TIRE
ACHIEVING MORE WITH INTELLIGENT SENSORS

SICK
Sensor Intelligence.

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CHALLENGES IN THE TIRE INDUSTRY

Sensor solutions for the entire production process

Tire manufacturing is a complex process that places high demands on quality and safety. All large tire manufacturers and tire machine builders count on SICK as a reliable partner to provide solutions to these complex tasks. Highly efficient and highly flexible production is essential in order to meet market requirements for quality and price. The challenge is to make production machines safe and increase production quality under rough environmental conditions. This also requires traceability of the products over the entire production cycle. This is where SICK uses its comprehensive sensor and industry expertise to produce ideal solutions.

Safety

Safe machines ensure high productivity. SICK offers the widest portfolio of safety solutions: marked by a high degree of integration in its controls and accompanied by an extensive range of services that includes consulting, commissioning, training and additional education.

Quality Control

Quality testing is required from the outset to ensure a consistent quality and reliability of the tires. From high-precision measurement of web thickness during the extrusion and calendering process, edge guiding and surface testing to accurate 3D measurement of the tire shape: SICK offers the right sensor solution for any application.
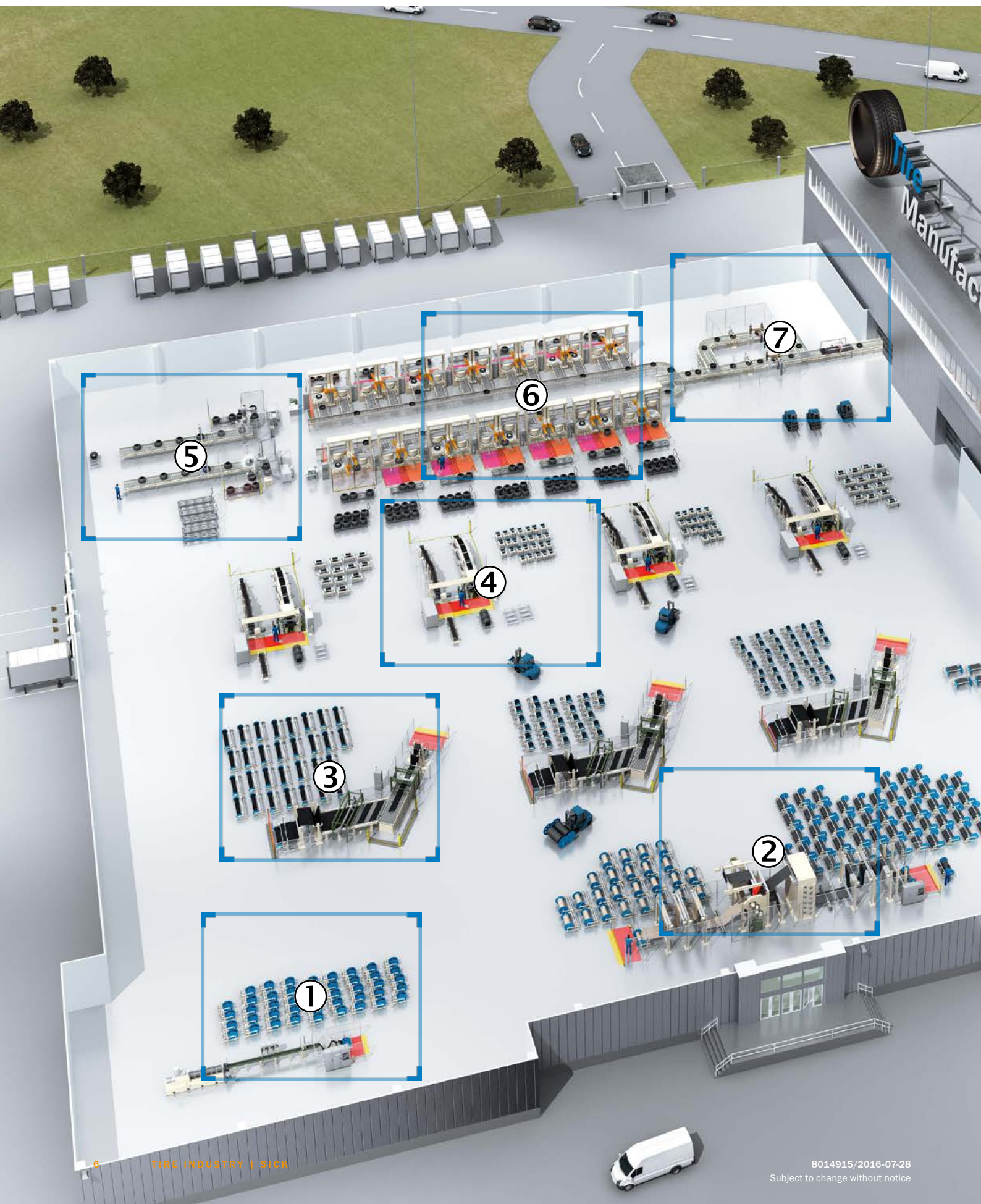
Track and Trace

Marking with bar codes is standard, but the properties of the tires as well as the material-handling environment mean that identification puts high demands on code reading. SICK offers ideal industrial reading systems for the tire industry, with easy integration, high durability and superior read rates, as well as the ability to get operations back up quickly in the event of a failure.

Flexible Automation

Numerous production steps are required in order to create tires from a large number of different materials in a wide variety of machines. As a mass product, produced in typerelated mass production, high flexibility is required in production. SICK supports you by providing sensors for the flexible automation of your production processes.

Applications in focus

Focus 1: Extrusion line

① **Level measurement in the material container**

The UP56 ultrasonic level sensor continuously measures the filling level of the material container. Alternatively, in the case of large silos, the LBV3x0 vibrating level switches can detect the minimum and maximum fill levels in the material container.

LFV200 ➜ p. 68
UP56 ➜ p. 68

② **Temperature measurement in the extruder**

The temperature needs to be controlled precisely to ensure that the tire rubber is extruded without any defects. The TSP temperature sensor is ideally suited to this task and provides all the typical mechanical process connections in different lengths and in various variants. The sensors are available in the Pt100 or Pt1000 versions.

TSP ➜ p. 71

③ **Flow measurement in the cooling circuits of extrusion lines**

FFU ultrasonic flowmeters ensure the rate of flow in the cooling circuits of profile extrusion lines is monitored. Thanks to the rugged design which does not contain any moving parts, the sensors are even suitable for use in harsh environmental conditions.

④ **Non-contact speed measurement of the tire material during extrusion**

When extruding tire rubber, the belt thickness of the tire material must be adhered to exactly in order to ensure product quality of a consistently high standard. This requires precisely synchronizing the release speed of the tire material on the belt to the continuous forward feed of the extruder press. The OLV linear measurement sensor measures the speed directly on the material without slipping, therefore making a significant contribution to the constant optimization of the product quality.

FFU ➜ p. 70

OLV ➜ p. 63
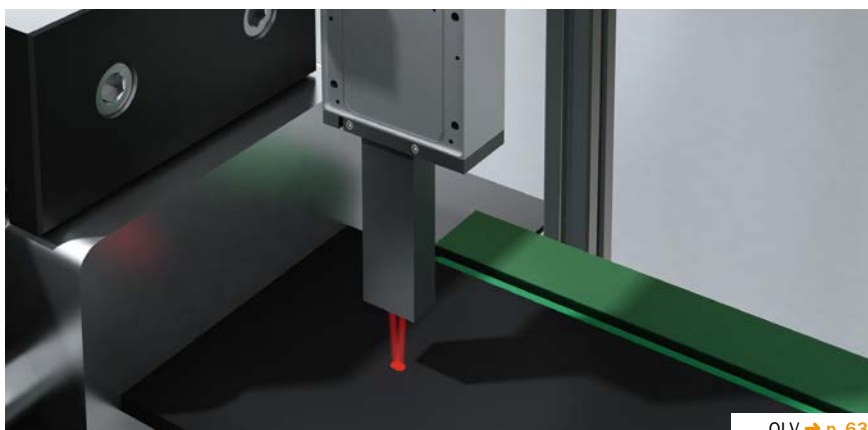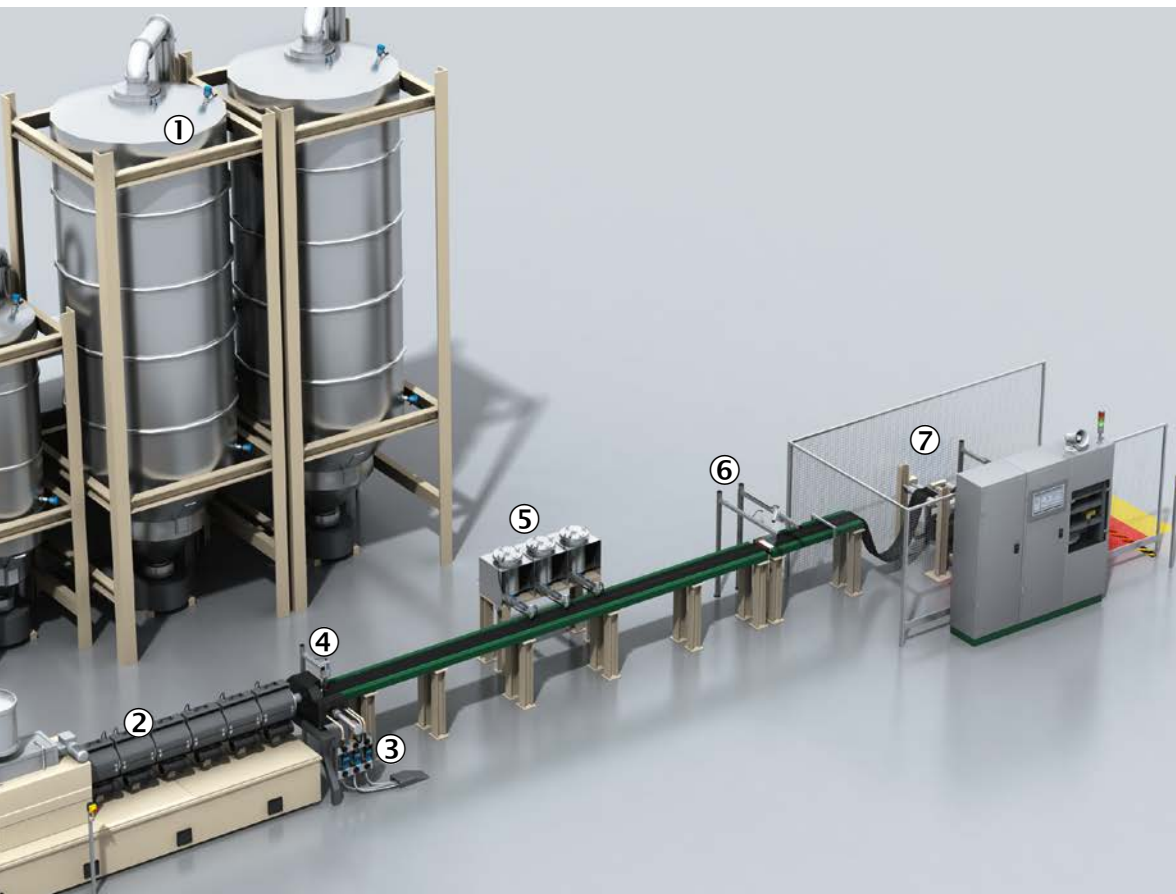
⑤ Cylinder positioning in the color marking station

The treads are given various color codes on their surface to enable them to be identified later. The exact positioning of the cylinders at various positions for different tread variants is carried out by magnetic cylinder sensors, such as MPS. Thanks to their high resolution and different lengths, MPS can be flexibly adapted to the application.

⑥ Width measurement and checking color strips

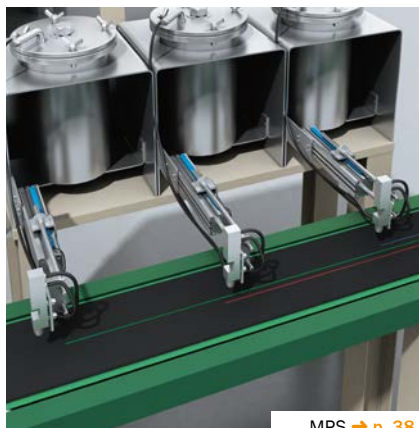The ColorRanger 3D vision sensor is a camera for capturing 3D measurements at maximum speed and is also a 2D color camera. As a result, the sensor is able to precisely measure the width of the tread using the 3D method, while also checking that the color strips which have already been attached are complete and in the right position.

⑦ Measurement of the roller diameter

The PowerProx MultiTask photoelectric sensor (WTT12L) measures the height of the material on the bobbin as the rubber sheet is being wound. The PowerProx sensor therefore detects when a bobbin is full and needs to be replaced with an empty one. The PowerProx features time-of-flight technology and has a sensing range of up to 3.8 m at 6% remission (black) with a very good level of accuracy. The switching point is easy to set using the teach-in button or the potentiometer.

