by activist Carl Malamud through his organisation Public.Resource.Org, Inc. relates specifically to four standards governing the safety of children's toys (DIN EN 71-4, DIN EN 71-5, DIN EN 71-12 and European standard EN 12472 'Method for the simulation of accelerated wear and corrosion for the detection of nickel release from coated items'). A public interest was thus derived from the fact that these products affected the safety of end consumers. The issue of public interest could be assessed differently for other harmonised standards.

The court did not address questions relating to the copyright of standards, nor compensation or refinancing options. Furthermore, there is still no clarity on how free access to harmonised standards could be facilitated.

In addition, there is also a lack of clarity on what impact the ruling will have on international cooperation between standardisation organisations. European standards are laid down under the umbrella of the standardisation organisations CEN, CENELEC (electrical engineering) and ETSI (telecommunication). At international level is the ISO (International Organization for Standardization), the IEC (International Electrotechnical Commission) and the ITU (International Telecommunication Union). According to the ruling, the content of international standards, such as ISO or IEC, which is integrated into many EU standards, must now be made available. This would touch on copyright issues.

The ECJ's ruling will now be examined closely by legal specialists and experts. We look forward to seeing where standardisation in the EU will go from here. ■

A ruling by the European Court of Justice, ECJ, of 5 March 2024 leaves many questions still to be answered and has the industry's attention.

Launching products requires a manufacturer to have comprehensive knowledge of standards, directives and laws. It is important to understand the ever-changing landscape of different paragraphs and articles, without which there is always the risk of civil and criminal investigations in response to accidents involving machinery and equipment.

Legal aspects of machine safety

Who is liable for damage?

Firstly, it is important to draw a distinction between the manufacturer or distributor of machinery and the operating company of machinery, for whom different requirements apply, both at European and national level. EU directives and regulations are published in the EU's Official Gazette on a proposal from the European Commission with the approval of the European Parliament and the Council of the European Union.

European directives and regulations specify basic health and safety requirements that must be implemented in accordance with the state of the art.

The latter is an important concept in legislation and standardisation. The German Product Liability Act (ProdHaftG, Article 1(2)(5)) states that: 'The obligation on the part of the manufacturer to provide compensation is excluded if the defect could not have been recognised according to the state of the art in science and technology at the time at which the manufacturer brought the product to the market.'

The requirements of directives are binding and must be transposed into national law by EU Member States by a set deadline. In German, this is done by means of laws and regulations.

The European Machinery Directive, for example, is transposed into German law in the Product Safety Act (Act on the provision of products on the market), which has relevance for manufacturers. By contrast, the European Framework Directive 89/391/EEC (Occupational Health and Safety Framework Directive) is crucial for operating companies. This governs the introduction of measures to improve employee health and safety protection in the workplace. It is transposed into German law as the Occupational Health and Safety Act, which serves to safeguard and improve the occupational health and safety of operating personnel in the workplace.

Technical implementation through harmonised standards

Directives and regulations define protection objectives, and harmonised standards are then formulated to ensure the technical implementation of these objectives. Harmonised standards are not legally binding, but do trigger what is known as the 'presumption of conformity.' This means that anyone who adheres to the technical specifications contained in the standards can assume that they meet the (higher-level) compulsory requirements, i.e. that their machinery complies with the basic health and safety requirements for the design and construction of machinery and that the machinery has thus been designed in accordance with the Machinery Directive. As a result, the presumption of conformity means that the burden of proof is reversed, as a complaint may only be raised about a compliant product if the manufacturer is specifically proven to have violated the requirements of the directive. →

CE marking and EC Declaration of Conformity

With the CE marking, the manufacturer, distributor or EU authorised representative declares that the machine complies with the applicable requirements.

The Declaration of Conformity is a written declaration from the manufacturer that its machinery is consistent with the requirements of the directives. A new conformity assessment procedure may, however, be required in the event of a 'substantial change' to the machinery.

What are the legal consequences of not affixing a CE marking or affixing an incorrect one?

- Bringing an incorrectly marked product to the market is an administrative offence in accordance with Article 7(2) and 39(1) no. 6 ProdSG (Product Safety Act). Businesses and/or the person responsible in the business could be liable to a financial penalty of up to €100,000.
- This could give rise to an official ban on bringing the product to the market.
- Persistent violation of legal regulations in accordance with Article 8 ProdSG (1-18. ProdSV)) or of an official order based on these legal regulations is considered a criminal offence. In addition, contractual claims could be brought against the user (dealer, end customer).

