

# Safe Stretch Wrapping Solutions

FUNCTIONAL SAFETY SERVICES FROM SICK –  
FOR SAFE AND PRODUCTIVE STRETCH WRAPPING

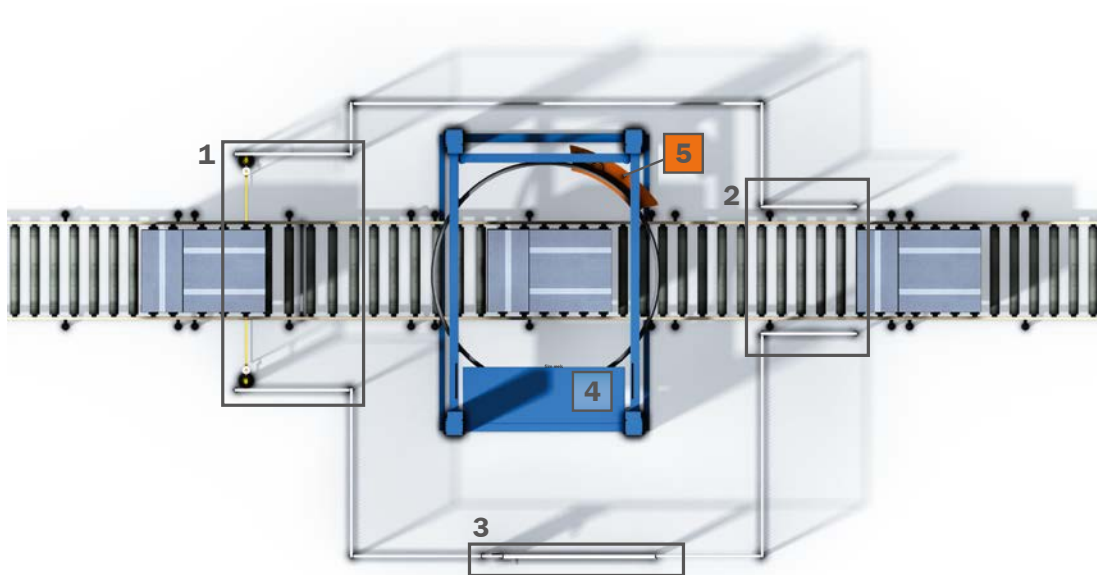
Safety solutions

**SICK**  
Sensor Intelligence.

# STRETCH WRAPPING MACHINES

## THE STRETCH WRAPPING PROCESS

Stretch wrappers are used to secure pallets of goods to provide protection during handling and shipping. This process can present hazards at the center of the machine where the pallet is wrapped with film. Potential entry points are at the conveyor in-feed, conveyor out-feed, and access doors.



|                      |                       |
|----------------------|-----------------------|
| <b>1</b> in-feed     | <b>4</b> machine body |
| <b>2</b> out-feed    | <b>5</b> film reel    |
| <b>3</b> safety door |                       |

### Detecting and dealing with hazards

Stretch wrapping machines have often been overlooked as a potential hazard for workers. As the process has become fully automated, existing protection measures are usually not sufficient at the point of operation. Typical hazards include crushing, shearing, impact, and entanglement as a consequence of:

- Rotation of the wrapper arm or ring
- Up and down movement of the wrapper arm or ring
- Movement of the film clamps
- Up and down movement of the pallet lift

## Safety requirements according to global standards

To ensure the safety and compliance of machines meet relevant safety standards, new machines should be designed to reduce risks to an acceptable level. This responsibility is shared between machinery suppliers and users. However, there are many old machines in use today that do not meet requirements listed in safety standards such as ANSI/PMMI B155.1 (USA), EN 415-6 & 10 (Europe), NR 12 (Brazil), and GB/T 18928 (China).

The Occupational Safety and Health (OSH) Act includes the General Duty Clause, which states, in Section 5(a)(1):

- Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees
- Furthermore, according to ANSI/PMMI B155.1-2011, the user accepts all responsibility for the safety of the machinery from the installation and commissioning of a machine through the end of the machine life cycle
- Retrofitting existing machines is, therefore, to be recommended in order to ensure a uniform operating concept for all machines



## Best possible productivity

The SICK solution for safe stretch wrapping machines does much more than simply safeguard your machines in compliance with related safety standards. It also maximizes productivity.

The smart muting function differentiates between personnel and goods. This intelligent protection concept optimizes productivity and ensures acceptance by operators.