MPS → p. 38

ColorRanger E → p. 60

PowerProx → p. 36

Focus 2: Calendering machine
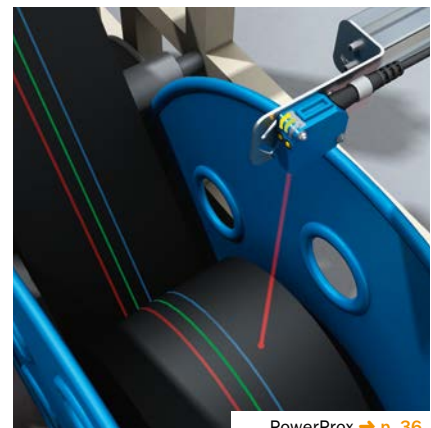
① Manually enabling the access protection of a let-off machine

Let-off machines can create a hazard at crushing and shearing points. An S3000 safety laser scanner monitors this hazardous area. After replacing a material bobbin, the new material must be drawn slowly into the machine. With the manual enabling process carried out by the rugged E100 3-stage enabling switch, the machine is then operated at a reduced speed. This deactivates the S3000 safety laser scanner. The S3000 is characterized by its highly rugged design. All safety devices can be connected to the Flexi Soft modular safety controller and are easy to interconnect. When used with the Flexi Soft Drive Monitor, it enables safe implementation of a speed monitoring system for setup using enabling switches.

S3000 Standard ➜ p. 43
E100 ➜ p. 51
Flexi Soft ➜ p. 52
Flexi Soft Drive Monitor ➜ p. 52
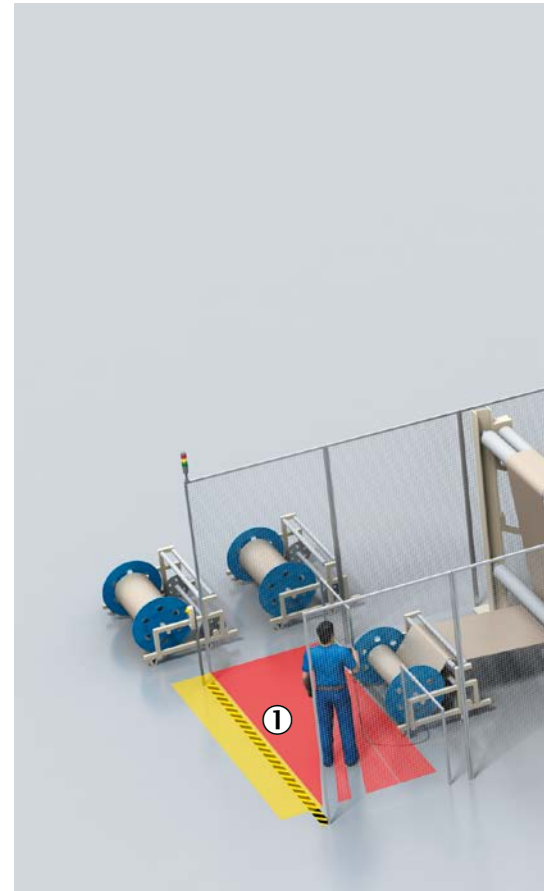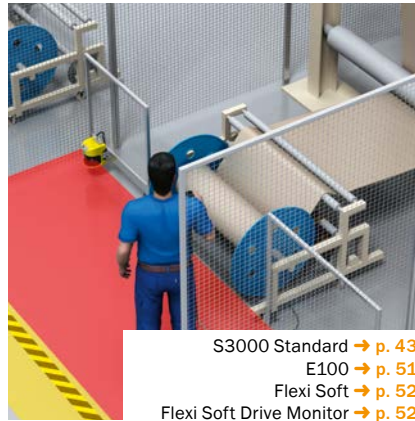
② Regulating the calendering process

The calendering process is regulated by highly accurate OD short-range distance sensors (displacement) arranged in pairs at three positions on the belt, which measure thickness using the difference in the measured values. The sensors reliably determine any deviations in thickness of less than 1 µm. Signals are processed and differential values calculated in the associated evaluation unit.

③ Inspecting the surface of the calendared rubber

After calandaring the rubber onto the textile tape, the quality of the material is inspected. Multiple Inspector 2D vision sensors monitor the material across the entire width, reliably identifying surface defects and color deviations.

④ Edge guiding after calendering

Material tapes run over several rollers in the machine. The Inspector PIM60 2D vision sensor determines the position of the edge and outputs its position data. The position data is transferred to the machine control, which precisely controls the material tapes, either via switching outputs or via Ethernet.

OD Precision ➜ p. 61

Inspector ➜ p. 59

Inspector ➜ p. 59
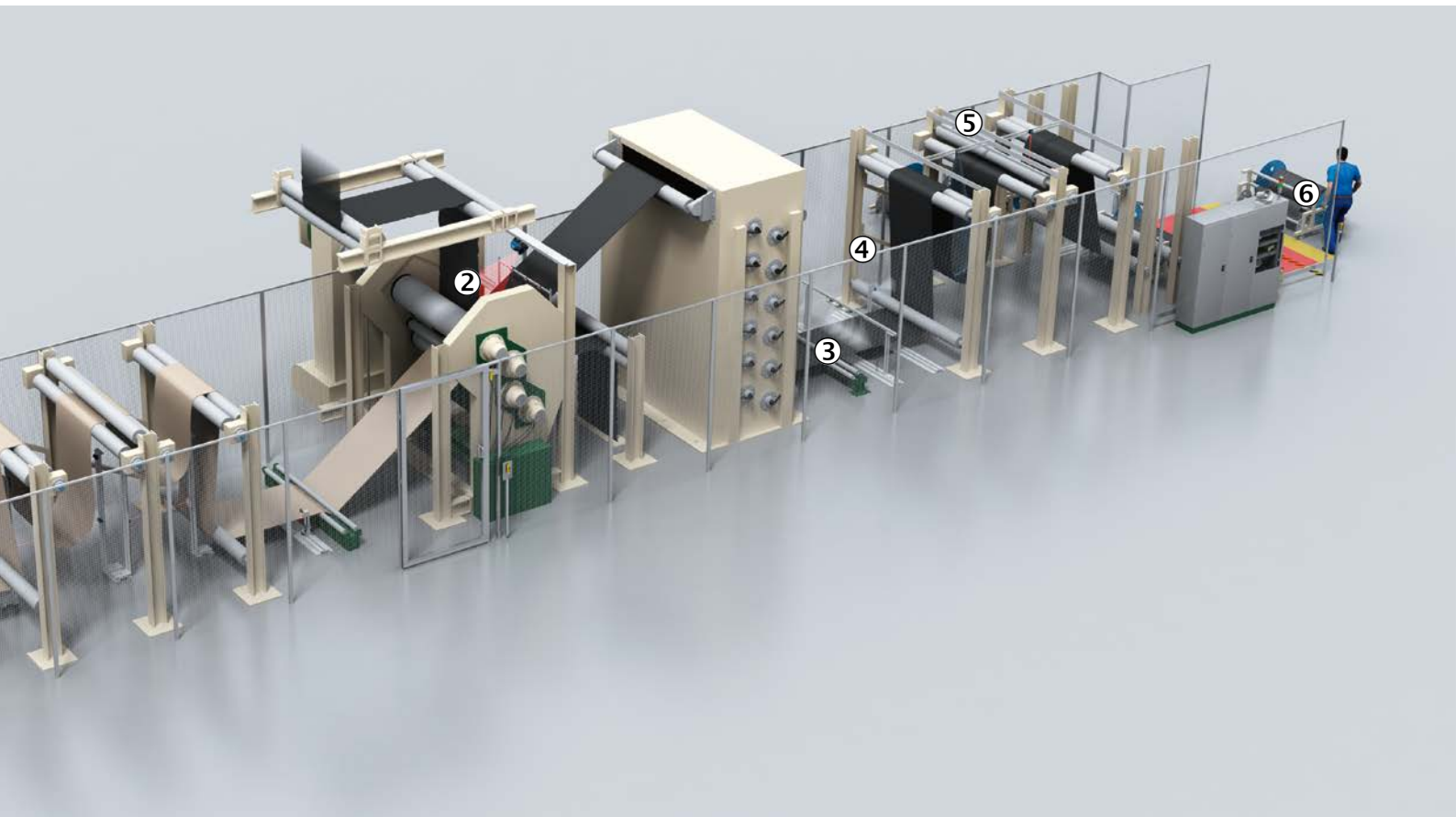
⑤ Loop control: loop and speed measurement

Loop control enables the uncoupling of processes such as calendering and material in-feed and out-feed. The distance sensors installed above the loop measure either continuously with analog output or with two previously taught-in digital switching points. Loop measurement is performed with only one sensor per loop, so only minor installation work is required. Depending on the properties of the material and the width of the belt, either Dx35 or Dx50 distance sensors, or UM30 ultrasonic sensors may be used. Configurable DFS60 incremental encoders monitor the speed of the driving rollers. The DFS60 is extremely rugged and is available in numerous mechanical and electrical variants.

⑥ Identifying material bobbins using 1D hand-held scanner

Consistent identification of the material used over the entire production process ensures a high process quality. The material bobbins have bar codes, allowing them to be identified at various storage locations in the plant using handheld scanners. The IDM16x hand-held scanners are extremely rugged readers (cable-connected or with Bluetooth and WLAN functionality).

Dx35 ➜ p. 62
Dx50 ➜ p. 62
UM30 ➜ p. 63
DFS60 ➜ p. 66

IDM16x ➜ p. 58

Focus 3: Cut and splice machine
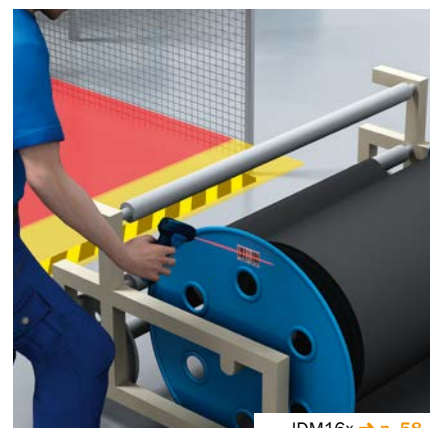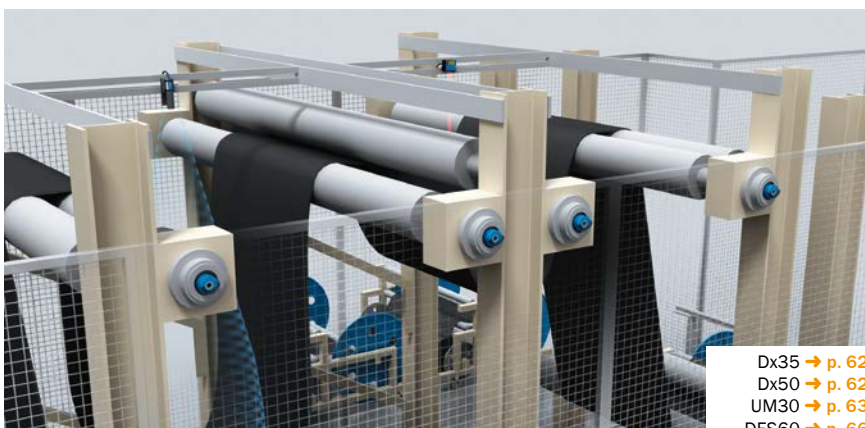
① **Hazardous area protection on a let-off machine**

The deTec4 Core safety light curtain reliably monitors the hazardous area in front of the let-off machine. The deTec4 Core protects the area easily and with high availability. Once manual work in the hazardous area has been completed, an operator acknowledgment is necessary.

deTec4 Core ➔ p. 44

② **Detecting the end of the reel when unwinding material**

When unwinding the tire material from the material bobbin, the end of the reel must be detected reliably so that the machine does not run empty. The material can vary in terms of width and thickness and have a shiny black surface. This presents a challenge for sensors when it comes to accurately detecting the edges. The Inspector 2D vision sensor reliably detects the edge, regardless of the different material properties.
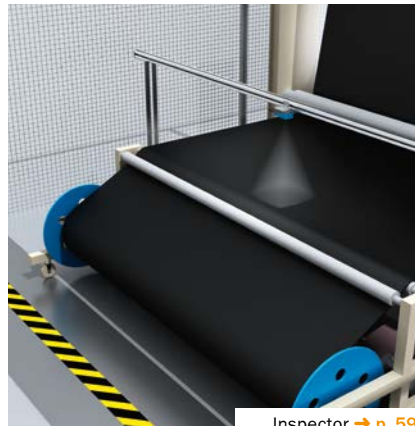
Inspector ➔ p. 59
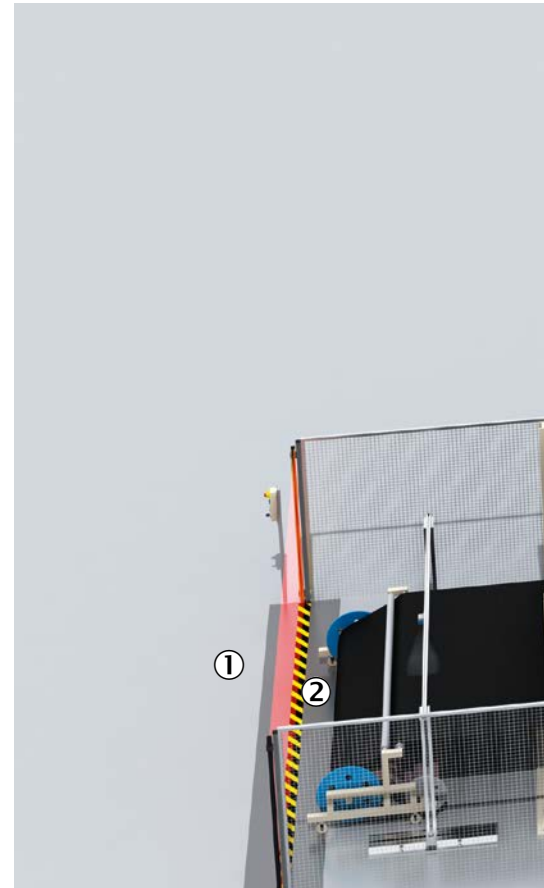
③ **Loop control: speed measurement**

DFS60 incremental encoders monitor the speed of the roller for the purposes of loop control. The DFS60 are extremely rugged and are available in numerous mechanical and electrical variants. DFS60 incremental encoders can be configured for any requirement. There is therefore no need to store variants with different resolutions.
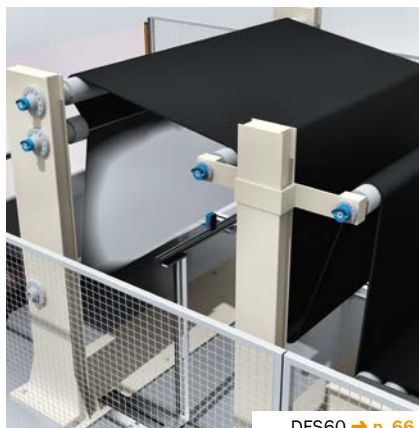
④ **Access protection on the cut and splice machine**

A deTec4 Prime safety light curtain monitors access to the cut and splice machine. The mirror column provides versatility for protection, even around corners. The integrated alignment aid on the deTec4 Prime ensures easy commissioning and alignment.

