



STORAGE AND CONVEYOR

APPLICATIONS EFFICIENTLY SOLVED

SICK
Sensor Intelligence.

TASKS IN THE STORAGE AND CONVEYOR INDUSTRY

Flexibility and efficiency – the competitive advantage in storage and conveyor systems

Storage and conveyor systems play a central role in intralogistics. This industry demands maximum throughput and optimum use of storage space. Highly dynamic markets, innovative logistics processes, and the wide range of goods to be transported require a high degree of flexibility. Sensors are one of the key technologies which are critical to the success of the intralogistics business. SICK not only offers a full portfolio of sensors and services, but also comprehensive industry knowledge – to ensure the success of your storage and conveyor system.



Read more about sensor solutions in the storage and conveyor industry
[→ www.sick.com/storage_and_conveyor](http://www.sick.com/storage_and_conveyor)



Detection

Sensor solutions for the detection of presence, leading edge, and position make automation of processes possible. Process throughput and efficiency require the optimal sensor solution for each application. SICK has the right sensor for every task.



Identification

Product traceability requires reliable automatic identification. SICK offers the three most common industrial identification technologies: laser-based scanning, image-based 1D and 2D code reading, and RFID. With SICK's 4DPro concept, the devices that can be used in stand-alone or in functional systems to solve the exact application needs.



Measurement

Through multiple technology platforms, SICK is able to provide critical details for each carton or package. Dependent on the application it may be necessary to know the position of the object, dimensional profile, package volume, or object weight. Informational data from these sensors allow efficiency and process reliability in critical storage and conveyor tasks.



Protection

Whether for persons, machines, or other objects, safety is the highest priority in the logistics process. SICK's comprehensive portfolio will provide the ideal safe environment, while maximizing system productivity. SICK's products, systems, and services ensure necessary safety requirements are met in compliance with applicable laws and standards.



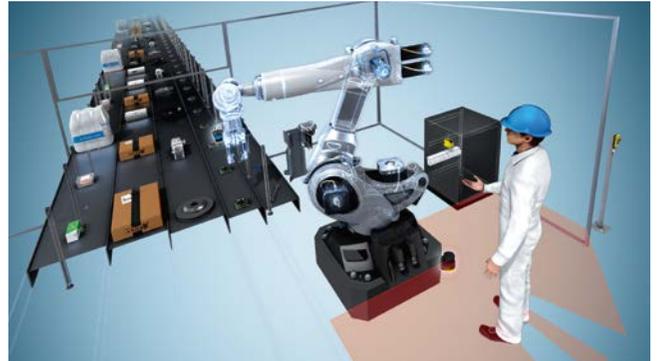
Custom solutions

SICK has a comprehensive and innovative technology portfolio. Based on these technologies, SICK develops tailor-made sensor solutions for storage and conveyor equipment manufacturers. The portfolio ranges from standard sensors to complex sensor-system solutions. Please contact us. We would be happy to provide you with more information on custom solution possibilities.

WORKING TOGETHER AS EQUALS - SENSOR SOLUTIONS FOR ROBOTICS

Flexible automation solutions thanks to Robot Vision technology and freely accessible robotics applications - this is the future that has already begun. Sensor solutions from SICK make this future possible. Humans and machines work hand in hand - just like SICK together with its customers.

Read more about sensor solutions for robotics
 → www.sick.com/robotics



Robot Vision
 Robot Vision refers to optical and image-based systems that turn the robot into a seeing participant and allow it to identify where something is located. These systems enable flexible automation in the era of Industry 4.0.



Safe Robotics
 Safe Robotics solutions ensure the safety of people and include all measures that turn the sensitive area close to the robot into a safe workspace.



End-of-Arm Tooling
 In the area of End-of-Arm Tooling, SICK offers sensors that are designed specifically for grippers and robot tools, enabling them to work with fingertip precision.



Position Feedback
 With Position Feedback solutions from SICK, the motor feedback systems integrated in the drives deliver data on speed and position as well as on the condition of the drive. They thereby create the sensory foundation for all robot movements.