# FUNCTIONAL SAFETY SERVICES FROM SICK – FOR SAFE AND PRODUCTIVE STRETCH WRAPPING



## Description of the solution

With SICK's safety solution for stretch wrapping machines, productivity can be optimized. This solution is designed to ensure stretch wrapping machines are in compliance with all safety standards. It includes all of the hardware, software, and associated engineering. The conveyor in-feed and out-feed are protected by safety light curtains that detect

personnel entering a hazardous area. Interlocking guards ensure the detection of personnel entering through a gate or door. The logic for this solution is processed and executed by the Flexi Soft safety controller. The solution features configuration and validation on site as well as controls schematics. This saves time and gives you security at all levels.

## At a glance

- Conveyor in-feed and out-feed protected by safety light curtains and muting sensors with intelligent personnel/goods differentiation
- Access protection at doors and gates
- Custom-made solution including, hardware, software, and engineering
- Suitable to fulfill the requirements ANSI/PMMA B155.1, EN 415-6 & 10, NR 12, and GB/T 18928
- Engineering documentation
- Commissioning and validation

## Your benefits

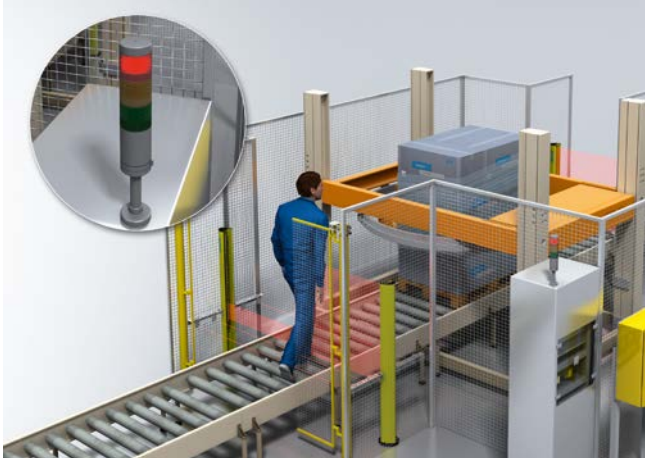
- Maximize productivity with smart muting functions
- Get state-of-the-art technology without use of own resources
- Fulfill national and local safety and compliance requirements
- Ideal for use on new and existing equipment
- Cost-effective solution thanks to quick and proven implementation by SICK

## Further Information

|                                  |    |
|----------------------------------|----|
| Solution concept. . . . .        | 5  |
| Project workflow . . . . .       | 7  |
| SICK LifeTime Services . . . . . | 10 |

**Solution concept****Protecting the conveyor in-feed and out-feed**

Using safety light curtains and muting sensors to protect the conveyor in-feed and out-feed ensures the safety of personnel while allowing goods into the machine to maximize productivity.

**Example product selection**

The following components are typically required to protect the conveyor in-feed and out-feed of a stretch wrapping machine:

- deTec4 Prime safety light curtain
- H18 photoelectric sensors
- Device columns
- Mounting kits
- Connecting cables

**Protecting access doors and gates**

Using interlocking guards with or without locking function to protect access doors and gates ensures the safety of personnel trying to enter the hazardous area of a stretch wrapper.

**Example product selection**

The following components are typically required to protect access doors and gates of a stretch wrapping machine:

- i110 Lock safety locking device
- Mounting kits
- Connecting cables

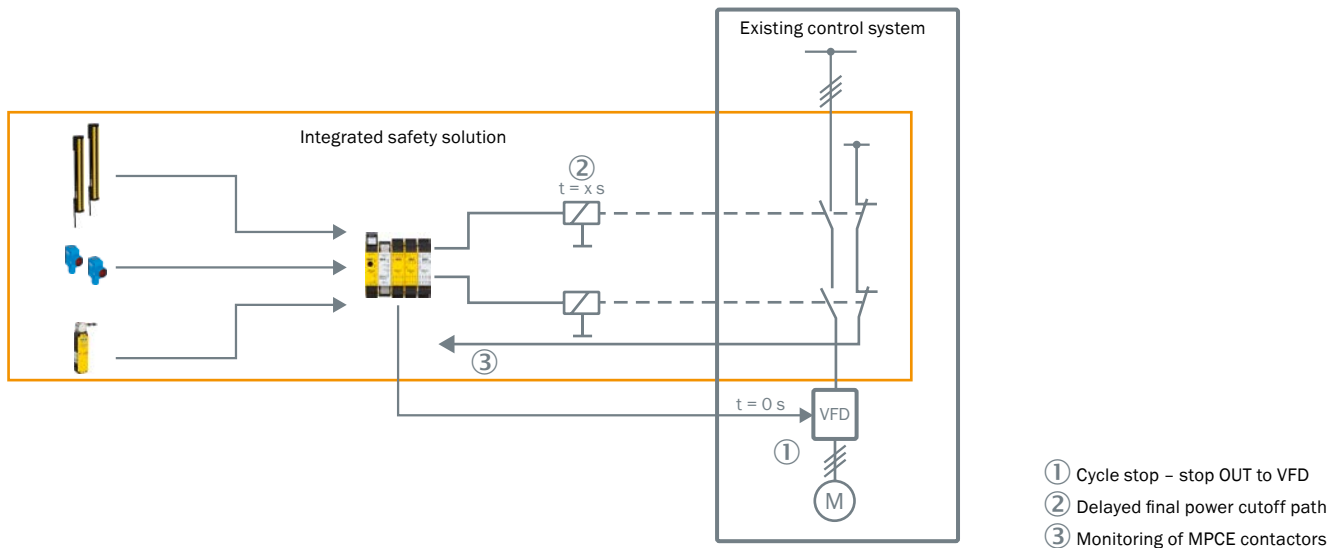
### Safety logic

The Flexi Soft safety controller is used to evaluate signals from SICK and non-SICK devices to safely make decisions on whether or not the machine is allowed to continue its operation.



### Integration in the machine control system

The safety system is integrated into the existing machine control system using all present power control elements, if possible. This ensures that only minimum changes have to be made to the existing control system. Moreover, this type of integration makes it easy to standardize the system from one machine to another, thus optimizing the cost of retrofitting many machines of the same type.



## Project workflow

### Identification of requirements

Retrofitting protective devices to existing machines requires careful planning in order to ensure accurate dimensioning and compliance with standards.

In practice, it has proven worthwhile to work through the following tasks systematically in separate work packages:

| Task                            | Description   |
|---------------------------------|---|
| Risk assessment                 | Specification of the limits and functions of the machine, identification of hazards, risk evaluation and analysis, documentation of risk assessment   |
| Safety hardware design          | Hardware planning on CAD (e.g., EPLAN) taking into account the specifications as well as relevant laws and directives and including technical clarification. Creation of connection diagrams and technical documentation in electronic format. Creation of hardware list with selection of the most suitable devices and accessories. |
| Control cabinet                 | Construction of a new or adaptation of an existing control cabinet in compliance with the specification and relevant laws and directives  |
| Safety software design          | Creation, testing, and verification of the complete application software for the safety controller and the configuration of all safety sensors  |
| Commissioning                   | Commissioning of the entire safety system on site at the machine  |
| Validation of functional safety | Validation of all functions of the safety system on site at the machine   |
| Acceptance report               | Report documenting in detail the acceptance of the entire safety system against the specification on every machine at every location in the world   |

