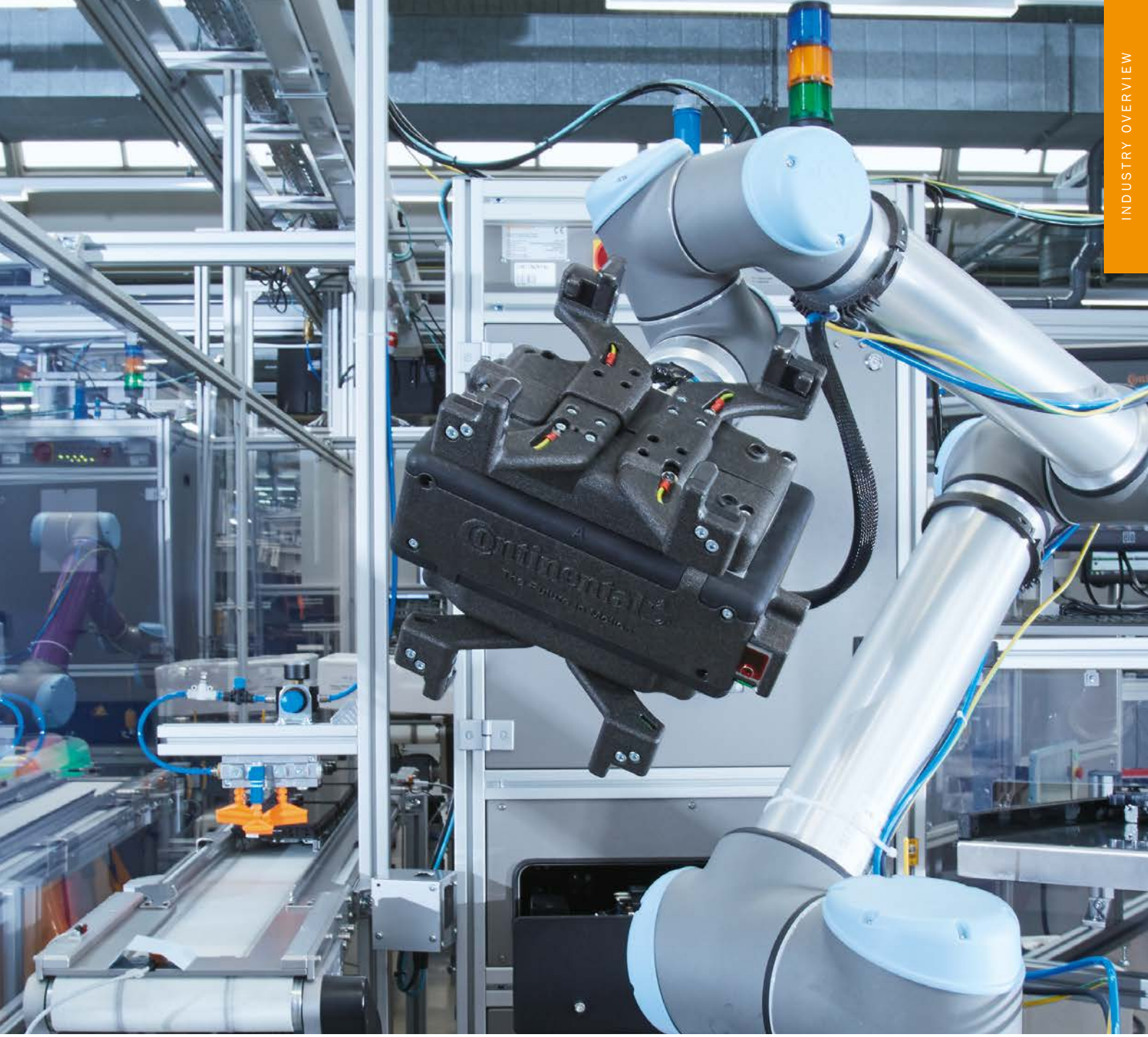

AUTOMOTIVE PARTS SUPPLIERS

EFFICIENT APPLICATION SOLUTIONS

SICK
Sensor Intelligence.

CHALLENGES FOR THE PARTS SUPPLIERS INDUSTRY

For decades, SICK has helped shape the parts suppliers industry as an independent world leader in the development and manufacture of intelligent sensor solutions.
“Sensor Intelligence.” contributes to optimizing the production of supplier parts - safety, flexibility, quality and efficiency are always the focus.
SICK has an extensive range of products and technologies which fulfill the needs of a wide variety of production processes for many different supplier parts, such as navigation systems, electric motors and instrument panels.
At an early stage, SICK recognized the trend towards implementing more intelligence and functionality in the field level, making its sensor technology ideal for meeting the requirements of the customers.