Product law in mechanical engineering

Anyone who manufactures a product or brings it to the market must ensure that it does not pose a danger and must assume responsibility for any damage. Various areas of law govern liability for damage caused by machinery and a distinction is drawn between civil law, criminal law and public law. While civil law is primarily about the economic compensation of damage sustained, criminal law determines the conditions under which the injuring party can be penalised. Public law is the part of law that regulates the legal relationships between the state and citizens or economic actors/businesses. This includes the Product Safety Act.

Product liability in EU Member States is based on EC Directive 85/374/EC. In Germany, a distinction is drawn between liability in accordance with the Product Liability Act (ProdHaftG) and producer liability in accordance with Article 823 BGB (German civil code).
Liability under the former is known as absolute liability. This means whether or not the manufacturer is at fault for the defect is not relevant (strict liability). →

In contrast to product liability, the burden of proof for producer liability rests with the customer, who has to prove that the manufacturer acted with gross negligence, plus that the product has a defect in its design, manufacture, instruction or product observation.

The Product Liability Act (ProdHaftG) states in Article 1(1)(1) that: 'If someone is fatally injured, their body or health is injured or property is damaged as a result of a product defect, the manufacturer of the product is obligated to compensate the injured party for the resulting damage.'

Claims for damages under civil law are usually directed at the business or its management, as the individual employee is not an 'appropriate' addressee within the sense of Article 4 ProdHaftG. Although the employee has unlimited liability towards the third party in his/her external relationship, he/she has a claim for indemnification or damages in his/her internal relationship towards the employer. If the employee is liable to third parties, the employee may be entitled to indemnification from the employer if the damage came about during work-related activities. Generally speaking, claims against third parties are initially settled by the employer and subsequent internal settlement is based on the degree of fault (slight negligence = no liability, gross negligence = full liability).

Some examples of the areas of responsibility or for gross negligence:

- **Manager**
  If essential measures to avert danger are omitted.
- **Design manager**
  If gross design errors are tolerated.
- **Designer**
  In the event of gross or intentional design errors.

The risk of criminal liability in the context of product responsibility under criminal law exists in principle for every employee of the manufacturing business involved in bringing the product to the market. In addition, there is also a risk of criminal liability if the business is aware that a product is dangerous but fails to act (omission). The focus of the public prosecution service is often on the management, as it usually decides on safety measures. There is also a risk of criminal liability if a product that is known to be dangerous is still brought to the market (positive action).

Ultimately, however, the safety of machinery and occupational health and safety are about more than just legal aspects. Werner von Siemens recognised this way back in 1880: 'Preventing accidents must not be seen as a legal requirement, but as a human obligation and an economic necessity.' ■

A seminar arranged by the tec.nicum academy provides more detailed information on this topic. More information on pages 20/21.

New directive for product liability

New regulations mean far-reaching changes

It is anticipated that the EU's new Product Liability Directive will be published shortly, replacing the previous Directive, 85/374/EEC, which dates back to 1985, in its entirety.

The background to the introduction of the new Directive is the huge changes that have taken place in terms of manufacture and distribution of products since the previous introduction. In addition, the new Directive will also cover new and increasingly important digital technologies, such as software and systems that incorporate AI.

Once the Directive is published, national legislators will have a 24-month period in which to ensure its implementation. This could be as late as mid-2026, but some Member States are expected to implement it sooner.

The regulations mean far-reaching changes: the definition of product and manufacturer is to be expanded, businesses will be required to satisfy extensive information obligations and the burden of proof will, in future, be reversed, giving product users greater scope to assert claims before the courts.