SUPPLIERS OF INFORMATION FOR INDUSTRY 4.0 - SMART SENSORS

Smart Sensors generate and receive data and information which goes beyond traditional switching signals or measured process parameters. They therefore enable substantial increases in efficiency, more flexibility, and better planning security for predictive plant maintenance. Depending on the requirement, Smart Sensors cover up to four dimensions of Smart Sensor technology.

Read more about smart sensors
 → www.sick.com/smart-sensors



Enhanced Sensing
 Top sensor performance for stable processes



Efficient Communication
 Flexibility and transparency at the lowest field level



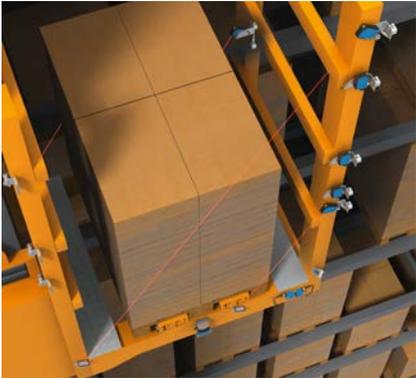
Diagnostics
 Highest availability levels thanks to predictive maintenance



Smart Tasks
 Tailor-made information directly from the sensor



AUTOMATED STORAGE AND RETRIEVAL SYSTEM



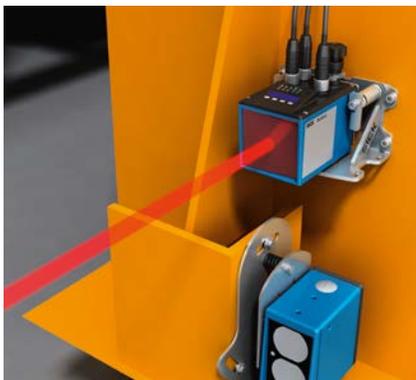
Protrusion monitoring at the load-carrying unit

After the pallet has been placed on the load-carrying unit, W16 small photoelectric sensors check whether the pallet is protruding and could cause a collision. Thanks to their immunity to ambient light and reflection, due to OptoFilters, the sensors ensure a stable process is carried out.

- W16 small photoelectric sensor



→ www.sick.com/W16



Positioning and data transmission at the stacker crane

The DL100 long range distance sensor positions the driving unit. The high resolution and repeatability of the sensor allows high speeds and accelerations. The ISD400 optical data transmission system included with the storage and retrieval system enables it to communicate with the warehouse control system.

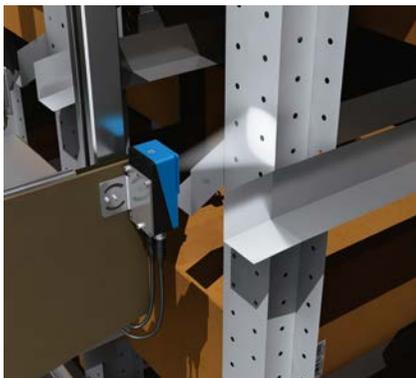
- Dx100 long range distance sensor
- ISD400 optical data transmission system



→ www.sick.com/Dx100



→ www.sick.com/ISD400



Fine positioning of the x and y axes on the driving and lifting unit

To ensure precise putaways and picks, it is necessary to compensate for any mechanical discrepancies in the shelving unit that may have been caused, for example, by the loading situation or thermal influences. Following absolute positioning of the driving and lifting unit, an InspectorP63x 2D vision sensor allows precise fine positioning in front of the storage bay with maximum repeatability.

- InspectorP63x 2D vision sensor



→ www.sick.com/InspectorP63x



Safe SILCL3 PLe positioning of the driving unit

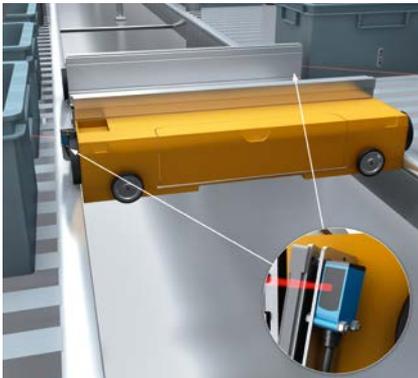
With the certified Safe Linear Positioning safety system positions and speeds of highly dynamic stacker cranes are detected and analyzed in constant cycles by the safety control (according to DIN EN 528:2009-02 - Safety requirements for rail dependent storage and retrieval equipment) and by using a bar code tape. Therefore sections can be defined where the driving unit is only allowed to move with reliably reduced speed to prevent accidents.