⑤ **Edge guiding with array sensor**

The Ax20 array sensor takes measurements of the edge for precise control prior to splicing the tire sheets. The sensor works according to the proximity scanning principle. The Ax20 itself detects the smallest gray value differences in its visual range and has a very high reproducibility rate of 0.03 mm. Thanks to its large measuring range of 30 mm, the Ax20 can be used to control a range of materials.

DFS60 ➔ p. 66

deTec4 Prime ➔ p. 44

Ax20 ➔ p. 41
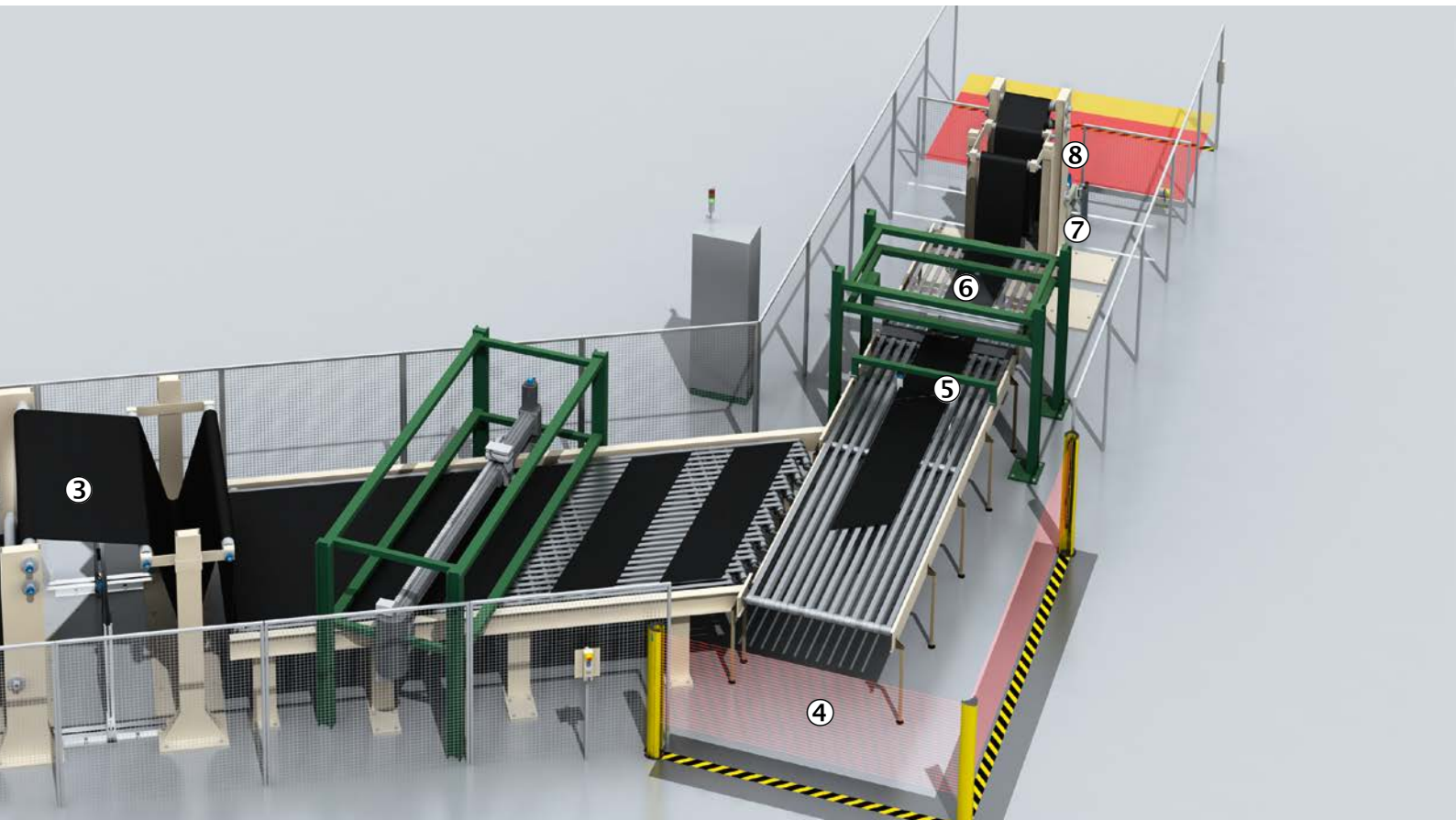
⑥ Open splice detection

During the splice process, sheets of material that had already been cut are joined back together. The Inspector 2D vision sensor checks the splices for any holes. Reflective tape in the background provides the ideal contrast to the black tire rubber, enabling the Inspector to reliably detect any surface defects.

⑦ Loop control: continuous loop measurement

Loop control separates processes such as cutting and splicing, and material infeed and out-feed. An MLG-2 automation light grid installed vertically takes continuous and precise measurements of the entire loop. An analog value or corresponding field bus interface integrates with the control.

⑧ Material roll identification in the winder

Ensuring complete traceability in the tire production process requires documenting process steps and identifying materials. For this purpose, material bobbins are given RFID transponders that are detected by reading devices with large sensing ranges. The highly resistant transponders boast an impressively long service life even in the harsh environmental conditions of the tire production process. The RFU620 read/write device identifies the transponder on the winder.
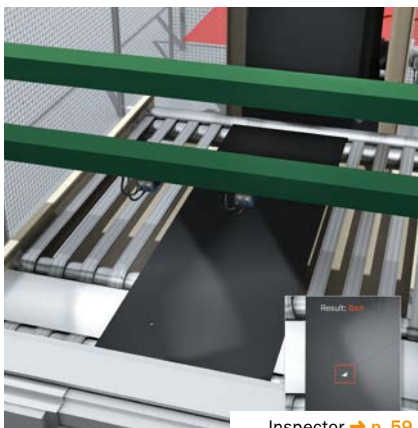
Inspector ➔ p. 59

MLG-2 ➔ p. 39

RFU62x ➔ p. 57
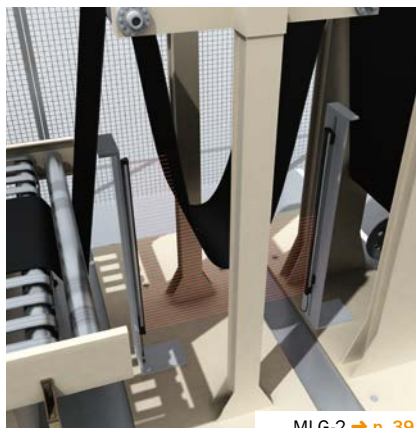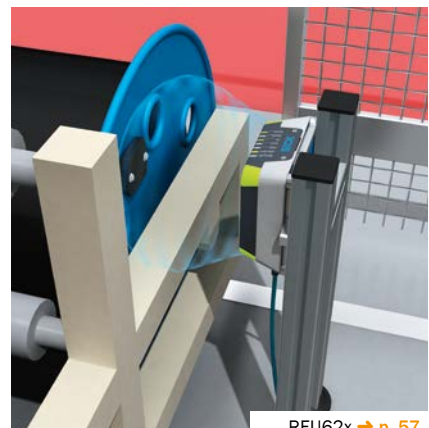
Focus 4: Tire building machine

① **Identifying tires in the tire building machine (first stage)**

Bar code labels which identify tires are attached to the tire during the production process either using an automated process or manually. Bar code scanners, which have a short reading distance, read the label once it has been applied to check that the tire has been clearly assigned its own unique ID number. The CLV61x is characterized by its reliable reading performance and compact construction in an industrial design. All the typical integration interfaces are available in the device.

CLV61x ➔ **p. 56**

③

② **Flexible access protection**

An M4000 multiple light beam safety device monitors the rear of the machine. The M4000 detects the entry of persons who bring and remove materials and stops the machine. The use of mirror columns allows various machine geometries to be protected.

Alternatively, a deTec4 Prime safety light curtain may be used as a solution for the application.

③ **Hazardous area protection with protective field switching**

A high level of interaction between human and machine is required on a tire building machine. Due to the numerous dangerous movements of the machine, the hazardous area must be protected. Safety laser scanners monitor the area without experiencing any wear. The S3000 safety laser scanner is available for large protection areas, while the needs of small areas can be met by the S300. The modular Flexi Soft safety controller controls all of the safety functions on the machine. A particular advantage of this is that the safety laser scanner uses simultaneous protective fields, as this allows several protected areas to be monitored at the same time.

deTec4 Prime ➔ **p. 44**
M4000 Standard ➔ **p. 46**

S3000 Standard ➔ **p. 43**
S3000 Advanced ➔ **p. 43**
Flexi Soft ➔ **p. 52**
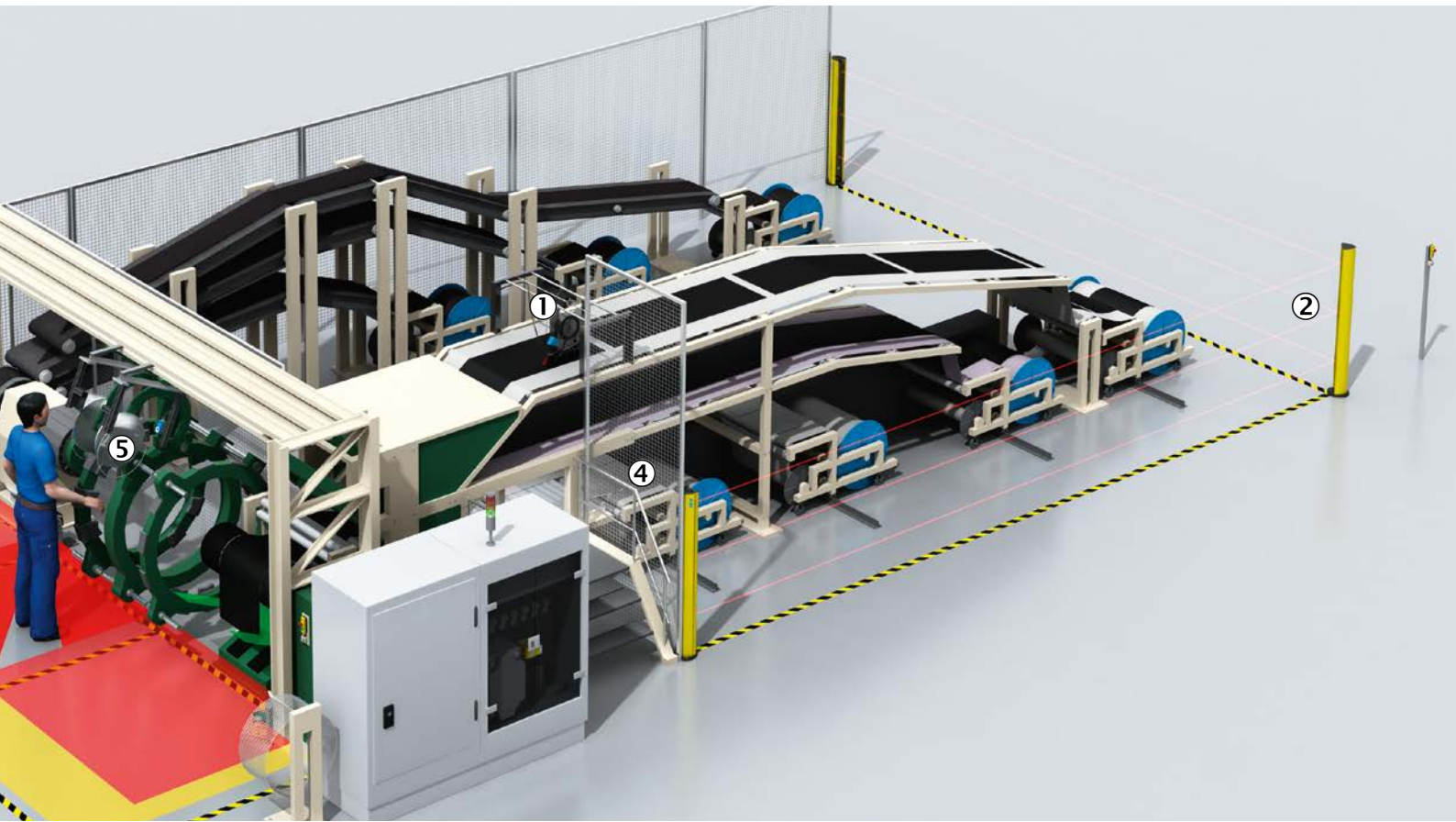
④ Monitoring the unwinding of foil

When unwinding thin material tapes, the foils must be removed completely to ensure consistent tire quality. The WL27-3 Reflex Array compact photoelectric sensor monitors the unwound material. The detection area allows the material to be detected regardless of its exact position, enabling the material to be moved laterally. . A break in the tape is detected immediately, as the entire detection field becomes clear.