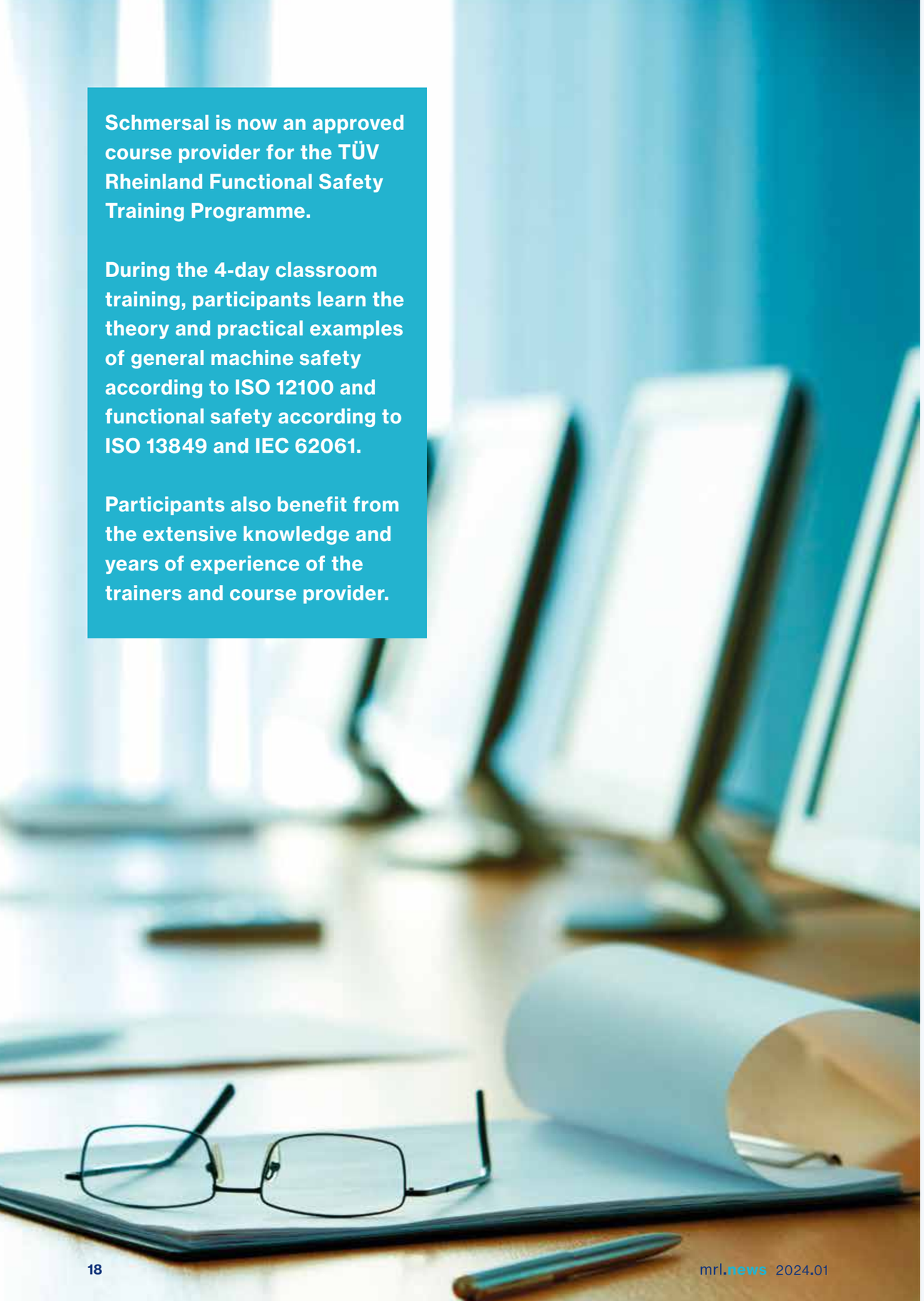
Under the new Product Liability Directive, authorised representatives of the manufacturers and providers of storage, packaging and shipping services as well as, under certain conditions, retailers and operators of online marketplaces, will also bear liability, irrespective of where the fault lies. This expands the circle of parties against whom claims may be asserted considerably, going far beyond the manufacturers, quasi-manufacturers and EEA importers, as is currently the case. This is designed to ensure that an injured party has a party against whom to assert a claim, even if the faulty product was purchased directly from a non-EU country and there is no (quasi) manufacturer or importer within the EU. In addition, the Directive will also ensure that businesses who 'significantly modify' a product independently and without authorisation can be held liable as manufacturer, irrespective of where the fault lies.

The Directive will also provide for software to be included within the scope of product liability for the first time, both by itself and as part of another product. This means that software manufacturers can now be held liable, irrespective of whether the software is a complete solution or merely a sub-component. Only developers who make software freely available on the market (open source developers), and not for commercial gain, remain unaffected. The consequence could be that manufacturers of networked devices will in future be liable for damage that is caused via networked interfaces.

The draft provides for the introduction of a 'disclosure of evidence,' which will mean that in future liability cases, businesses may be required by the courts to disclose all internal documents and communication, including e-mails, that relate to the product or corresponding processes.

The courts must, at the same time, take steps to protect the defendant's business secrets. If the obligation to disclose is to apply, the claimant must also present sufficient facts and evidence to make a claim for damages appear plausible. In addition, disclosure of the evidence must be limited to what is deemed necessary and proportionate.