➜ www.sick.com/Parts_Suppliers

Safety

Flexible processes and human-robot collaboration (HRC) present special challenges for safety technology in the parts suppliers industry. SICK offers a broad range of safety solution technology here which can be integrated very well into machine and system controls. SICK also supports customers with a comprehensive service package which includes consultation, commissioning assistance, training and education.

Flexible automation

The demand for an increasing number of vehicle types as well as electronic devices and the multitude of individual customer requirements dictate the need for enhanced flexibility and also efficient production in the parts suppliers industry. Modern, intelligent sensors from SICK are able to store settings, use automatic teach-in and diagnostic capabilities, and independently evaluate and relay the sensor data in processes. The sensors therefore make a significant contribution towards meeting the requirements of flexible automation.

Quality control

A high degree of quality is a key success factor in the parts suppliers industry. SICK offers the right solution for all quality control applications: Photoelectric proximity sensors for checking that components are present in the assembly process, displacement measurement sensors for precise measurement of components, vision sensors for identifying components and 3D vision systems for high-end testing. All these sensors ensure that the high quality level demanded is achieved.

Track and trace

Reliable identification of objects is a prerequisite for a smooth production flow, and lays the foundations for traceability and continuous quality improvement. SICK offers a wide range of both RFID technology and permanently installed and mobile readers for bar codes and 2D codes. This ensures gap-free traceability throughout the entire production process. Whether 1D, 2D, 3D or RFID – with 4D*pro*, SICK offers uniform connectivity, user interfaces and accessories.

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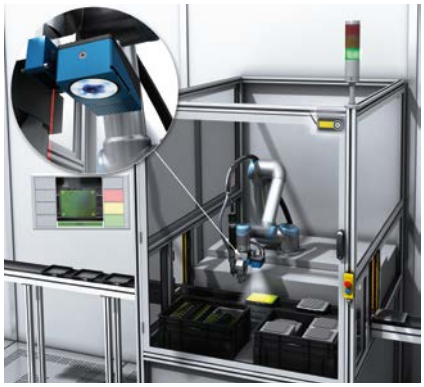
ELECTRONICS



Robot guidance of a robot from Universal Robots made easy

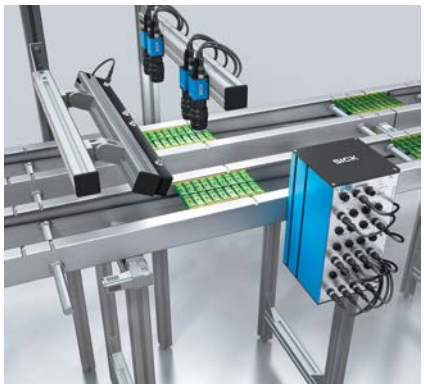
The Inspector URCap software enables simple integration of the PIM60 Inspector 2D vision sensor into a Universal Robots control. The live image from the sensor, calibration and alignment to robot coordinates as well as the setting of grip positions and changing of reference objects are now available in the Universal Robot control unit. A camera-based robot guidance system can thereby be created in just a few minutes. Other tool boxes for measurement and inspection tasks are also available and the range of applications is nearly limitless.

→ www.sick.com/Inspector

Multiple code reading on PCB panels

The Lector63x image-based code reader can identify all codes on a printed circuit board panel. The special software script makes it possible to selectively output or serialize individual codes according to customer requirements. The read rate can be raised considerably by recording several images from different angles. Thanks to its large field of view, the Lector63x can flexibly record codes regardless of their position, contrast ratios or conveyor speed. This means, for example, that retrofitting is no longer necessary when reading different E-card designs.

→ www.sick.com/Lector63x

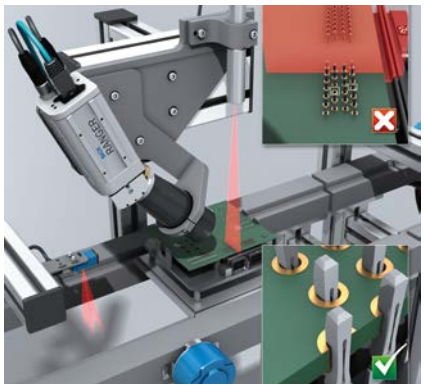


PCB inspection with SIM4000 and picoCam304x

Industrial image processing is used to ensure production quality and consistent traceability of all production steps - the SIM4000 Sensor Integration Machine and two picoCam304x streaming cameras are the perfect complements in these processes. The SIM4000 does both inspection and identification tasks with the help of HALCON procedures and transfers the results to the programmable logic controller. This solution can be scaled up by connecting additional cameras and expanding the sensor app.