⑤ Error prevention through inline test

The Inspector 2D vision sensor monitors the number and correct type of the metal rings used in the tires. The background lighting of the 2D vision sensor improves the contrast, enabling reliable inline testing.
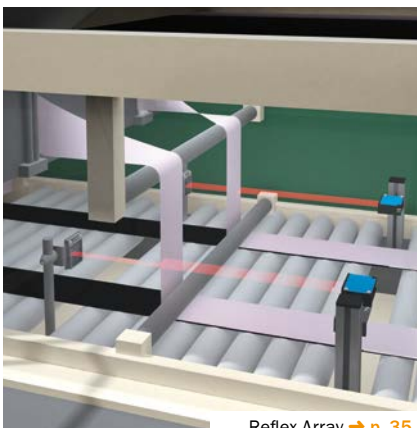
Reflex Array ➜ p. 35
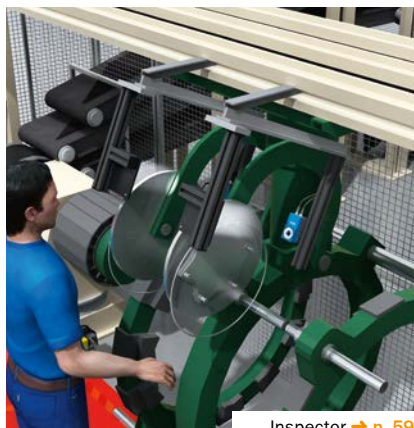
Inspector ➜ p. 59

⑥ Preventing errors through flexible material detection

Numerous materials of various widths are placed in the tire building machine, particularly when building the carcass. To ensure that all materials are available for each tire, the TiM300 2D laser scanner detects unassembled material below the tire building drum. The TiM300 detects the material regardless of its width and position in the detection field. In the event that the detection field is interrupted due to the presence of material, the TiM300 stops the process and sends a signal to the operator of the machine.

TiM3xx ➜ p. 64
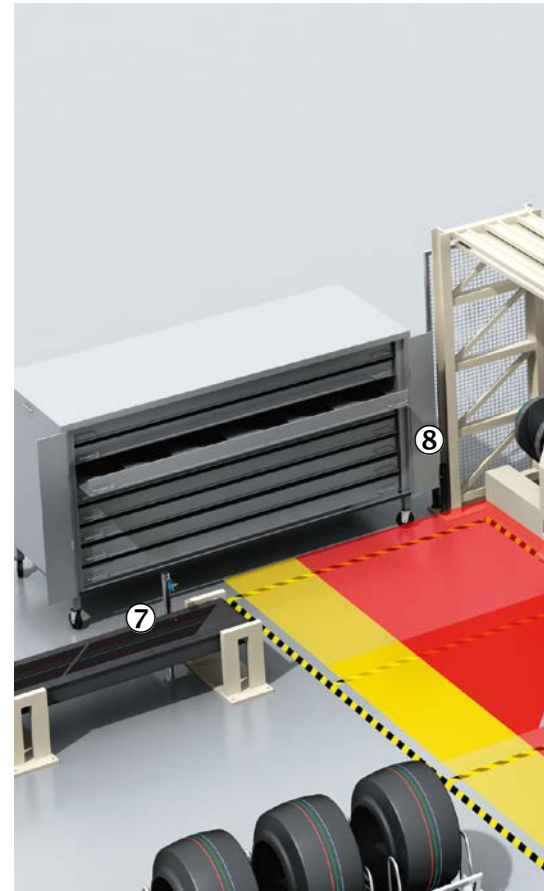
⑦ Reliable material detection on the belt

Safely detecting black, shiny tire rubber on the belt is a challenge for optical sensors without reflectors due to the low levels of contrast. This is where the MultiPac MultiTask photoelectric sensor with two receiver arrays from SICK offers maximum operational throughput. MultiPac detects objects extremely reliably and redundantly even in extreme sloping positions. The intense, highly visible light spot and the teach-in button facilitate a quick and easy setup.
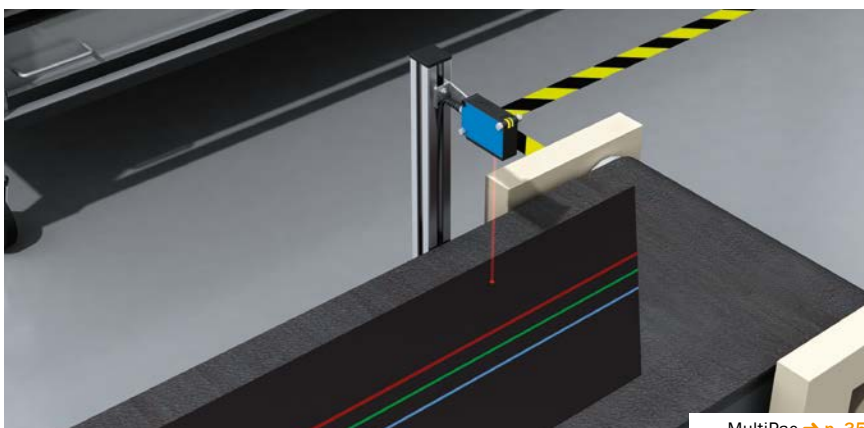
MultiPac ➜ p. 35
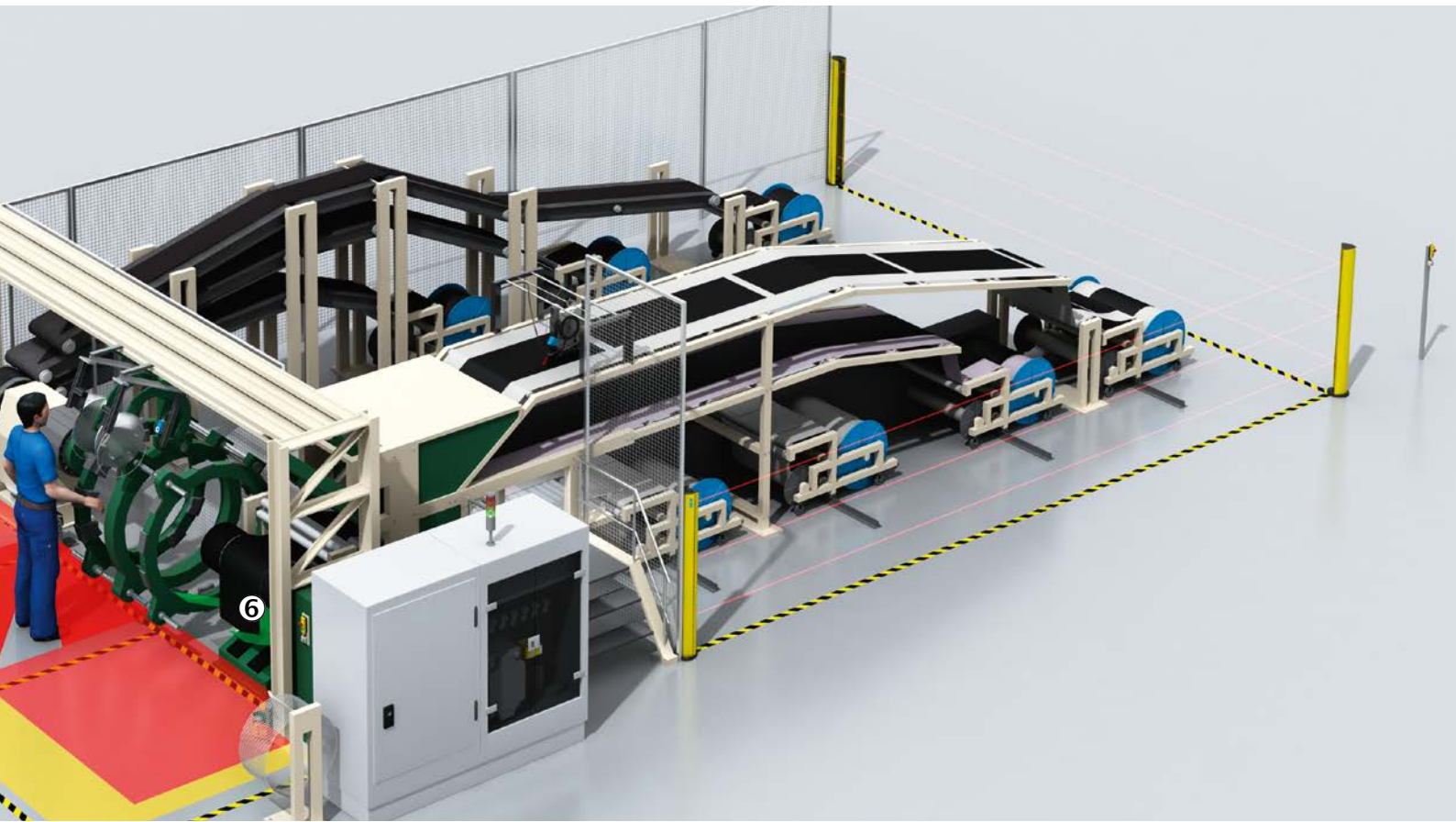
⑧ Identifying materials on the tire building machine

The precut treads are brought to the tire building machine by a material trolley. The material trolley is equipped with an RFID transponder to ensure the traceability of the batch of treads. The RFU620 RFID read/write device on the tire building machine identifies the transponder. The advantages of the rugged transponders lie in their long service life. The large read range of the read/write device means the trolley does not need to be positioned exactly. The RFU620 displays the identification status directly on the device by means of easily visible LEDs on the corners.

RFU62x ➜ p. 57

① **Hazardous area protection for material transfer applications**

Sprayed green tires are placed on a material trolley. A protection system consisting of a deTec4 safety light curtain at the front of the hazardous area and a M4000 multiple light beam safety device at the rear prevents the hazardous area being accessed by a person and the robot at the same time. Once the material trolley has been replaced by a worker, they must acknowledge they have left the area in the system. The robot will then continue to automatically stack the raw tires onto the empty material trolley.

deTec4 Core ➜ **p. 44**
M4000 Standard ➜ **p. 46**
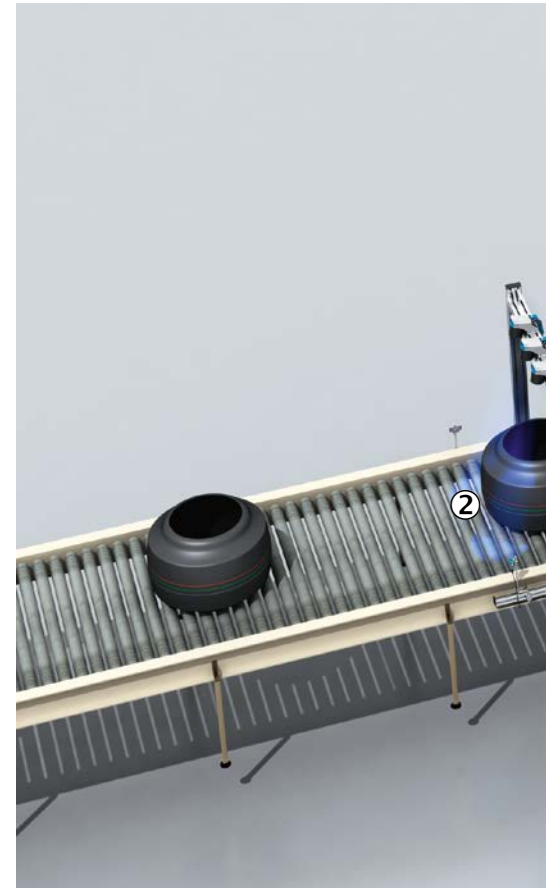
② **Raw tire identification – Tire Lector Array**

To identify raw and finished tires reliably, regardless of their size, position, and alignment of bar codes, as well as on different conveyors, SICK has developed the Tire Lector Array tire code reading system. The modular system consists of a Lector65x high-resolution image-based code reader. Several code readers are flexibly combined to form a system and perfectly adapted to the width of the conveyor. Dynamic focus and dynamic brightness adjustment for sharp and uniform images at different object heights (especially for HGV tires) minimize the number of cameras required. Sophisticated design and individual pre-assembly facilitate easy installation and maintenance.
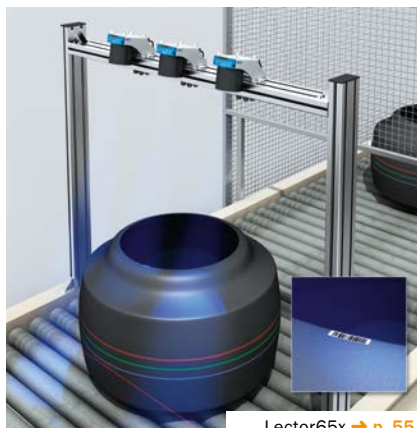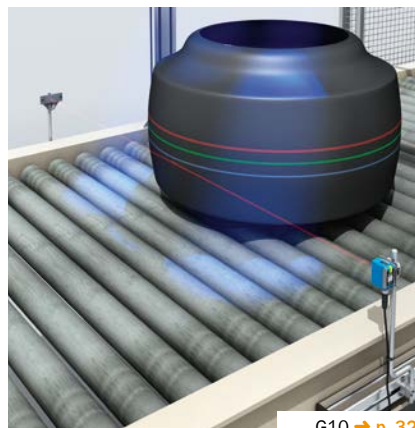
③ **Access protection at a robot cell**

The i10 Lock electro-mechanical safety switch uses the locking device to lock the machine door and ensures that all process steps are completed before the door can be opened. The machine will not start if a door is open. The door must be closed for the machine to restart.

