



# Safe Portal Solutions

FLEXIBLE AND EFFICIENT PORTAL SAFEGUARDING

Safety solutions

**SICK**  
Sensor Intelligence.

## MATERIAL THROUGHPUT IN HAZARDOUS AREAS

Automated guided vehicles (AGVs) or other conveying systems frequently pass through access points or portals, in applications involving automated material transport into or out of production lines. Each of these steps involved in production presents sources of danger, with a high risk of accidents occurring. That is why portal safeguarding is necessary, and the operating entity is legally obligated to ensure the safety of its employees by putting appropriate protective measures in place.

Many conventional safety solutions consist of rigid mechanical protective devices. Barrier solutions such as pendulum-type flaps complement the controller based protective measures. Variations in production requirements – e.g. model changes – often require complex, time-consuming structural modifications.

### Highly adaptable and simply safe

Safe Portal Solutions can be used easily in different applications with material transfer stations such as hanging conveyors, skillet conveyors, etc. The protective fields can be adjusted to new contours quickly and easily. This ensures continuous monitoring of the hazardous area. Additional advantages are the flexible data integration into various safety controllers as well as the bidirectional and permanently active protective function without muting.

### Maximum productivity

Do not simply ensure standard-compliant protection of your plant, but also secure the highest possible productivity at the same time. This is achieved with higher availability of the production system, quick protective field adaptation when changing models (without mechanical change) and a low error rate due to the absence of muting sensors.

### Everything from a single source

Tailored and flexibly expandable complete solutions including hardware and engineering services from a single source – implemented by experienced safety experts in line with applicable standards and directives.



Safe Portal Solutions from SICK ensure flexible, efficient safeguarding for automated material transfer stations. Operating with up to eight simultaneous protective fields, vertically installed safety laser scanners detect people gaining unauthorized access of any kind.

At the same time, the intelligent logic allows objects with defined contours to continue passing through without interruption – which brings numerous benefits.



### Guaranteeing safety

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.

### Saving time, costs and resources

Lean back and leave it to the experts – with professional project management, tried-and-proven processes, and well-established solution concepts. Quick implementation thanks to the extensive wealth of experience and the takeover of all relevant work steps by SICK. SICK therefore offers the implementation of your project with state-of-the-art technology and without allocation of your own resources.

As there are fewer components, less effort is needed for design. Also, barrier-free access to maintenance work is created for the service staff at the same time.

# FLEXIBLE AND EFFICIENT PORTAL SAFEGUARDING



## Description of the solution

SICK Safe Portal Solutions are specifically tailored to ensure efficient protection for material transfer stations in a way that complies with safety standards. Vertically aligned safety laser scanners with intelligent monitoring case switching provide access protection. Objects with predefined contours are able to pass through the portal safely. This ensures a very flexible production process at the highest possible productivity. The customized safety solution includes

all technical protective devices and the associated engineering. It also contains diagrams in EPLAN format as well as configuration and validation for the customer on-site. This saves time and costs, and ensures safety at all levels.

## At a glance

- Intelligent protective field evaluation
- Rugged, space-saving solution without muting sensors
- PL d (EN ISO 13849)
- Logic integration even into third-party controls, e.g. SIEMENS or Allen-Bradley
- Engineering documentation with SICK VERIFIED SAFETY quality seal
- Hardware, engineering, commissioning and documentation from a single source

## Your benefits

- Access protection permanently active – no muting necessary
- Maximum productivity thanks to use of reliable hardware
- Safety through fulfillment of EN ISO 13849 requirements
- Future-proof integration into the existing infrastructure, flexible adjustment if there are changes in production processes
- Legally-compliant, transparent and comprehensive documentation: Archived for you for 30 years according to the harmonized worldwide standard
- Customized, risk-minimized and economic solution thanks to quick, routine implementation by SICK