→ www.sick.com/SIM4000

→ www.sick.com/picoCam



High-precision pin inspection for the press-fit operations during the final assembly of electronic modules

The Pinspector quality control system consists of a Ranger 3D streaming camera and laser technology and detects deviations from the defined quality standard for pin connectors and pins of printed circuit boards. A three-dimensional, non-contact measurement function is used to check that the pins are correctly aligned with the designated through holes in the printed circuit board. After successful positioning, Pinspector gives the go-ahead for the press-fit process. This is followed by the same three-dimensional position measuring to monitor the presence, height, and co-planarity of the pins.

→ www.sick.com/Pinspector

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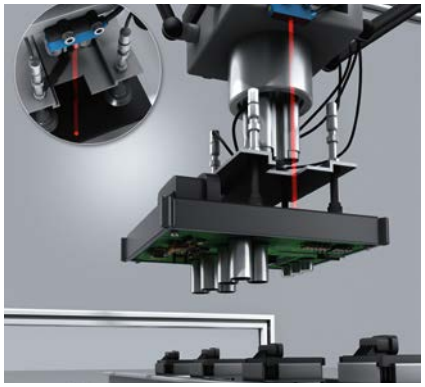
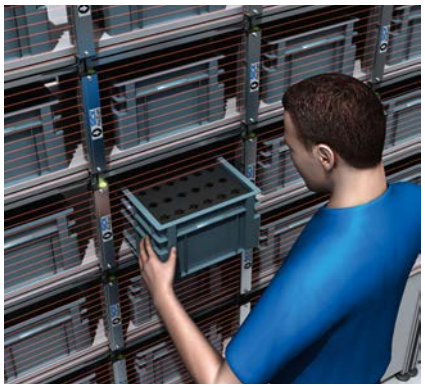
ASSEMBLY



Monitoring of part picking during transport

The PowerProx MultiTask photoelectric sensor monitors the part picking of a pick-and-place robot during transport until the safe placing of the workpiece. Thanks to its very small housing, the photoelectric sensor can be mounted above the tool flange in order to save space. This means the sensor does not also have to be replaced when exchanging the gripper. Despite its exceptional compact form, the sensor detects the presence of a workpiece up to 800 mm away.

→ www.sick.com/PowerProx



Worker guidance with pick-to-light

For many years, SICK has been a leader in the development of worker guidance systems. The PLG automation light grid guides the worker to the correct pickup shelf by means of the 360°-visible green job LED. If the worker reaches into the wrong shelf, the PLG triggers an acoustic signal. As an alternative, the slim SPL automation light grid and the TiM5xx or LMS1xx 2D laser scanner can also be used to guide the worker.
Patent EP 0994761 B1 is to be observed for the laser scanner solutions.

→ www.sick.com/LMS1xx
→ www.sick.com/TiM5xx
→ www.sick.com/PLG

Safety solutions allowing automated guided carts to travel at high speeds

Automated guided carts (AGC) manage high speeds even when going around curves thanks to the switching of protective fields. Reliable detection of speed and direction of travel with safety solutions from SICK also reduces the number of components and thereby the required installation space in AGCs.

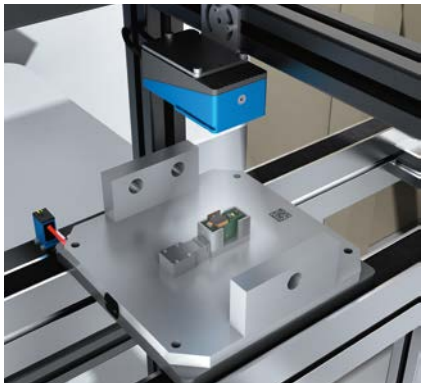
→ www.sick.com/DFS60S_Pro
→ www.sick.com/S300_Professional
→ www.sick.com/Safe_AGV_Easy
→ www.sick.com/Flexi_Soft

Safely increase the productivity of work stations with PSDI function

PSDI functionality implemented with an opto-electronic protective device and a safety controller allows the worker to start the machine cycle by simply leaving the protective field after loading the machine. Two-hand control device and foot pedals are no longer needed. As there are fewer movements to perform by the worker, part cycle time decreases and daily productivity increases significantly. The work station is safeguarded according to European safety standards, so the worker can focus entirely on the assemblies at hand.