Lector65x ➜ **p. 55**

G10 ➜ **p. 32**

i10 Lock ➜ **p. 47**
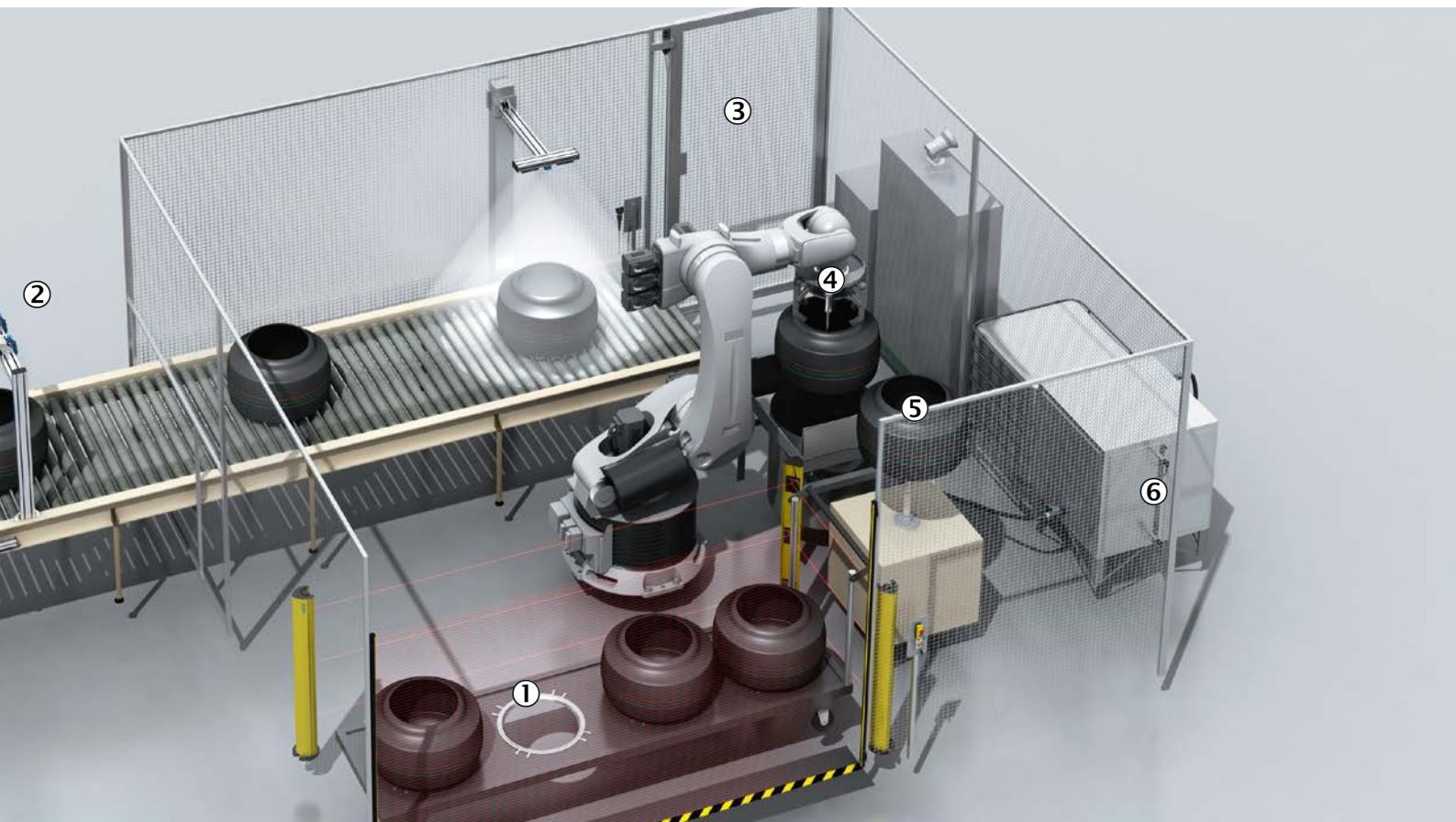
④ Positioning of the pneumatic cylinder in the gripper

To pick up the raw tire, you need to be able to control how far the gripper of the robot opens. The MPS analog positioning sensor precisely measures how far the gripper is open on the pneumatic cylinder. This prevents the tire from being damaged during handling. With the MPS, a pneumatic drive can now achieve a level of accuracy that up to now only linear motors could offer.
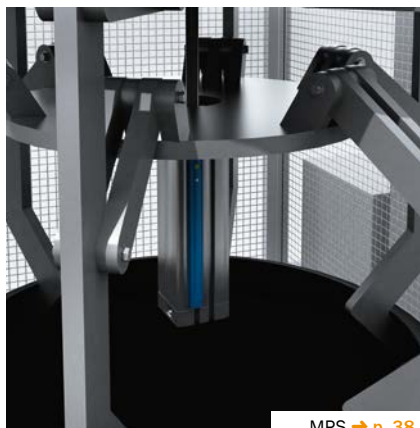
⑤ Monitoring the release agent

The insides of the tires are sprayed with a release agent prior to processing in the curing press. The release agent prevents the tire from sticking to the mold. The Inspector 2D vision sensor checks that the agent is applied properly by counting the pixels while the tire rotates. The release agent has a different color than the tire rubber.
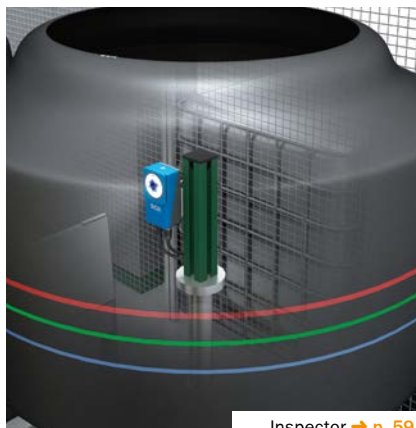
⑥ Level measurement in the release agent tank

The maximum and minimum level in the storage tank must be measured to ensure that release agent is always available. The LFV200 vibrating level switch detects the pre-defined fill levels in the storage tank with millimeter precision. Whether indicating that the tank has reached its maximum fill level to prevent it from overflowing or that it is empty to prevent the pumps from running dry, the LFV200 works with all liquids and is wear- and maintenance-free.

MPS ➜ p. 38

Inspector ➜ p. 59

LFV200 ➜ p. 68

① **Access protection with safety light curtains**

The deTec4 Core safety light curtain secures access to the tire vulcanizing machine. The deTec4 Core stops both the handling unit and the upper part of the mold from moving when a person enters. Personnel must acknowledge that they have left the area to enable the machine to be restarted.

deTec4 Core ➜ p. 44

② **Hazardous area protection with safety laser scanners**

The S3000 safety laser scanner protects the hazardous area in front of a tire vulcanizing machine. Four simultaneous protective fields are available in conjunction with the Flexi Soft safety controller. This allows one safety laser scanner to monitor four hazardous areas at the same time. Thanks to the two upstream protective fields in front of a machine, the movement of the automatic handling units are stopped by the outer field and the movement of the upper part of the mold is stopped by the inner protective field. Productivity increases as a result because processes are able to run independently of one another.

③ **Safe position monitoring of the upper part of the mold**

Inductive, non-contact IN4000 safety switches ensure safe, wear-free position monitoring of the upper part of the mold. Thanks to the non-contact, direct detection of metal, low-maintenance installation is possible in the harsh environmental conditions of tire production.
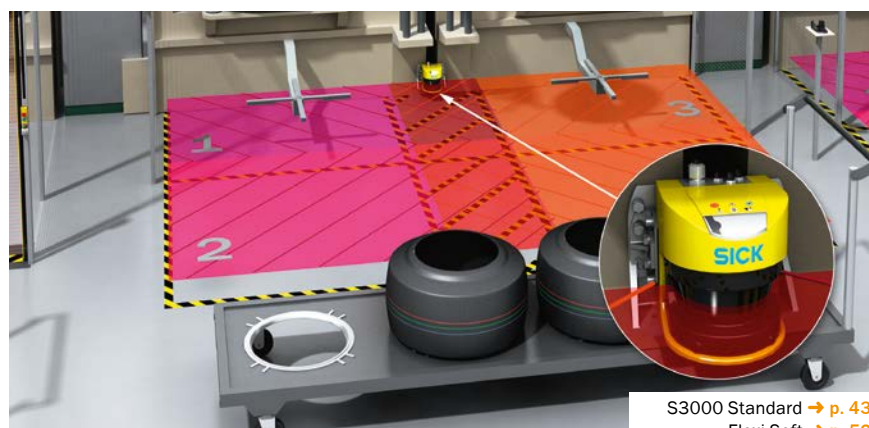
S3000 Standard ➜ p. 43
Flexi Soft ➜ p. 52

IN4000 Direct ➜ p. 49
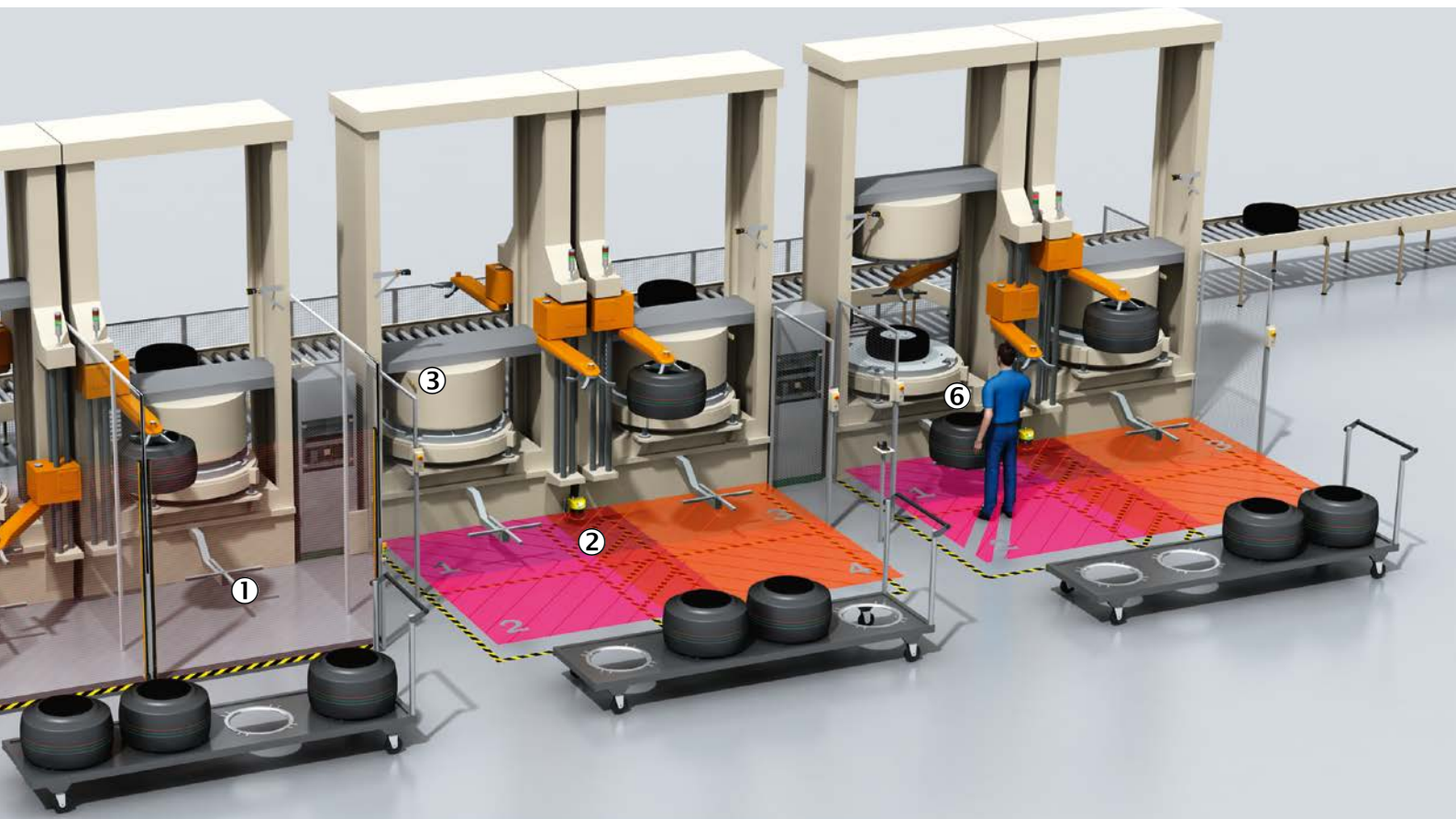
④ Protecting the rear area using safety light curtains

When it comes to tire removal, access to the area/roller conveyor must be facilitated or protected as necessary, for example to allow tires to be taken for inspection purposes or to perform maintenance on the machine. As an electro-sensitive protective device, a safety light curtain attached behind and to the side of the tire vulcanizing machine ensures that work can be carried out ergonomically and efficiently in this area of the machine.

deTec4 Core ➜ p. 44

⑤ Measuring pressure, level, and temperature in the machine hydraulics

The PBS pressure switch measures the system pressure of the hydraulic pump and compares the actual value with the set value. The LFP Cubic TDR level sensor monitors the level of hydraulic oil in the unit and prevents the pump from being damaged due to a low oil level. The TBT temperature sensor checks the oil temperature to prevent overheating.
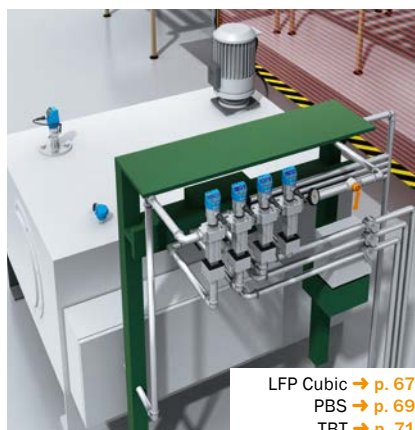
LFP Cubic ➜ p. 67
PBS ➜ p. 69
TBT ➜ p. 71

⑥ Mobile identification of bar codes on tires

The bar code attached to a tire can be read with the rugged IDM16x hand-held scanner. The data is wirelessly transferred to the base station. The operator can view all the information they need about the tire on the integrated display. This verifies that the correct type of tire has been vulcanized using the correct configuration. The production data is also available, ensuring complete traceability.