### Project planning

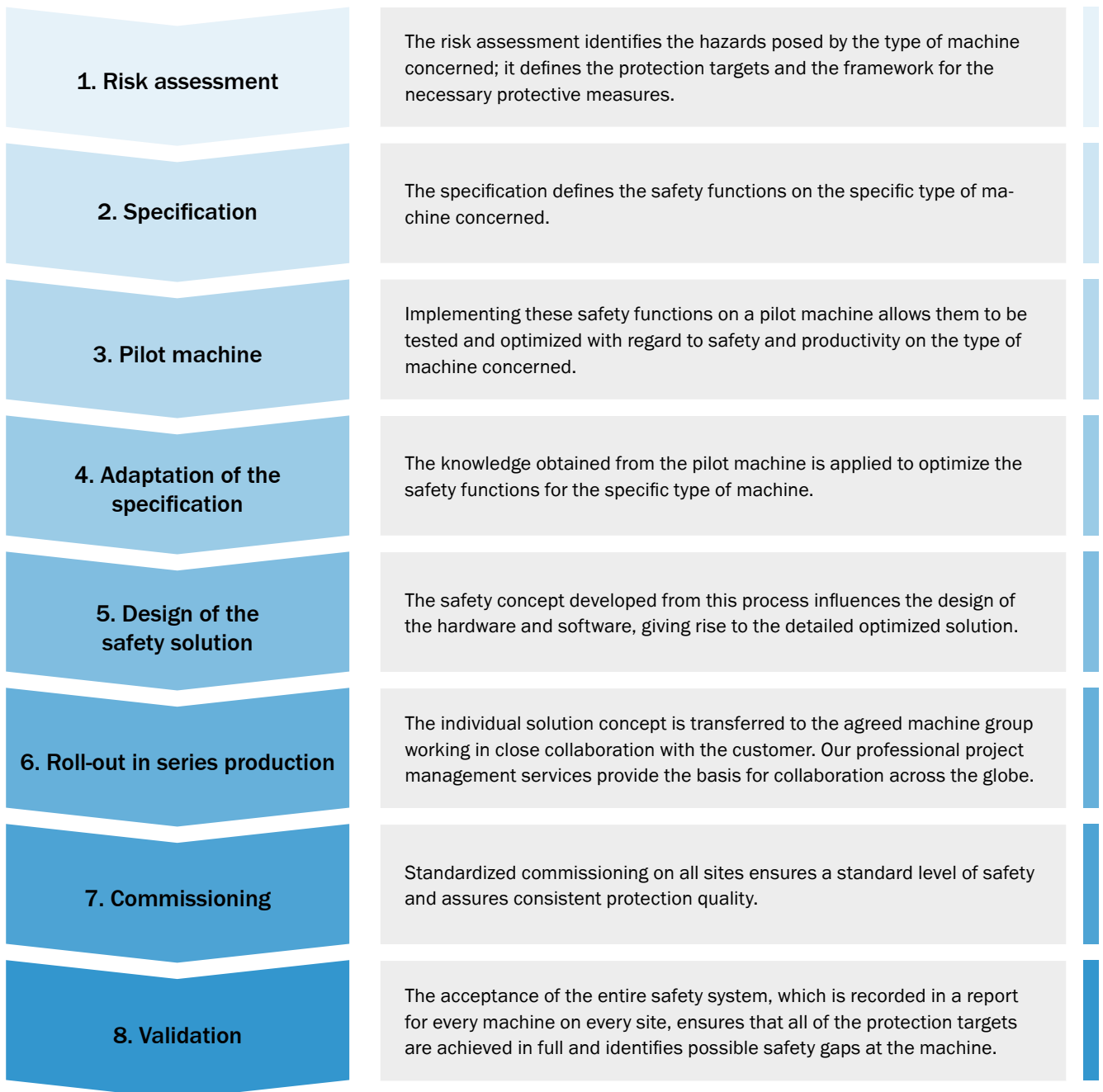
An example project workflow to help guide you through the work packages you need to process can be found on the following pages. You will also find an excerpt from the comprehensive portfolio of safety services that SICK is able to provide all over the world.



## INDIVIDUAL PROJECT SUPPORT

Based on many decades of experience, SICK is able to offer customer-oriented solutions for specific requirements and can be relied upon for active support in all relevant work steps.

### Example project workflow







### Identification of requirements within the organization

The implementation of an individual end-to-end solution starts with a comprehensive analysis of the actual situation within your organization. This analysis is carried out based on the following questionnaire, which is designed to identify your specific requirements. Contact us once you have worked through the questions in your organization. We will happily work with you to develop a suitable solution.

- How many stretch wrappers are in your facility?
- Do any of the stretch wrappers have existing guarding or safety devices fitted?
- Do you have electric, mechanical, or pneumatic schematics for the machines?
- Which models and manufacturers of stretch wrappers do you have in your facility?
- Are you interested in a turnkey solution that includes the installation of hard guarding, safety devices, and integrating the safety system into the existing machine control?

Our end-to-end solutions for retrofitting stretch wrapping machines are characterized by safety engineering that is compliant with standards and produces verifiable results, offering you professional outcomes based on comprehensive empirical values from a large variety of installations that have been implemented all over the world.