→ www.sick.com/Flexi_Soft
→ www.sick.com/miniTwin4

ASSEMBLY



Optical inspection

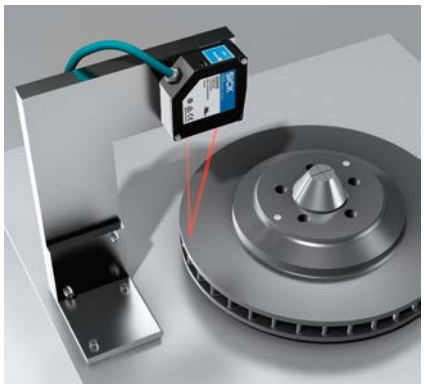
Once the optical components have been manually fitted in place, the Inspector PIM60 2D vision sensor checks the pieces to ensure they have a tight fit and are complete. The optical components are then transported to final assembly. The PIM60 features flexible measuring tools for an incredibly simple pass/fail test of the components' size using digital outputs, and it supplies accurate measured values via Ethernet.

→ www.sick.com/Inspector

Robot-assisted picking of individual parts in an assembly plant

To manufacture a torque transducer, components are transported on a pallet to a work station. The PLOC2D robot guidance system distinguishes between these parts by means of its 2D object localization capability and feeds them to the assembly facility in the correct sequence. There they are assembled into a complete torque transducer. The image processing unit of the system locates the exact position of the parts and guides the robot to the correct location. This eliminates the need for part-specific compartments on the pallet as the parts can be located in different positions on the pallet.

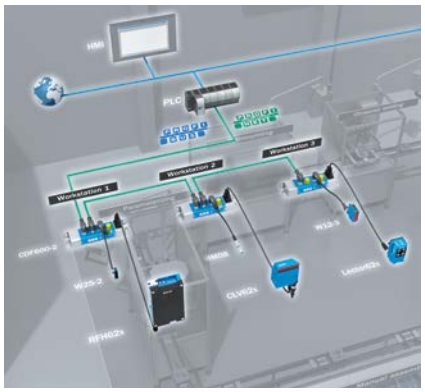
→ www.sick.com/PLOC2D



Measuring brake discs on test benches

Undesired brake rotor vibrations must be examined with micrometer precision. With its measuring frequency of up to 80 kHz, the OD5000 displacement measurement sensor is optimally suited for implementing this in test benches with short test times and high precision.

→ www.sick.com/OD5000



Networking 4D*pro* devices in an assembly line

The CDF600 fieldbus module enables the networking of 4D*pro* devices, such as bar code scanners, RFID systems, and handheld scanners, in PROFIBUS, PROFINET-IO, or EtherCAT® networks. This ensures continuous communication by the individual devices with the higher-level control system of the assembly line. All 4D*pro* devices are compatible and interchangeable through the standardized 4D*pro* platform. As a result of the proxy operating mode integrated in the CDF600-2, only the 4D*pro* device is visible to the control system, not the CDF600-2. This means that direct access to control of the devices is possible (GSD and GSDML configuration).

→ www.sick.com/CDF600-2

→ www.sick.com/CDF600

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POWERTRAIN

Safe human-robot collaboration in the production of electric motors

A robot takes the electric motors from the conveyor belt and gives them to the worker for further processing. The worker then places a cable harness in the electric motor. The robot then places the workpiece back on the conveyor belt. In this way, the robot functions as a flexible production assistant that can help the worker with unergonomic, manual tasks. This safety solution at the workstation is implemented by means of a microScan3 safety laser scanner and the Flexi Soft safety controller.

→ www.sick.com/Flexi_Soft

→ www.sick.com/microScan3_Core

Stationary monitoring of adhesive beads in a joining process

Once the joining process on a powertrain for the electric motor is complete, it is no longer possible to assess the quality of a workpiece without damaging it. Using a pattern, optical monitoring systems compare the position, gaps in, and quality of the adhesive used in the joining process and document any errors. The Inspector PIM60 Bead 2D vision sensor allows complete contour inspection of the adhesive bead and workpiece quality control immediately after the adhesive is applied.