IDM16x ➜ p. 58

① Tire identification

To identify raw and finished tires reliably, regardless of their size, position, and alignment of bar codes, as well as on different conveyors, SICK has developed the Tire Lector Array tire code reading system. The modular system consists of a Lector65x high-resolution image-based code reader. Several code readers are flexibly combined to form a system, perfectly adapted to the width of the conveyor, and can be used to read from above or from below. Dynamic focus and dynamic brightness adjustment for sharp and uniform images at different object heights (especially for HGV tires) minimize the number of cameras required. Sophisticated design and individual pre-assembly facilitate easy installation and maintenance.

Lector65x ➔ p. 55
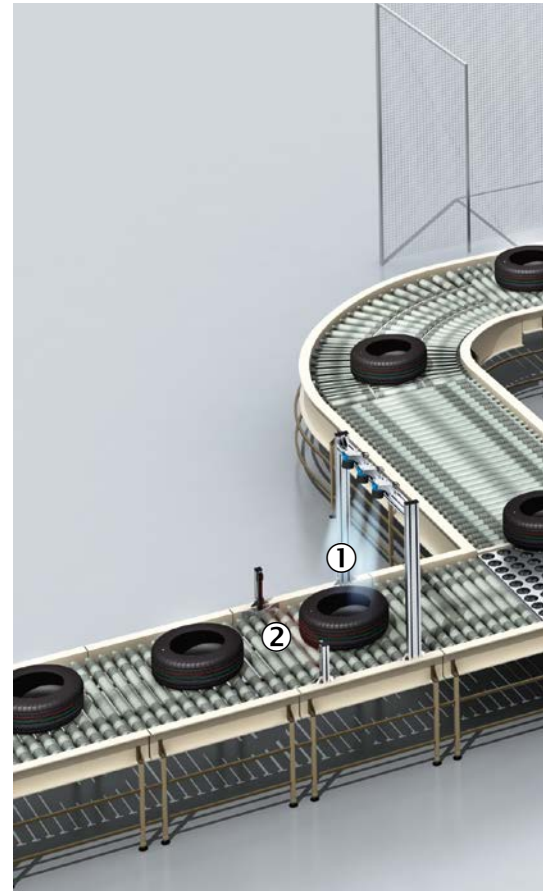
② Focus control for the tire code reading system

The MLG-2 measuring automation light grid measures a huge range of different tire heights, such as in the manufacture of HGV tires, and adjusts the focus position for the Lector652 Dynamic Focus image-based code reader. Thanks to how easy the light grid is to integrate into the tire code reading system, the reading process can be initiated and the focus position of the image-based code reader adjusted at one time. As a result, the tire code reading system is able to achieve a large depth of field and the number of code readers required can be kept to a minimum.

③ Spotting

Tires are identified and aligned at the same time in the spotting station. The Lector642 image-based code reader provides high flexibility at the object height and rotation speed thanks to the large field of view and depth of field. Programming the accepted reading field width and the high decoding speed enables the fast and precise alignment of the tire.

Lector652 Dynamic Focus ➔ p. 73

Lector64x ➔ p. 55
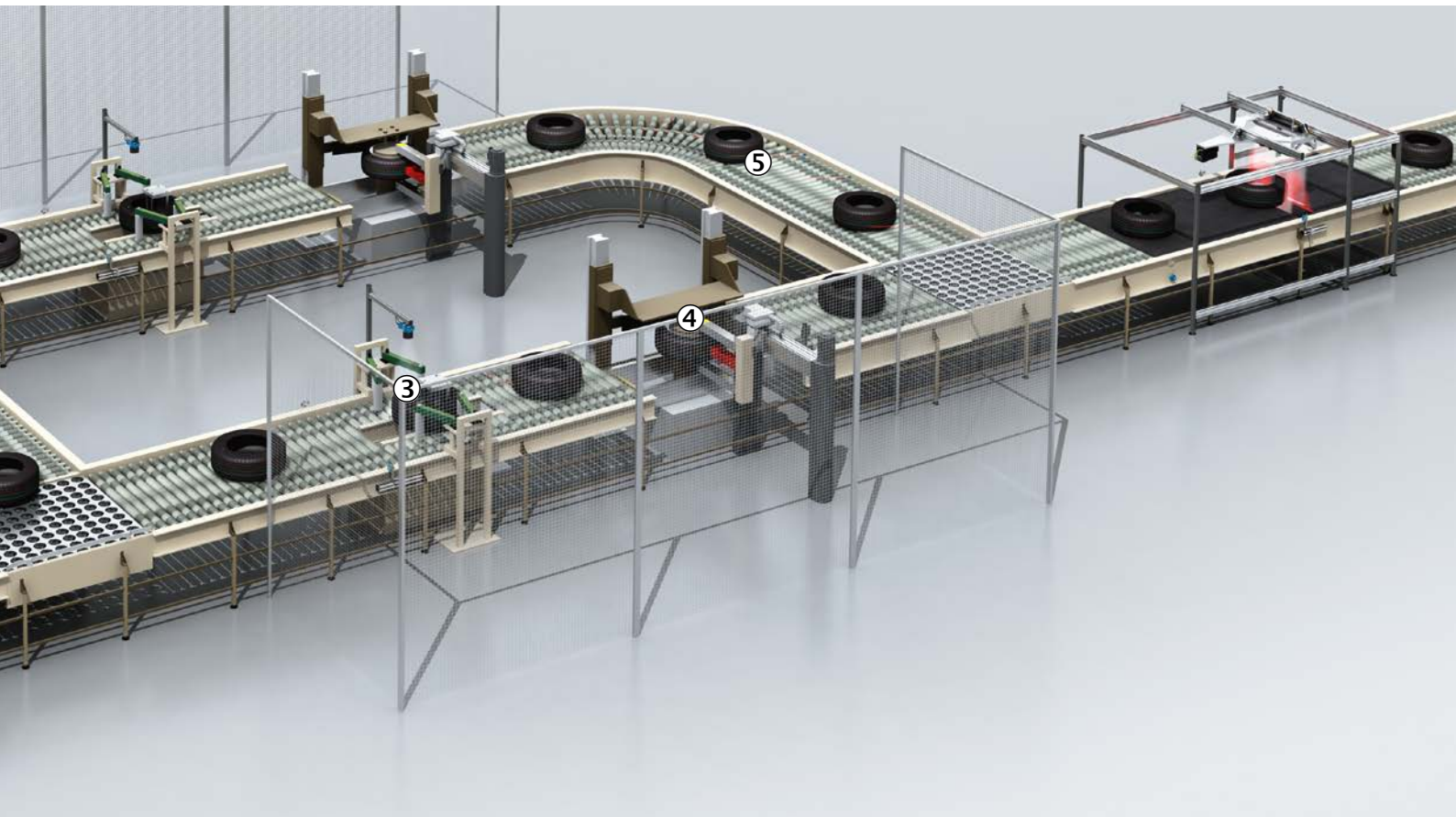
④ Inspecting the tire geometry

Stringent quality requirements apply to tire production. A final examination of the tire geometry is carried out in the tire testing machine, which checks the tire for radial runouts, blisters and blemishes, and other inconsistencies while the tire rotates. Depending on requirements, short-range distance sensors (displacement) or 3D vision sensors are used.

⑤ Automatic tire separating in the conveying line

Just as traffic lights regulate the flow of traffic, ZoneControl MultiTask photoelectric sensors control the flow of tires on a belt – without the need for a programmable logic controller (PLC) or another type of external control. This process is known as zero pressure accumulation (ZPA). The ZoneControl solutions are extremely easy to install: integrate the MultiTask photoelectric sensors into the conveyor system, operate them in series, and connect the pneumatic line or the connection to the motor-driven rollers. There is therefore no need for programmable logic controller programming and expensive cabling. Versions with various mounting configurations for different mounting requirements are available.
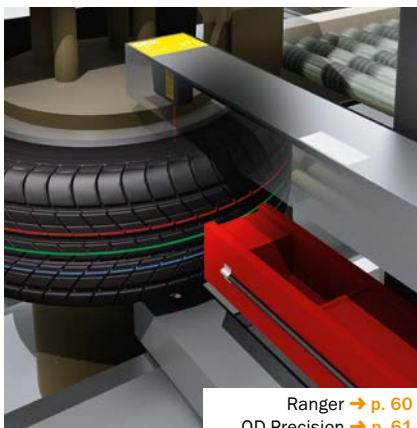
Ranger ➜ p. 60
OD Precision ➜ p. 61

ZoneControl ➜ p. 36

⑥ Synchronizing the camera system

Image evaluation requires an undistorted image. The DFS60 incremental encoder sends the information relating to the speed of the belt and therefore also the tire (which is required for synchronization) to the ColorRanger E 3D vision sensor.

ColorRanger E ➜ **p. 60**
DFS60 ➜ **p. 66**

⑦ Marker inspection with IRIS-M

Markers, such as color and adhesive markers, are used in the manufacture of tires. They serve as an orientation guide while mounting the tire on the rim and must therefore be clearly visible. The IRIS-M quality control system reliably detects and validates the markers. IRIS-M has been specially developed for this demanding task. IRIS-M processes both 3D and color information. This means that, first, the IRIS-M can reliably differentiate between markers by color and, second, the 3D technology makes the application resistant to faults. The complete solution can be seamlessly integrated into the production process as a superstructure or substructure system and enables complete monitoring as well as high throughput simultaneously.
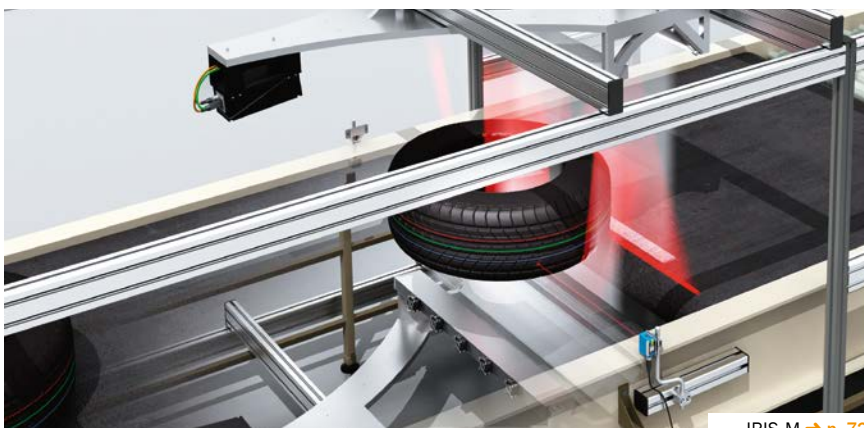
IRIS-M ➜ **p. 72**
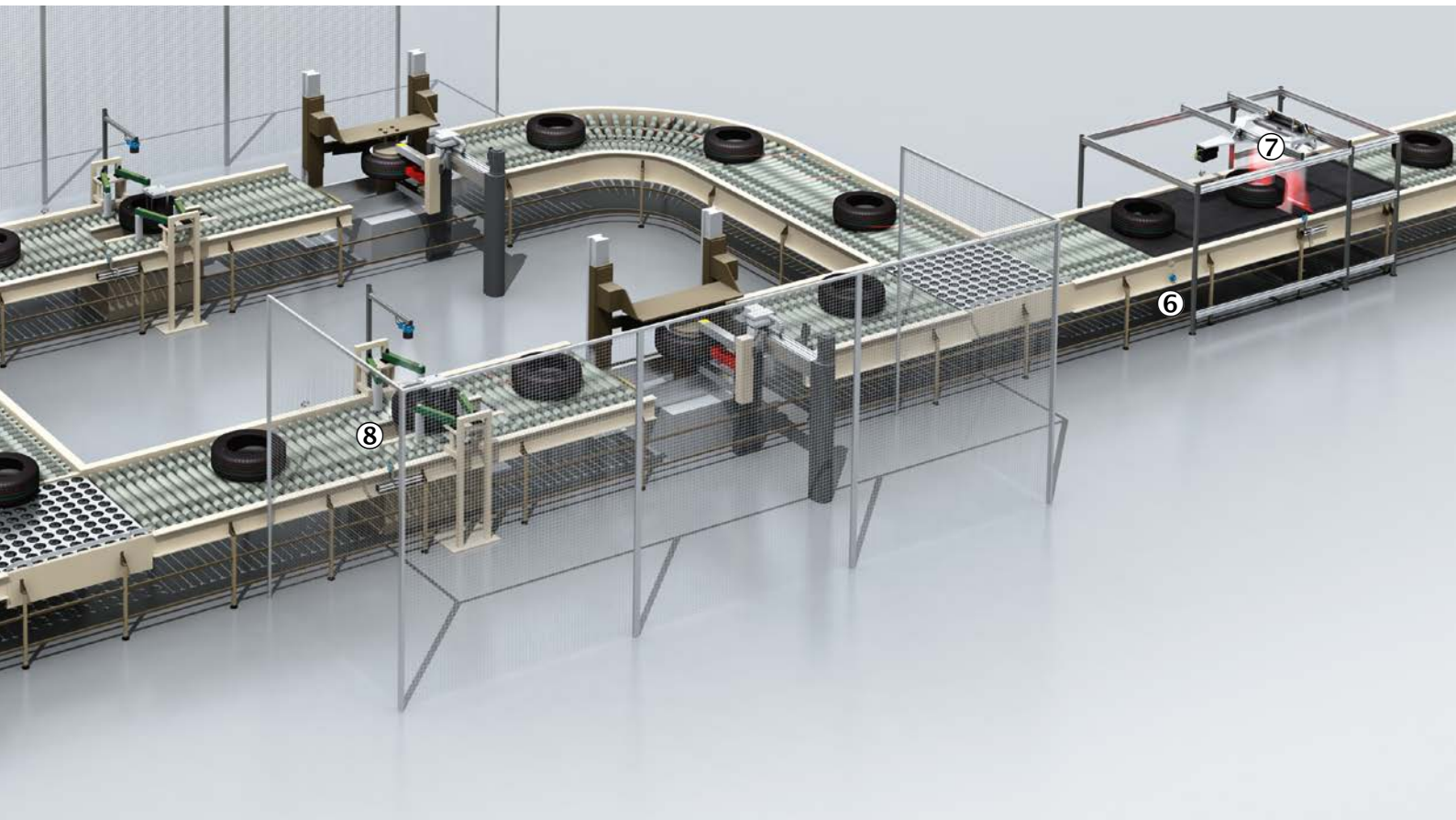
⑧ Tire detection on the belt