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## Solution concept

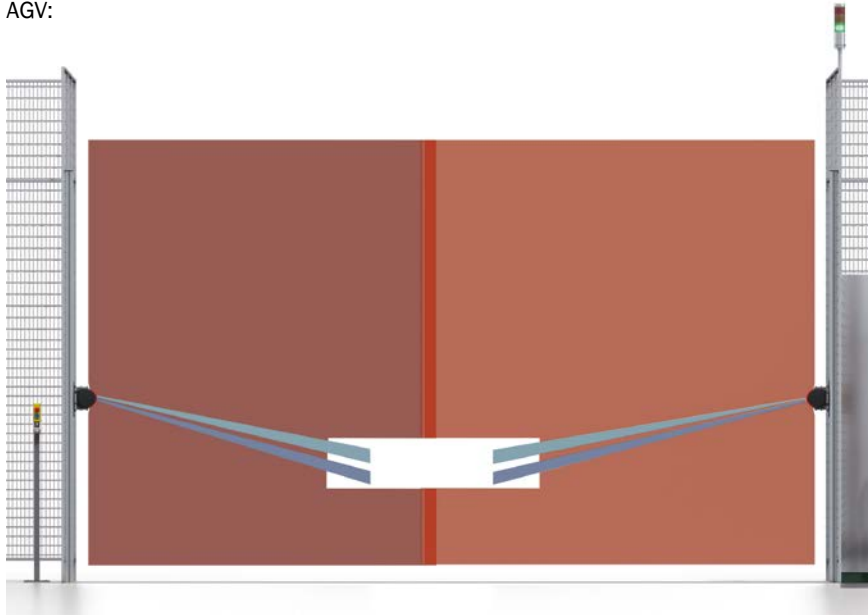
### Safeguarding for material transfer station

Safe Portal Solutions use the multiple sampling function that is featured in SICK's safety laser scanners. During installation, two safety laser scanners are mounted vertically at the portal and up to eight simultaneous protective fields are programmed for each laser scanner.

Two initialization protective fields (blue) in beam form are used in the example shown below. Aligned at different heights, these detect an approaching AGV and its status (loaded or unloaded):

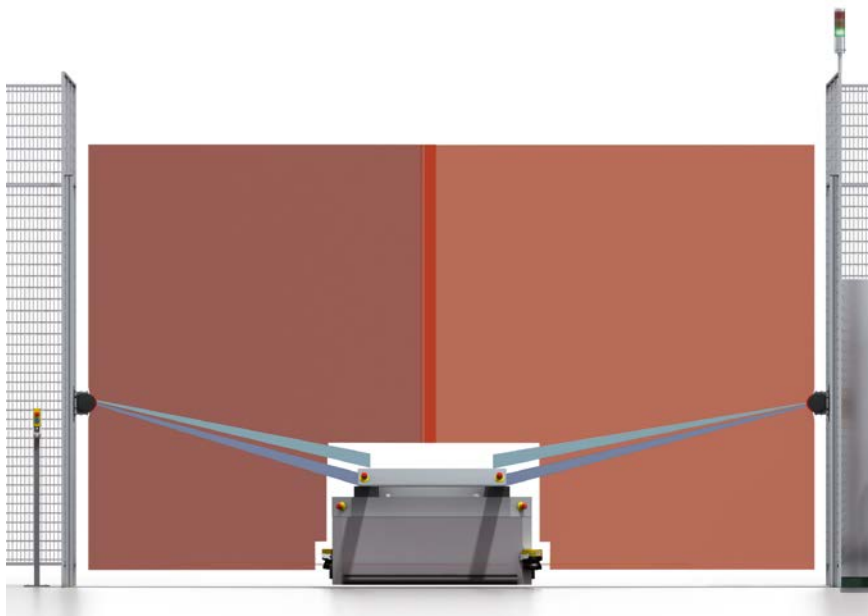
- The lower initiating protective field is interrupted by an empty AGV with its loading platform in the bottom position
- The upper initiating protective field is interrupted by a loaded AGV with its loading platform in the top position

The third protective field (red) adopts the safe gate function and is adapted according to the position and loading status of the AGV:



#### Status 1

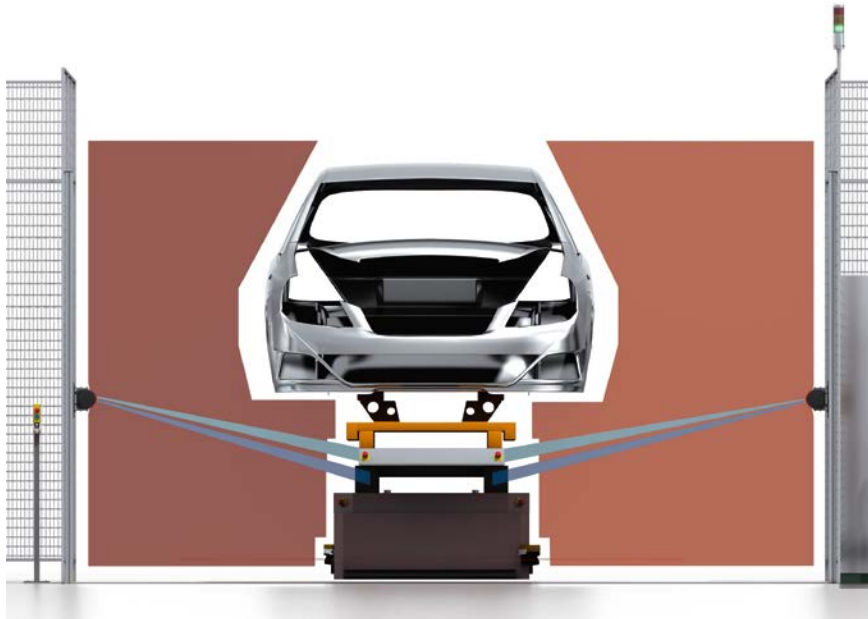
If there are no AGVs in the transfer area, neither the upper nor the lower initiating protective field detects an object. The protective field for safe material transport (red) remains closed.