→ www.sick.com/Inspector

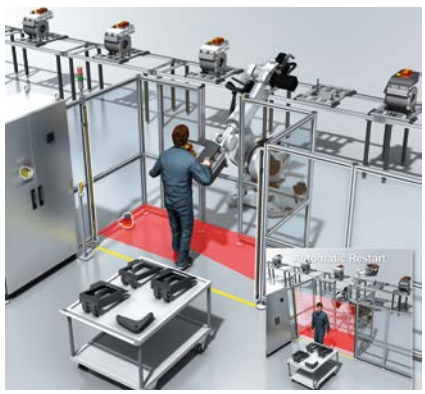
Conveyor speed measurement and presence monitoring on a rotary indexing table

To control the speed at the rotary indexing table, an SEK160 motor feedback system is mounted directly on the drive shaft of the torque motor, thereby eliminating the need for transmission elements such as timing belts or couplings. The SEK160 is equipped with the HIPERFACE® interface and thus compatible with all common drive systems. A W16 photoelectric proximity sensor detects the sheet metal stacks in the individual work stations and even reliably identifies glossy surfaces. The W2S-2 miniature photoelectric sensor installed on the robot gripper rounds off the application package.

→ www.sick.com/SEK160

→ www.sick.com/W16

→ www.sick.com/W2S-2



Safe human-robot collaboration in the final assembly of electric motors

A worker attaches non-rigid parts to an electric motor, e.g., a protective cover on a hybrid powertrain. A safely monitored robot with force and torque limiters takes electric motors from a conveyor and passes them to the worker. Once the worker has applied the protective cover to the powertrain and exits the protected area of the robot, it starts up again automatically. This has been implemented by means of a safety concept comprising a safety laser scanner, microScan3, deTec4 Core safety light curtain, and a Flexi Soft safety controller.

→ www.sick.com/Flexi_Soft

→ www.sick.com/microScan3_Core

→ www.sick.com/deTec

ELECTROMOBILITY AS DRIVER FOR INNOVATION

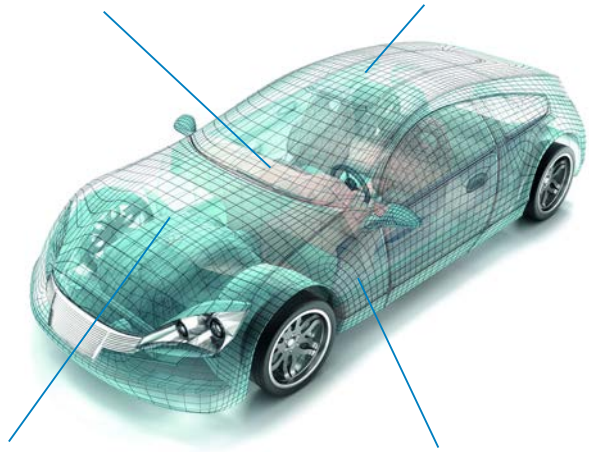
More and more vehicles are relying on electric motors instead of combustion engines and “intelligence” is increasingly being built into vehicles. Developments in the area of electromobility are having a massive impact on industry as a whole. New production concepts and processes are needed.

Multimedia, communications, intelligence

The task:
Automated and efficient quality control during the final assembly of electronic modules
The solution:
Quality control systems such as Pinspector for optimizing PCB production

Design engineering, handling, robotics

The task:
Reliable detection of all kinds of materials (carbon, transparent materials)
The solution:
MultiTask photoelectric sensors such as PowerProx



Engine production (electric and hybrid)

The task:
Safe and efficient human-robot collaboration at a robot-based handling workstation
The solution:
A safety laser scanner (such as the microScan3) combined with a safety controller

Battery production

The task:
Automated checking of the battery module (from a straightforward presence check right through to inspection of the weld seam and contact)
The solution:
3D vision sensors such as the TriSpector and IVC-3D

The ability to produce high-quality parts efficiently in large quantities calls for a high degree of automation in the production process. Objects need to be reliably detected for a smooth production flow. The properties of the objects being detected can vary significantly. As a result, flexibility and precision are required to reliably detect materials such as carbon.

The ability to offer exactly the right identification solution for every stage of the production cycle is absolutely essential if the traceability of products, components, and batches is to be ensured. Not only is reliable data management an absolute necessity for potential product recalls; it also opens up new potential for optimizing processes. As a result, efficient detection of production data provides a major competitive edge. To cater for these requirements, SICK offers a wide range of both permanently installed and mobile readers for bar codes, 2D codes, and RFID technology. Because connectivity, the user interface, and the accessories are all standardized, customers can switch flexibly between the various technologies – a real advantage when it comes to security of investment and sustainability.

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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

SICK
Sensor Intelligence.