### Machine safeguarding evaluation

- Identification of electrical and mechanical hazards
- Risk assessment of identified hazards
- Evaluation of existing protective measures
- Recommendation of new or improvement of existing protective measures
- Consideration of valid provisions and regulations
- Service can be retrieved worldwide

→ [www.sick.com/machine\\_safeguarding\\_evaluation](http://www.sick.com/machine_safeguarding_evaluation)

### Your benefits

- Detailed knowledge of the safety status of the machines
- Concrete statements on the urgency of improvement measures
- High flexibility thanks to product-neutral perspective
- Economic, well-thought-out recommendations for reducing detected risks
- Reduced effort when drafting safety concepts
- Enables simple and standard-compliant implementation of the recommended protective measures for safety technology
- Foundation for fulfilling due diligence with documented inspection of the machine
- Guaranteed quality thanks to standardized processes and sustainable competence management



### Risk assessment

- Performance of or instruction for risk assessments
- Determination of applicable directives and standards
- Identification of hazards
- Risk evaluation
- Specification of safety requirements

→ [www.sick.com/risk\\_assessment](http://www.sick.com/risk_assessment)

### Your benefits

- Saves time and resources thanks to involvement of experienced SICK experts
- Independent and comprehensive expertise provide certainty when assessing risks
- Periodic qualification of SICK specialists ensures the latest directives and standards are incorporated in new and repeat projects
- High level of quality thanks to standardized processes and sustainable competency management



### Safety concept

- Specification of safety functions and required safety level (PLr or SILr)
- Recommendation for technical implementation of safety functions in the form of a block diagram
- Definition of parameters for the selection of protective devices
- Safety concept specification

→ [www.sick.com/safety\\_concept](http://www.sick.com/safety_concept)

### Your benefits

- Saves time and resources thanks to involvement of experienced SICK experts
- Increases machine safety as a result of compliance with essential safety and health requirements and standards
- Choose from any safeguarding component available on the market
- Ensures effectiveness and competitiveness by preventing unnecessary measures
- High level of quality thanks to standardized processes and sustainable competency management



### Safety hardware design

- Selection and interconnection of suitable components
- Specification of measures for controlling and avoiding systematic errors
- Determination and verification of the safety level
- Hardware concept specification
- Creation of a SISTEMA project file

→ [www.sick.com/safety\\_hardware\\_design](http://www.sick.com/safety_hardware_design)

### Your benefits

- Saves time and resources thanks to the involvement of experienced SICK experts
- Provides greater safety by implementing measures for avoiding and controlling systematic errors
- Incorporates all technologies (pneumatic, hydraulic and electrical) for comprehensive service
- High level of quality thanks to standardized processes and sustainable competency management



### Safety software design

- Specification of safety-related application software, including the definition of input and output signals
- Creation and verification of safety-related application software according to the V-model for software development

→ [www.sick.com/safety\\_software\\_design](http://www.sick.com/safety_software_design)

### Your benefits

- Saves time and resources thanks to involvement of experienced SICK experts
- Provides safety through standardized implementation according to the V-model, including measures for avoiding and controlling errors
- Reduces complexity by using modular and clearly structured programming of safety functions
- High level of quality thanks to standardized processes and sustainable competency management



### Commissioning

- Configuration and parameter setting of components or systems, optimized for each application
- Final functional testing of components or systems
- Documentation of the configuration and parameter setting in the acceptance report
- Briefing of operating personnel

→ [www.sick.com/commissioning](http://www.sick.com/commissioning)

### Your benefits

- High productivity: via application-optimized components and system settings
- Cost savings: quick transition to normal operation under professional supervision
- Planning reliability: via effective cooperation between SICK, the system integrator and the customer



### Validation of functional safety

- Creation of a verification and validation plan to thoroughly check for proper selection, installation, implementation and functioning of the safety-related parts of the control system (SRP/CS)
- Configuration of safety-related parts of the control system
- Analysis and testing according to the verification and validation plan
- Specification of the necessary adjustment and, if necessary, revision of the safety-related application program

→ [www.sick.com/validation\\_of\\_functional\\_safety](http://www.sick.com/validation_of_functional_safety)

### Your benefits

- Saves time and resources: experienced SICK experts provide efficient execution
- Ensures protection objectives have been met thanks to standardized validation using analysis and testing
- Implements the two-man rule: execution and checking completed by two qualified individuals
- Comprehensive service: specification and implementation of any adjustments that may be necessary
- High level of quality thanks to standardized processes and sustainable competency management



### Periodic inspection

- Evaluation of the optical protective devices to ensure they have been installed correctly and according to the specification
- Inspection of whether the protective device is operating according to current machine usage
- Identification of operational changes and manipulations
- Readjustment of the optical protective devices and removal of contamination
- Production of an inspection report and issuance of a test seal