Another important change relates to easing of the burden of proof for the injured party. In the past, the claimant was required to prove the product defect, the damage and the causal relationship between the two. The final draft sticks to this principle, but considerably eases the burden of proof in favour of the claimant. Amongst other things, the new legislation allows the defectiveness of the product and the causal relationship between the product defect and the damage to be (refutably) presumed if in spite of the disclosure by the business, and taking all circumstances of the case into account, certain conditions are satisfied. ■



Schmersal is now an approved course provider for the TÜV Rheinland Functional Safety Training Programme.

During the 4-day classroom training, participants learn the theory and practical examples of general machine safety according to ISO 12100 and functional safety according to ISO 13849 and IEC 62061.

Participants also benefit from the extensive knowledge and years of experience of the trainers and course provider.

New tec.nicum certification

Functional Safety of Machinery training course and exam for the Functional Safety Engineer (TÜV Rheinland) certificate

The programme is open to engineers with proven experience in machine safety and functional safety.

You will be introduced to the requirements of international standards and, after passing the final examination, you will receive an official certificate as a Functional Safety Engineer (TÜV Rheinland). The course explains and discusses international regulations, basic concepts of risk assessment, examples of protective devices on machines, safety functions, circuit concepts and Performance Level (PL) and Safety Integrity Level (SIL) calculations.

The course provides high-level expertise in the following areas:

- Risk assessment and risk reduction
- Specification of machine guarding
- Development of safety functions
- Calculation and validation of the performance level
- Calculation and validation of the safety integrity level

Who should attend?

Professionals with proven experience in the field of machine safety and functional safety (application engineers, system integrators, designers, safety specialists) who wish to have their knowledge tested and certified by an official international certification.

Admission requirements for participants

Participants wishing to obtain the FS Engineer (TÜV Rheinland) certificate must fulfil the following requirements, complete the entire course and pass the examination:

1) At least three years of experience in the field of functional safety
2) University degree (Bachelor's, Master's, Diploma, etc.) in engineering or another technical field

Additional information

The standards ISO 13849 Part 1 and Part 2 as well as IEC 62061 are necessary working material for this course and must be purchased and brought along by the participants.

The FSE courses will take place on these dates in 2024:

- Online (language: English), 13 to 23 June 2024
- Online (language: Spanish), 3 to 13 June 2024
- Pune, India, 17 to 21 June 2024
- Boituva, Brazil, 12 to 16 August 2024
- Albany, USA 16 to 20 September 2024
- Malvern, Great Britain, 4 to 8 November 2024

Exclusive in-house training is also available for companies that want exclusive courses for their employees. The courses will also be available in Germany and online in German language in the future.

Contact for further information and registration:

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Compact and informative

New tec.nicum seminars for managers

Due to their role and legal requirements, and the occupational health and safety legislation in particular, managers have very clear requirements and responsibilities when it comes to health and safety. A key aspect is the delegation of business duties or distribution of certain tasks to employees and other managers.

Managers thus have a particular need for information in relation to the safety of machinery and occupational health and safety. **With this in mind, the tec.nicum Academy has developed new seminars for precisely this target group.**

Seminar:
The legal aspects of the safety of machinery for managers

When launching new products to the market, manufacturers need to comply with a variety of standards, directives and laws. Managers need to have clarity, particularly due to their risk of civil and criminal investigations following accidents involving machinery and systems.

The seminar provides information on personal liability and individual in-house responsibility:

- European machinery law
- National transposition of the Machinery Directive
- Liability and responsibility in product liability and civil law
- Manufacturer, importer and dealer responsibility
- Intent and negligence
- Employee and employer liability
- CE representative responsibility

Compact seminar, half-day event
Format: Face-to-face and online
Date: 20 September 2024, 09.00 to 13.00 hrs

Seminar:
The basics of occupational health and safety for managers

This seminar has been configured to give both young and experienced managers a quick and compact overview of the world of occupational health and safety.

The seminar will take a practical look at important requirements and current developments relating to occupational health and safety, presented in a way that is tangible for users.

The seminar will also look at occupational health and safety legislation:

- Legal principles for managers
- Areas of responsibility and liability
- Organising occupational health and safety across different areas of responsibility
- Occupational health and safety in everyday operations
- Working with other bodies (safety engineer, works council, etc.)
- Practical introduction of targeted measures
- Aids for practical implementation
- Special requirements (alcohol consumption, mental stress, etc.)

Intensive seminar, one-day event
Format: Face-to-face and online
Deadlines: 19 June 2024 in Wuppertal and 2 September 2024 (online), both 09.00 to 16.30 hrs

In future, the seminar will also be available as a compact seminar (half-day event) with a focus on the 'Legal principles for managers' and 'Areas of personal responsibility and liability.'
Date: still open

tec.nicum academy can also arrange seminars as in-house events on request.
For further information and enrolment: **https://tecnicum.com/academy**

tec.nicum academy

Seminar programme 2024

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

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

We would be happy to design a customised in-house seminar that is tailored to the individual professional interests of participants for a date that suits you.