- Safe Linear Positioning safety system



→ www.sick.com/Safe_Linear_Positioning

SHUTTLE SYSTEM



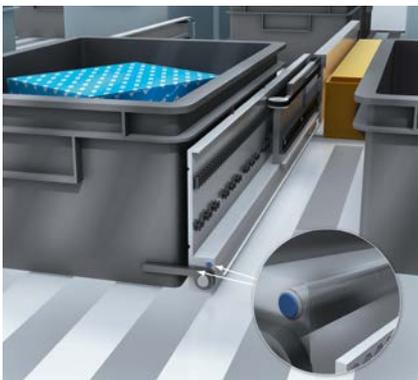
Empty bay detection

Before a tote is stored, a time-of-flight sensor checks whether the allocated storage area is free. The high performance WTT4 sensor offers all the advantages of time-of-flight technology in a small housing, and can even detect jet black and shiny objects.

- WTT4 MultiTask photoelectric sensor



→ www.sick.com/PowerProx



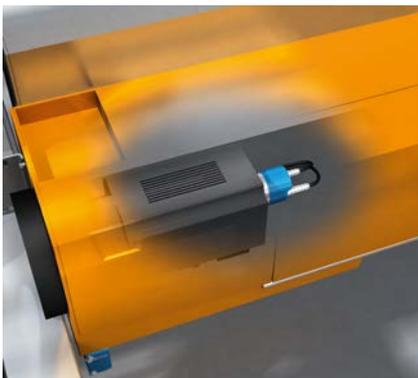
Positioning of telescope arm and finger

IME inductive proximity sensors control the positioning of the telescope arm and finger. Thanks to the extremely compact design of the extraordinarily rugged and long-lasting sensors, the machine design itself faces virtually no restrictions, even in applications where space is critical.

- IME inductive proximity sensor



→ www.sick.com/IME



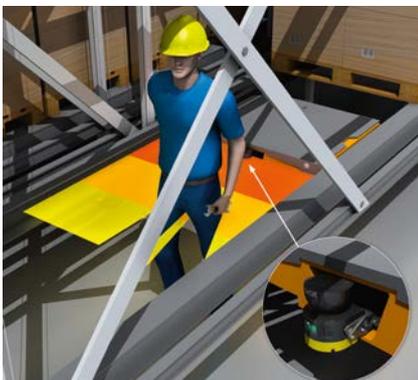
Speed measurement on the shuttle

The DBS36 Core incremental encoder determines the necessary data to control the speed, acceleration and deceleration of the shuttle. With its high resolution and repeatability, the encoder ensures that the positioning of the shuttle is executed with precision.

- DBS36 Core incremental encoder



→ www.sick.com/DBS36_Core



Protection of operating personnel in the shuttle system

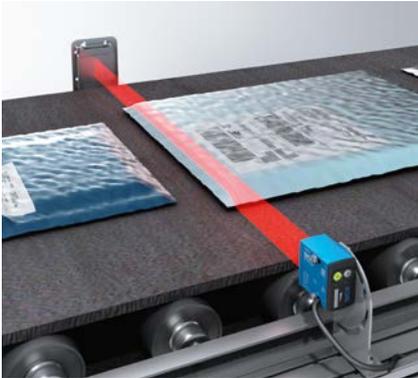
If persons can access the shuttle tracks, safety functions must be implemented in accordance with applicable standards. Ultra-compact safety laser scanners like the microScan3 with switchable protective and warning fields make it possible to implement these safety functions while conforming to standards.

- microScan3 Core safety laser scanner



→ www.sick.com/microScan3_Core

CONVEYOR TECHNOLOGY



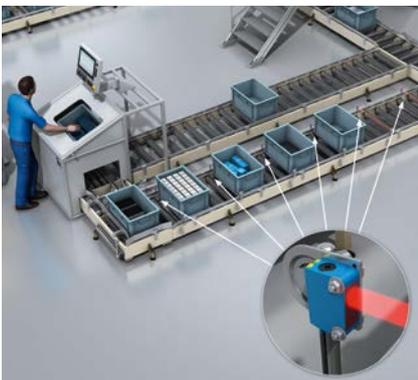
Leading edge detection for polybags

Precise leading edge detection enables the spacing of objects on singulated and accumulation conveyors to be optimized. The RAY10 Reflex Array photoelectric retro-reflective sensor with its 25 mm high light band reliably detects the leading edges of flat objects such as polybags. The precise signal from the photoelectric retro-reflective sensor enables the speed of the individual belt segments to be optimally controlled.