GL10 small photoelectric sensors detect tires on the roller conveyor before they reach spotting station. The switching signal serves to control the roller conveyor as it enters the station. A PinPoint LED with a bright, precise light spot and the Q-Lock mounting system ensure installation is quick and efficient.

G10

Focus 8: Tire picking station

① **Tire identification on overhead conveyors with hook loader**

An overhead conveyor transports the tire from the high bay for order picking. Before it is picked, the tire must be identified by the bar code. The Tire Lector Array tire code reading system can also reliably identify the tire on the hook from the side even if it has been conveyed imprecisely. The modular system comprises a Lector65x image-based code reader. This allows for the omnidirectional reading of 1D codes and 2D codes, perfectly adapted to the width of the conveyor.

Lector65x ➜ p. 55
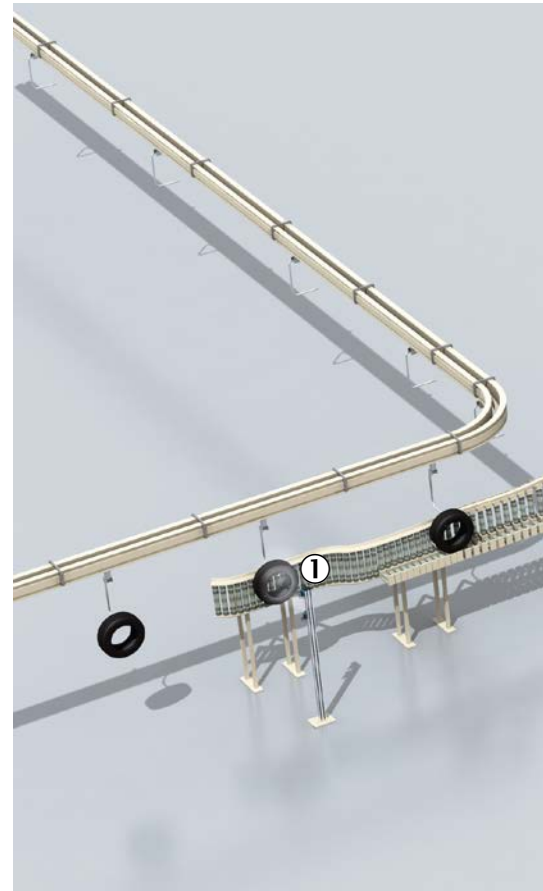
② **Eco-label identification**

In accordance with an EU regulation, new tires must have an eco-label. In addition to the readable text, the label also has a 1D and 2D code. With an arrangement of four Lector65x image-based code readers, both codes on the label can be read regardless of the orientation and position of the tire on the belt. The Lector65x reliably identifies codes thanks to its large depth of field.

③ **Sensor-based robot guidance**

The Inspector PIM60 2D vision sensor provides the robot with the precise grip position for the tire. The Inspector PIM60 precisely detects the size and inner diameter of the tire with a high level of repeat accuracy. As a result, the robot is able to approach the defined position with the utmost accuracy. The Inspector PIM60 can send the information for positioning to the robot control using either switching outputs or via Ethernet protocol.

④ **Efficient robot drives with HIPERFACE DSL® in motor feedback systems**

The innovative and interference-free HIPERFACE DSL® protocol achieves communication using just two wires that are integrated into the motor cable. It therefore offers significant cost savings, as it only requires one highly flexible cable per drive to control the robot. In addition, the EKS36 motor feedback system saves a service life histogram, allowing for continuous application analysis for each individual drive.

Lector65x ➜ p. 55

Inspector PIM-series ➜ p. 59

EKS/EKM36 ➜ p. 64
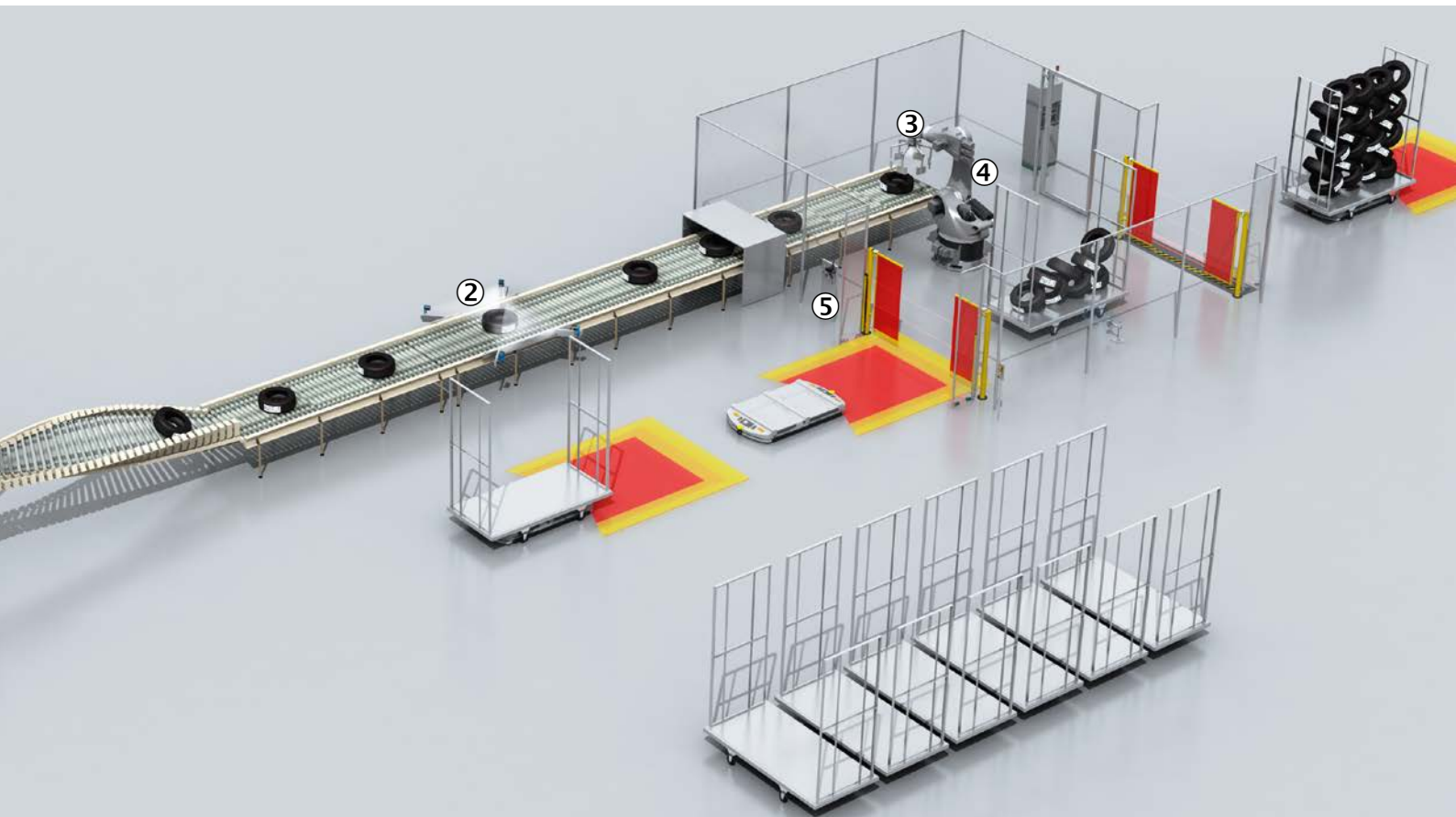
⑤ **Compressed-air monitoring for the robot gripper**

The robot gripper requires a continuous and steady supply of compressed air. The PAC50 pressure sensor monitors the pneumatics to ensure they have the correct working pressure. The large bi-color display shows whether the pressure is within the required range from a great distance. With the integrated IO-Link interface, all parameter and diagnostic data is available in a connected control unit which makes it easier to switch devices. 7811719083 PAGE 1/ NUMPAGES 90 Document created with eZ Publish and eZ ODF
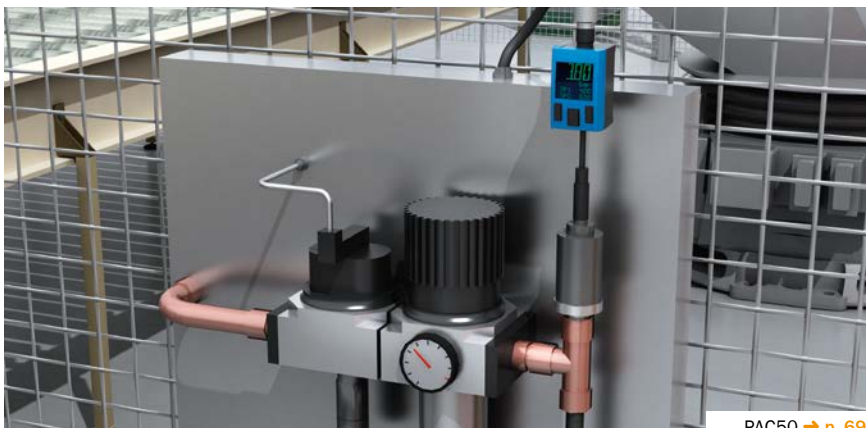
⑥ Presence check for racks

The IME12 inductive proximity sensor checks that the rack is present and monitors correct pickup by the automated guided vehicle (AGV). The precise switching point ensures that the rack is located at the correct position and does not slip during transport in the AGV.

IME ➔ p. 37
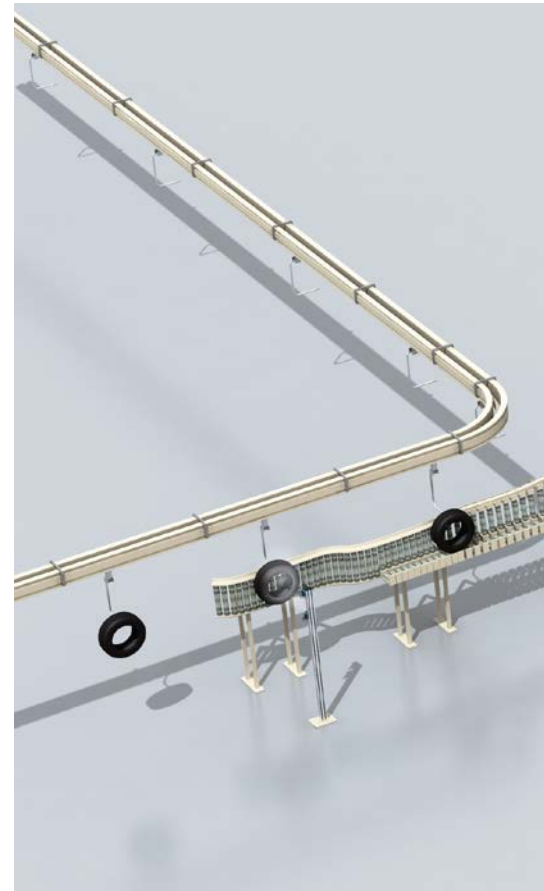
⑦ Mobile hazardous area protection

Safety laser scanners protect automated guided vehicles (AGV) against collisions with persons, other vehicles, and the materials on the floor in both directions of travel. Due to its compact dimensions, the S300 Mini can be easily integrated into small vehicles. Combined with the Flexi Soft safety controller, the full range of functions of a safety laser scanner are provided in the smallest of spaces. Protective and warning fields are configured for different speeds for both forward and reverse travel, and are activated by the Flexi Soft safety controller as appropriate. This means full productivity with maximum safety.