We would be happy to advise you personally.
Please get in touch:

Jasmin Ruda
Tel. +49 202 6474-804, jruda@tecnicum.com

Seminar topics	Wuppertal	Ulm	Wettenberg	Hamburg	Online	Inhouse
Law						
NEW Machinery Directive 2023/1230 – **(Compact seminar)**	30.07.2024	on request	on request	on request	on request	on request
NEW Machinery Directive 2023/1230 – **(Intensive seminar)**	26.06.2024 + 27.06.2024	on request	on request	on request	on request	on request
Machinery Directive 2006/42/EC – CE conformity assessment procedure	–	on request	–	on request	14.11.2024	on request
The legal aspects of the safety of machinery for purchasers, designers, project coordinators **(1/2-day seminar)**	24.10.2024	on request	–	on request	–	on request
The basics of occupational health and safety for managers	19.06.2024	on request	–	on request	02.09.2024	on request
Law	**Wuppertal**	**Ulm**	**Wettenberg**	**Lübeck**	**Online**	**Inhouse**
The legal aspects of the safety of machinery for executive personnel **(1/2-day seminar)**	–	on request	on request	on request	20.09.2024	on request

(Continued on page 22)

Seminar programme 2024 (continued from page 21)

Seminar topics	Wuppertal	Ulm	Wettenberg	Lübeck	Online	Inhouse
Standards – regulations						
Risk assessments for infection prevention	Dates on request					
Risk assessment and operating instructions	–	on request	–	02.12.2024	07.10.2024	on request
Validation in accordance with EN ISO 13849-2 **(1/2-day seminar)**	–	on request	–	03.12.2024	–	on request
The basics of the Industrial Safety Regulation (BetrSichV)	13.06.2024	on request	–	on request	25.11.2024	on request
Risk assessment for machinery and systems	05.06.2024	on request	–	on request	28.08.2024	on request
Technical documentation of machinery and systems	on request	on request	–	on request	03.09.2024	on request
New-build, conversion, retrofitting – from manufacturer to operator? **(1/2-day seminar)**	–	on request	–	on request	29.11.2024	on request
Application of EN ISO 13849-1 Introduction to SISTEMA	19.06.2024	on request	11.09.2024	20.11.2024	–	on request
Workshop Woking with SISTEMA **(1/2-day seminar)**	20.06.2024	on request	12.09.2024	21.11.2024	–	on request

Standards – regulations	Wuppertal	Ulm	Wettenberg	Hamburg	Online	Inhouse
NEW Application of EN ISO 13849-1 Introduction to SISTEMA	12.06.2024	–	18.09.2024	–	–	on request

Standards – regulations	Wuppertal	Kirkel	Wettenberg	Lübeck	Inhouse
Training to obtain TÜV certification as “Machinery CE Certified Expert® – mce.expert”	–	–	02.12.2024 until 05.12.2024	on request	on request

Seminar programme 2024 (continued from page 22)

Seminar topics	Wuppertal	Ulm	Wettenberg	Lübeck	Online	Inhouse
Application						
The basics of safety engineering – guards and protective devices	16.05.2024	On request	25.09.2024	On request	22.11.2024	On request
Electromagnetic compatibility EMC/EMVU in practice	Dates on request					
Safe fluid technology – safely implementing EN ISO 13849-1	Dates on request					
Fire protection in mechanical engineering	Dates on request					
Driverless transport systems and their integration into the production environment	10.09.2024	on request	–	on request	on request	on request
Safety in integrated robot production systems	11.09.2024	on request	–	on request	on request	on request
Human-robot collaboration	12.09.2024	on request	–	on request	on request	on request
Compact seminar on explosion protection	Dates on request					
Safety-related design of battery production systems	09.09.2024	on request	–	on request	on request	on request

Application	Wuppertal	Kirkel	Wettenberg	Lübeck	Online	Inhouse
NEW Electrically instructed person (EUP)	–	–	04.12.2024	–	–	–

Products	Wuppertal	Ulm	Wettenberg	Hamburg	Online	Inhouse
Basic workshop PSC1 safety controller	on request	on request	on request	on request	–	on request
Expert workshop on the PSC1 safety controller	on request	on request	on request	on request	–	on request

Products	Wuppertal	Mühldorf	Inhouse
The basics and inspection of opto-electronic protective equipment in accordance with the BetrSichV **(seminar objective: competent person)**	–	26.06.2024	on request

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