- RAY10 MultiTask photoelectric sensor



→ www.sick.com/Reflex_Array



Zero pressure accumulation using photoelectric retro-reflective sensors

Zero pressure accumulation ensures a controlled material flow within the logistics process. The photoelectric retro-reflective sensors in the G6 family also reliably detect objects with challenging surfaces. An external control unit evaluates the sensor signals and controls the various zones.

- G6 miniature photoelectric sensor



→ www.sick.com/G6



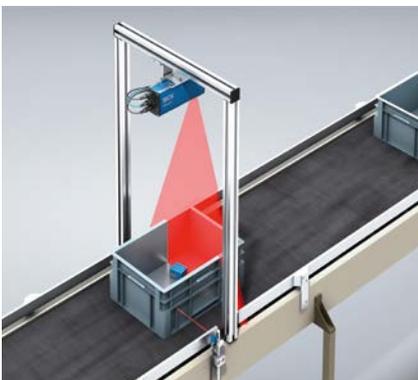
Optical identification solutions on the conveyor

The high performance CLV6xx series bar code scanners are the ideal solution for track and trace applications with 1D codes and high read rates – even under the most challenging conditions. If 2D codes, stacked codes or plain text are also used, the compact Lector® series image-based code readers ensure reliable detection.

- Lector63x image-based code reader



→ www.sick.com/Lector63x



Empty tote detection and level measurement

The ability to detect empty totes and fill levels is crucial for inventory control and process reliability. The TriSpector1000 3D vision sensor records the height profiles of moving totes using a laser line and camera and assembles them into a high-resolution 3D image with intensity overlay.

- TriSpector1000 3D vision sensor



→ www.sick.com/TriSpector1000

VERTICAL STORAGE SYSTEM



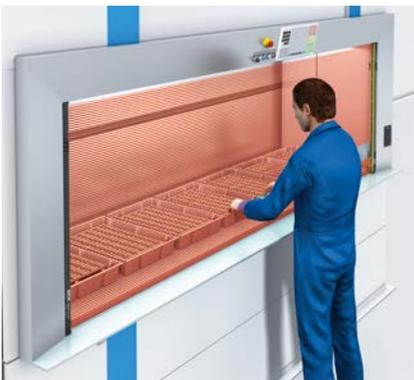
Employee identification by RFID

UHF read/write devices make logging into a warehouse system quick and uncomplicated. RFID also supports specific access rules for employees and simplifies the implementation process. Furthermore, industry standard interfaces make it easy to integrate into existing IT infrastructures.

- RFU61x UHF read/write device



→ www.sick.com/RFU61x



Access protection at the operating opening

deTec4 Core safety light curtains protect the operating opening against unintentional access by personnel. All movements in the putaway and picking process are stopped immediately. The compact design and fine adjustment of the protective field length of the deTec4 Core guarantee an optimal machine integration.

- deTec4 Core safety light curtains



→ www.sick.com/deTec



Height measurement of the stored items

The MLG-2 Pro measuring automation light grids support the optimal utilization of the available storage capacity in a vertical storage system. During putaway, the MLG-2 Pro measures the height of the items on the tray and at the same time detects any overheights and protrusions. Thanks to the single-beam evaluation, the light grid can reliably detect even the smallest height differences.

- MLG-2 Pro measuring automation light grids



→ www.sick.com/MLG-2_Pro



Positioning of the lifting unit in the y direction

The OLM100 linear measurement sensor is a highly-precise and non-contact bar code positioning system. In vertical storage applications, the sensor determines the absolute position of the lifting unit and also controls its speed. Thanks to the camera technology used, the sensor is wear- and maintenance-free.

- OLM100 linear measurement sensor



→ www.sick.com/OLM100

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 8,800 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