#### Status 2

If an object is being collected from the material transfer station, an empty AGV must move into the hazardous area first. During this process, the AGV's loading platform is in the bottom position and is detected by the two lower initiating protective fields. The contour of the protective fields (red) is adapted to the empty AGV and the vehicle is allowed to pass through.

As soon as the empty AGV has moved fully into the hazardous area, it is no longer detected by the lower and upper initiating protective fields. The protective field for material transport (red) closes again (status 1).



## Status 3

Once the object has been picked up at the material transfer station, the AGV moves out of the hazardous area. At this point, the two upper initiating protective fields detect the loading platform in the top position. The protective fields are adapted to the contour of the material (in this case, a car body) including the AGV and allow the vehicle to pass through again. Once the vehicle has moved all the way out, the protective fields for the material transport (red) close again (status 1).

Protective field switching for material transport, using initiating protective fields, operates according to whether an AGV with or without material is moving into the hazardous area or out of it.

This solution makes it possible to achieve performance level d.

## Example product selection

The following components are typically necessary for vertical access protection:

- Safety laser scanner, e.g. microScan3 or S3000
- System plug for safety laser scanner
- Mounting kits
- Connecting cables

When using logic with the Flexi Soft safety controller, the following components are necessary:

- Flexi Soft main module
- UE4740 PROFINET IO EFI gateway
- Flexi Soft PROFINET IO gateway
- Flexi Soft XTIO module
- Flexi Soft system plug

You can use these hardware components to meet safety requirements with different programming variants.

Alternatively, the functional logic can be integrated into an existing safety controller (e.g. from Siemens or Allen-Bradley).

## Other solution concepts

### Access protection to transfer stations of skillet conveyors

Safe Portal Solutions are perfectly suited for protecting the entrances and exits of skillet conveyors, for example for transfer stations or platform elevators.



Safe Portal Solutions can be expanded, for instance, to allow passage of component baskets moving on skillet conveyors.



# THE PATH TO MORE SAFETY AND PRODUCTIVITY WITH SICK

When you choose a complete solution from SICK, the project process is precisely defined. First we clarify the objectives and scope of services. Then we support you step by step through the consulting and engineering phases. The VERIFIED SAFETY quality seal is your guarantee that all work results during the project have been verified and validated by our certified SICK employees.

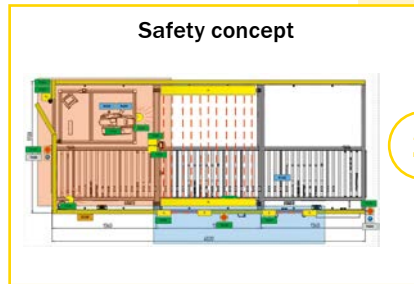
## Clarifying the order details and creating a quote

- Agreeing on the scope of services for the technical solution: What tasks will SICK perform? What tasks will the customer perform?
- Agreeing on a rough schedule
- Estimating the services budget
- Jointly defining the acceptance criteria

- Assessing the safety status of the machine
- Determining the machine limits
- Identifying hazards
- Estimating and assessing risks
- Proposing risk-minimization measures



- Specifying safety objectives and selecting risk-minimization measures for optimal safety and productivity
- Defining safety functions: tailored to the work processes and machine functionality
- Agreeing on the safety concept, resolving any outstanding questions
- Implementation approval



- Designing the safety-related parts of the control system (SRP/CS)
- Specifying the safety-related application software (SRASW) in detail
- Selecting standard and safety components and producing bills of materials
- Producing wiring diagrams for integrating the solution into existing systems
- Determining the performance level (PL)







### Safety made by SICK

On completion you receive the consulting and engineering documentation with a VERIFIED SAFETY quality seal from SICK.

