

Safety technology for the "Smart Factory"



Industry 4.0 is attributed to great economic potential and a variety of positive effects: Efficiency gains, productivity gains, more individualised products and smaller quantities up to lot size 1.

The Schmersal Group sees Industry 4.0 as a chance to tap into growth potential for the company as well as for their customers. As a specialist in machine safety, Schmersal can make a significant contribution to the realisation of Industry 4.0 concepts. Because even in the Smart Factory it is important to ensure the protection of man and machine while taking efficiency effects into account.

Opportunities

The basic idea of Industry 4.0 is the linking of objects and data, as well as their connection with digital networks. So-called Cyber Physical Systems (CPS) are real objects that have software components, whereby they are able to store data and to evaluate. It aims to turn as many real objects into CPS, and to interconnect, so that, for example, machines can communicate with one another digitally.

The more systems in the company, but are also linked with external partners, the greater the possibilities - such as the control and integration of development, production and delivery processes.

Communication enabled objects

One of the prerequisites for Industry 4.0 is the communication ability of the object, its data, functions and position as relevant information in the superordinate control level to be made available. Schmersal has already developed basic technology in the past, which have resulted in certain components for the machine safety of today are "communication capable objects."

Preventive maintenance

RFID is a basis for the "intelligent products". This technology is used, for example, in the product family of RSS security sensors by Schmersal. A technical safety modified RFID signal takes over responsibility for communication between the transmitter and receiver. An advantage of this family of products is that they allow a high tolerance for door misalignment. When the RSS sensors reach their misalignment limits they emit an electronic warning signal before switching off. The RFID sensors make information available that can be used for preventive maintenance.

Modular safety control

To produce smaller batch sizes, future modular systems will play a greater role. Control functions will be divided into smaller, decentralised units which are networked with one another. Here, the new modular safety controllers of the PSC product group from Schmersal offer the ability to configure individual protection systems via software. Also, safe communication between different PSC controllers is possible via Ethernet SDDC (safety device-to-device communication). This simplifies the setup of complex, multi-part installations with networked safety subsystems. Another advantage of the PSC family: Optionally, it is possible to transfer additional non-secure diagnostic signals via a standard bus system to an automation controller. This also allows signals to be evaluated, that are relevant to prevent downtimes and increasing plant availability - and this in turn enables efficiency.

Industry 4.0



Safety systems for robotics

Robots are becoming more common in the digital networked industry. Together with well-known manufacturers, Schmersal has developed safety and switching systems which communicate with the controllers of these machines for the separate monitoring of robots. This monitors the position of the Androids in a three-dimensional space. This allows a protected, virtual work space to be depicted, where it is possible for safe collaboration between humans and robots.

Expertise as part of the safety services

Schmersal not only makes communication-capable components and systems for Industrial 4.0 available for its customers, but also the competent and comprehensive consulting as well as the downstream engineering including tec.nicum, the services division of the company. Furthermore, Schmersal developed individual and future oriented solutions, that meet the increasingly demanding tasks in the "Smart Factory".

Development potential

The development potential for safety solutions, which can be integrated in the concept of the Industry 4.0 and support the objectives, is by no means exhausted. Schmersal is working together with its customers and external research institutions, to raise these potentials.

Example simulation technologies: Schmersal is supporting a research project of the Universities of Stuttgart and Wuppertal, which amongst other things involves the use of virtual engineering components in product development. This can significantly reduce development times. Schmersal is also involved in a research project of the University of Bonn, which starts in the autumn 2015. This involves a new camera system for industrial robots, which facilitate the safe cooperation between humans and robots.

Challenges

Industry 4.0 does not only bring opportunities, but the industry also faces great challenges.

What is necessary are:

- A comprehensive, industry-wide harmonisation of standards and norms
- An internationally uniform language for cross-company data exchange
- New IT security concepts (security), which provide effective protection for cross-company data exchange

The Schmersal Group is actively involved and these essential requirements for the implementation of the Industry 4.0 are created and developed further. In collaboration with external organisations and associations, Schmersal will participate in the elaboration of standards and roles to play in both safety and security aspects. The company can build on its many years experience dealing with norms, committees and associations and on its practical experience in the area of services.



The Schmersal Group

The privately owned Schmersal Group has been developing and manufacturing products to enhance the safety at work for decades. The company was founded in 1945 and is represented by seven manufacturing sites on three continents with its own companies and sales partners in more than 60 nations. In the demanding field of machine safety the Schmersal Group is one of the international market and component leaders. On the basis of a comprehensive product portfolio, the company's approximate 2000 employees develop and design complete solutions for the safety of man and machine.

Customers of the Schmersal Group include „Global Players“ from mechanical engineering and plant manufacturing and operators of machinery. They benefit from the comprehensive know-how of the company when it comes to the standard-compliant integration of safety technology in the production processes. Furthermore, Schmersal has special sector expertise in the application fields that demand high quality requirements and special characteristics from safety switching systems. This includes the foodstuff production, packaging industry, machine tool industry, lift switchgear, heavy industry and the automobile industry.

Against this background of growing standards and directives on machine safety, the tec.nicum offers a comprehensive range of Safety Services as part of the Schmersal Group services division: Certified functional safety engineers advise customers in creating suitable safety concepts keeping in mind the legitimate requirements, and this is done on a worldwide scale.

Product ranges



Safe switching and monitoring

- Guard door monitoring (Safety switches)
- Command devices with safety function
- Tactile safety devices
- Optoelectronic safety devices

Safe signal processing

- Safety-monitoring modules
- Safety controllers
- Safety bus systems

Automation

- Position detection
- Command and signalling devices

Industries



- Elevators and Escalators
- Packaging
- Food
- Automobile and automotive
- Machine tools
- Heavy industry

Services



- Application support
- CE conformity assessment
- Risk assessment
- Risk assessment
- Upgrading / Retrofit
- Technical planning and implementation
- Trainings

Competences



- Machine safety
- Automation
- Explosion protection
- Hygienic Design

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