→ [www.sick.com/inspection](http://www.sick.com/inspection)

### Your benefits

- Safety is determined and corresponding documentation is provided in the inspection report as proof that the legal obligation for testing has been fulfilled
- High testing quality through certification and periodic inspections in accordance with IEC 17020 is carried out by independent bodies and with on-going competency management
- Quick identification of the safety status and the period of validity by means of test seals as proof to regulators of current inspections
- Safety is ensured due to early detection of changes to application conditions and manipulations
- High machine reliability due to periodic checking and, if necessary, removal of contamination or readjustment
- Automatic reminder of required testing periods within the framework of the service contracts to ensure equipment is working properly



### VERIFIED SAFETY – Safety made by SICK

With its VERIFIED SAFETY seal of quality, SICK provides an assurance that the results have been obtained and verified by certified staff in line with a defined process. VERIFIED SAFETY means guaranteed functional safety with verifiable quality.

### Specialists – On site, wherever you are

SICK has specialists to support you wherever you are in the world. Our experts are entirely familiar with local standards and directives. All of our specialists are part of a global network. This means that we can offer you the right skills for local and international projects.



### Competence management – Knowledge assured in the long term

Competence is not just about theoretical knowledge. At SICK, every specialist must also have the necessary experience and prove his or her capability by taking regular tests. Across the globe, competence is shared and secured for the future through the SICK Competence Management program.

We are happy to provide seminars to share our knowledge further. SICK is a recognized provider of Functional Safety Engineer training as part of the TÜV Rheinland Functional Safety Program.

### Customer project management – Project risks under control at all times

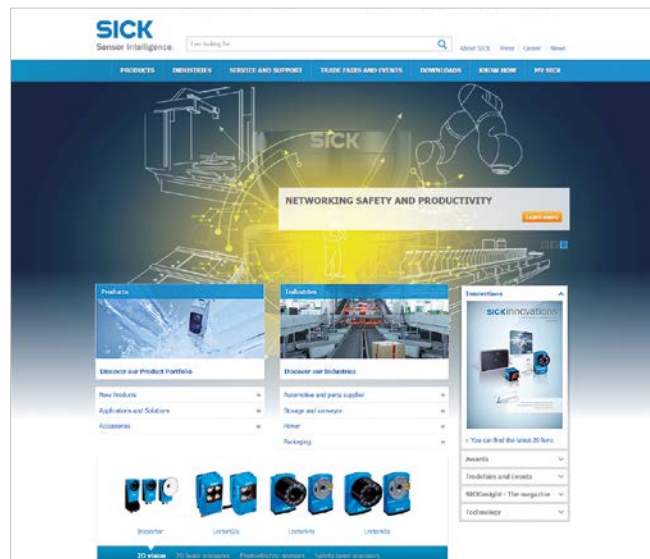
At SICK, all management systems for developing projects follow a uniform and consistent management philosophy.

Projects follow a defined process from acquisition through customer approval. Regular checks against milestones guarantee completeness, reveal any deviations early on, and enable corrective measures to be introduced promptly. Professional and standardized project management is the basis for successful planning, economic implementation, and precise control of projects.



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- ✔ Access information on net prices and individual discounts.
- ✔ Easily order online and track your delivery.
- ✔ Check your history of all your orders and quotes.
- ✔ Create, save, and share as many wish lists as you want.
- ✔ Use the direct order to quickly order a big amount of products.
- ✔ Check the status of your orders and quotes and get information on status changes by e-mail.
- ✔ Save time by using past orders.
- ✔ Easily export orders and quotes, suited to your systems.



## SERVICES FOR MACHINES AND PLANTS: SICK LifeTime Services

Our comprehensive and versatile LifeTime Services are the perfect addition to the comprehensive range of products from SICK. The services range from product-independent consulting to traditional product services.



- 
**Consulting and design**  
 Safe and professional
- 
**Product and system support**  
 Reliable, fast, and on-site
- 
**Verification and optimization**  
 Safe and regularly inspected
- 
**Upgrade and retrofits**  
 Easy, safe, and economical
- 
**Training and education**  
 Practical, focused, and professional

## SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 8,000 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, we are always close to our customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in various industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services round out our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

**For us, that is “Sensor Intelligence.”**

### **Worldwide presence:**

Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, Hong Kong, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

Detailed addresses and further locations → [www.sick.com](http://www.sick.com)