#### Verifying and validating



- Verify installation of the components
- I/O check/ function test
- Validate installed safety functions
- Perform inspection before initial operation
- Acceptance of the services provided

#### Installation and commissioning



- Install physical guards (e.g., fencing or covers)
- Install and configure safety-related components (sensors)
- Install safety-related application software
- Commissioning



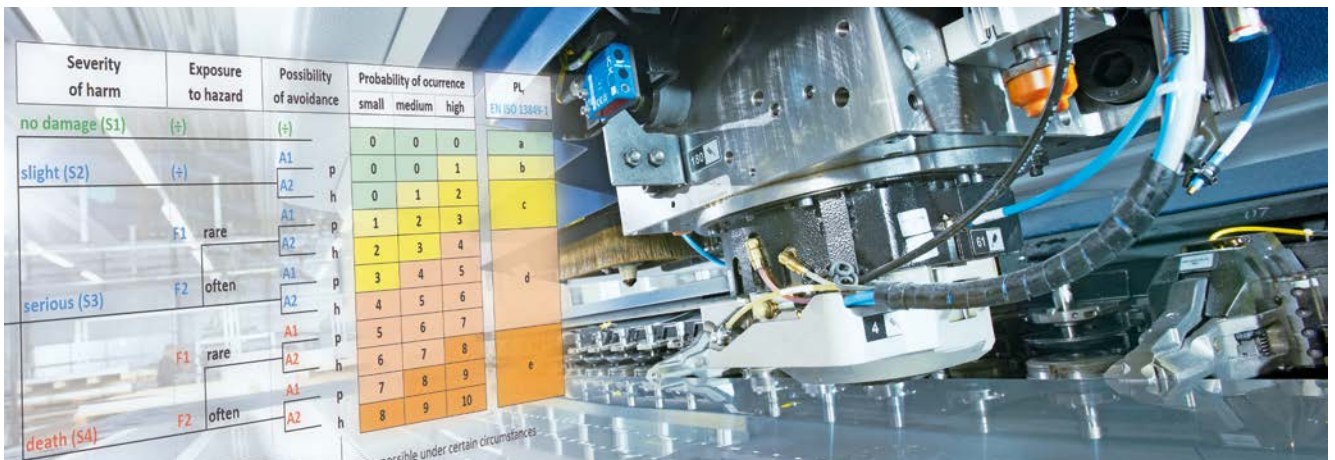
### Machine safeguarding evaluation

- 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

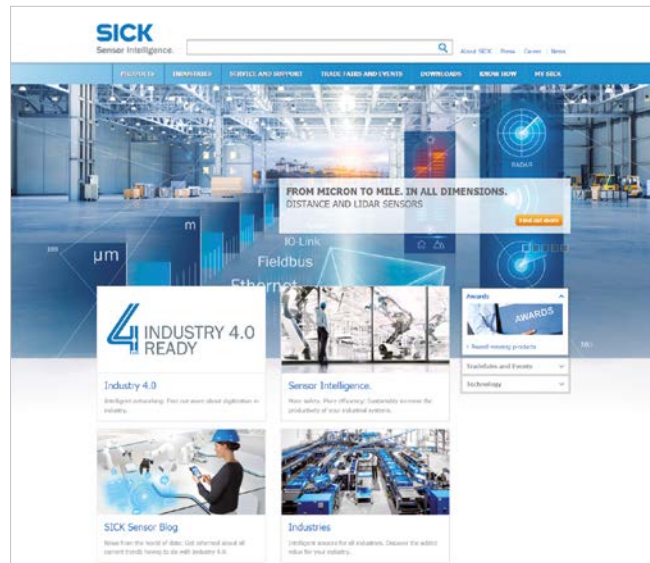
At SICK, all management systems for developing projects follow a uniform and consistent management philosophy.

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.



## REGISTER NOW AT WWW.SICK.COM AND ENJOY THE FOLLOWING BENEFITS






- ✔ View net price and individual discount for each product.
- ✔ Simple ordering and delivery tracking.
- ✔ Overview of all quotes and orders.
- ✔ Create, save and share personalized wish lists.
- ✔ Direct ordering: place large orders quickly.
- ✔ View status of all quotes and orders. Notification by e-mail in the event of status changes.
- ✔ Simple reuse of previous orders.
- ✔ Convenient export of quotes and orders in the right format for your systems.



## SERVICES FOR MACHINES AND SYSTEMS: SICK LifeTime Services

The sophisticated and versatile LifeTime Services perfectly complement SICK’s comprehensive product range. Services range from product-independent consulting to traditional product services.



- 
**Consulting and design**  
 Secure and professional
- 
**Product and system support**  
 Reliable, fast, and on-site
- 
**Verification and optimization**  
 Safe and regularly tested
- 
**Upgrade and retrofits**  
 Simple, 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 9,700 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, SICK is always close to its 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.

SICK has extensive experience in various industries and understands their processes and requirements. With intelligent sensors, SICK delivers exactly what the 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 SICK a reliable supplier and development partner.

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

**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)