S300 Mini Standard ➔ p. 42
Flexi Soft ➔ p. 52
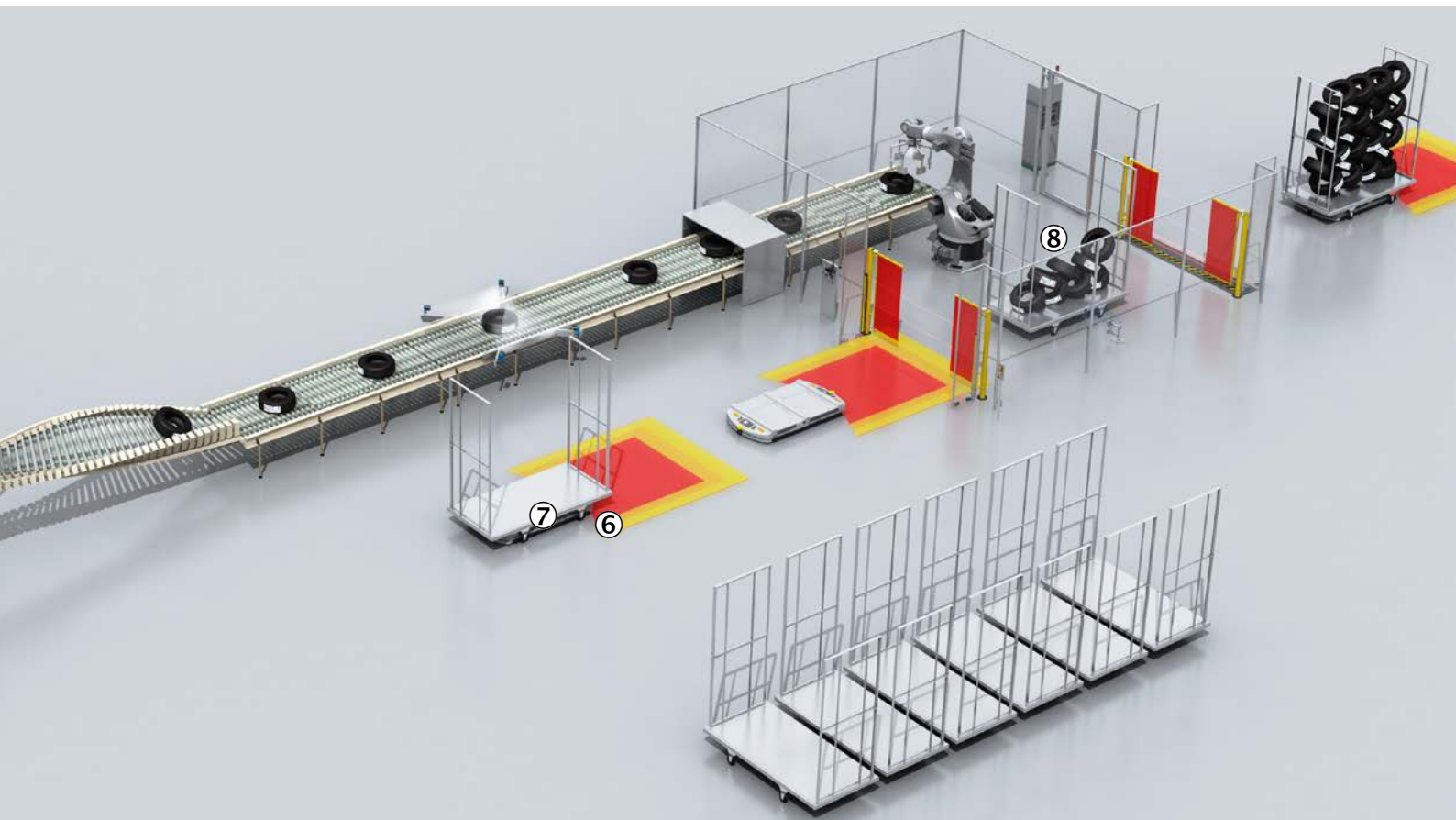
⑧ Identifying material racks for finished tires

The tires are stacked in shipping racks for transport. The racks have RFID transponders so that the racks can be reliably identified the entire time they are in transit. The RFU620 RFID read/write device in the robot cell identifies the transponders. The large read range of the RFU620 means the rack does not need to be positioned exactly. Numerous typical industrial communication interfaces make it easy to integrate the devices directly into the production control system.

Product overview

G6 – At a glance

- PinPoint LED for a bright, precise light spot
- Durable metal threaded inserts
- SICK ASIC technology - the result of decades of experience in photoelectric sensors
- Large, user-friendly potentiometer
- Large, bright indicator LEDs
- IP 67 enclosure rating

Your benefits

- Easy alignment and precise object detection due to a highly visible PinPoint LED
- Quick and easy mounting and high durability due to threaded metal inserts
- SICK ASIC technology provides high performance and excellent reliability
- Easy to adjust due to large, user-friendly potentiometers
- Easy to monitor due to large, bright indicator LEDs
- Easy installation with SICK accessories

→ www.sick.com/G6

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

G10 – At a glance

- Long sensing ranges: 1,200 mm with background suppression; 15 m on PL80A reflector
- PinPoint LED with bright and precise light spot
- Small housing design
- 10 ... 30 VDC or 24 ... 240 VAC/VDC power supply with PNP/NPN or relay output
- Rugged sensor housing with metal-reinforced holes for assembly
- Q-Lock assembly system for mounting the sensor within a few seconds

Your benefits

- Long sensing ranges for maximum operating reserves
- Efficient installation: The G10 and the Q-Lock assembly system save valuable hours when mounting and commissioning multiple sensors
- A single sensor family for all industrial and commercial fields of application
- Universal DC or AC/DC power supply for even greater application flexibility
- Highly reliable and durable despite optical interference or mechanical loads
- Wide range of accessories simplifies sensor integration: aids for assembly, connecting cables, and reflectors

→ www.sick.com/G10

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

W12-3 – At a glance

- Best-in-class optical performance due to superior OES technology
- Autocollimation with retro-reflective sensors
- Background and foreground suppression with second emitter LED on proximity sensors
- Highly visible, precise light spot and high-energy IR transmitters
- Rugged die-cast zinc housing, optional with Teflon® coating
- Mounting options with through holes, base blind holes, oblong through holes and dovetail
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

Your benefits

- Reliable detection due to superior ASIC (application-specific integrated circuit) technology and immunity to optical interference factors from the industrial environment
- PinPoint LED technology provides a bright, small and precise light spot that enables quick and easy sensor alignment
- Precise switching characteristics ensure reliable object detection, reducing downtime caused by re-adjusting sensors during recipe changes
- Wide range of products enclosed in a rugged metal housing enables application flexibility in a broad range of industrial environments
- Flexible mounting options reduce installation time
- IO-Link provides easy data access from the PLC
- Quick and easy configuration
- Quick and easy integration using function blocks

→ www.sick.com/W12-3

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

W280L-2 Long Range – At a glance

- WTT280L-2: sensing distance up to 4 m
- WLT280L-2: sensing distance up to 18 m
- Complete background suppression: very small black/white shift, insensitive against reflections from the background (e.g. shiny metal, window, safety vest)
- Visible red class 1 laser light
- Version 1: with 1 x switching output and light/dark switch, version 2: with 2 x switching outputs and light/dark switch
- Disable laser by wire
- Reliable detection also in very fast production processes thanks to the switching frequency of 1000 Hz

Your benefits

- Reliable target detection with difficult target colors, angles and color transitions (black/white shift)
- One sensor with two outputs and two status LEDs improves application flexibility and reduces the number of sensors needed
- Quick and easy comissioning with sensing distance adjustment potentiometers and status LED – one for each output
- Quick and easy alignment with a red class 1 laser light
- Rotatable connector and light/dark switch for mounting and installation flexibility

→ www.sick.com/W280L-2_Long_Range

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

W27-3 – At a glance

- Intense visible red emitter LED with consistent light spot for PinPoint versions
- Long sensing ranges with IR LED achieve up to 2500 mm
- Precise background suppression for detection of multi-colored objects
- Universal DC or DC/AC supply voltage
- Operating temperature: –40 °C – +60 °C
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization

Your benefits

- Quick and easy commissioning due to a highly visible red PinPoint LED
- PinPoint technology can replace laser photoelectric proximity sensors in some applications. No laser safety regulations and a longer operating life due to PinPoint technology
- Resistant to ambient light, optical reflections, and crosstalk from other photoelectric devices
- Less contamination due to high operating reserves, reducing downtime
- Resistant to vibrations, reducing downtime
- Operation in harsh environments with temperatures as low as –40 °C
- IO-Link provides easy data access from the PLC
- Quick and easy configuration

→ www.sick.com/W27-3

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

GR18S – At a glance

- Low-cost cylindrical M18 sensor with extra short housing
- Five different housing styles
- Variety of plastic and metal housing styles, with straight or right angle optics
- Bright and highly visible PinPoint-LED
- Potentiometer for adjustment of switching threshold (depending on type)
- Special flush type, one-piece metal housing
- Highly visible signal indicator LED
- IP 67 rating

Your benefits

- Space-saving solution due to short housing
- Flexible mounting options due to versatile housing styles
- Easy installation and precise detection due to PinPoint LED
- Reduced maintenance costs due to high tightening torque of single piece flush metal housing
- Rugged and reliable with proven SICK technology
- Highly visible signal indicator LED saves maintenance and commissioning time

→ www.sick.com/GR18S

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

MultiPac – At a glance

- Two redundant receiver arrays from SICK
- The newest SICK chip technology
- Intense, visible red HighPower LED
- Sensing distance up to 500 mm
- Fast and precise commissioning thanks to the highly visible light spot

Your benefits

- Redundant receiver arrays provide reliable detection of shiny, gloss, dark, or irregular shaped objects without signal interruptions
- Products can be detected using a higher angle of incidence. This removes the typical mounting restrictions associated with detecting these products.
- In applications involving plastic wrapped bottles, the MultiPac replaces current solutions which require expensive mechanical height adjustment
- Allows overhead detection of product that is transported on a single conveyor belt but seperated into multiple lanes

→ **www.sick.com/MultiPac**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Reflex Array – At a glance

- Detects objects > 12 mm within a 50 mm light array, regardless of position
- Sensing range for detection from 0 m to max. 4.5 m
- Minimum distance of 0.5 m between sensor and reflector for all variants
- PinPoint technology for intense red light
- Automatic adjustment of the switching threshold when there is contamination

Your benefits

- Reduces the installation work required by up to 50% compared to light grids or multiple photoelectric sensors
- Detects objects > 12 mm within a 50 mm light array, regardless of position Three other variants are available for other objects.
- PinPoint technology and optical alignment procedure enables simple and quick commissioning
- Continuous Threshold Adjustment (CTA) ensures less downtime

→ **www.sick.com/Reflex_Array**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

PowerProx MULTITASK PHOTOELECTRIC SENSORS
ZoneControl MULTITASK PHOTOELECTRIC SENSORS

PowerProx – At a glance

- Time-of-flight technology
- Laser class 1
- Sensing range for object detection: 5 cm to 3.8 m
- Switching frequencies up to 1,000 Hz
- Smallest minimum distance between the object and background: 15 mm
- VISTAL™ housing
- 1 or 2 switching points which can be adjusted independently
- IO-Link available as an option (distance value, 8 switching points, smart sensor functions)

Your benefits

- Reliable object detection over large sensing ranges, e.g., even with shiny or jet-black surfaces and background reflections
- Highly visible light spot simplifies alignment of the photoelectric proximity sensor
- Precise and simple adjustment with potentiometer or teach-in button
- Eye-safe thanks to laser class 1
- Extremely reliable and durable. Rugged even under high mechanical loads thanks to VISTAL™ housing.
- Smallest housing of its kind worldwide offers great flexibility in terms of machine design
- IO-Link extends functionality

➜ www.sick.com/PowerProx

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

ZoneControl – At a glance

- Three mounting types: mounting between the rollers (R/IR), mounting on the side frame (ZLM), or mounting above the belt (WLR)
- Three types of logic: single feed, single feed with sleep function, block (slug) feed
- Up to 50 ZoneControl solutions can be connected in series.
- Fully animated simulation to ease selection and implementation
- Standard cut lengths of 1 m (3 ft) or 2 m (6 ft)

Your benefits

- Largest Zero Pressure Accumulation portfolio on the market gives users a wide variety of choices for their application
- SICK ZoneControl solutions control the flow of packages a on conveyor without a PLC or other external control
- Quick setup since no programming, no laptop, and no PLC interfacing are required
- With 20 years of ZoneControl experience and personal support from SICK experts, all application and product issues are quickly addressed
- Quick expansion or modification of the conveyor due to the modular design

➜ www.sick.com/ZoneControl

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

IME – At a glance

- Types: M08 to M30
- Extended sensing ranges: 1.5 mm to 38 mm
- Electrical configuration: DC 3-/4-wire, DC 2-wire
- Enclosure rating: IP 67
- Temperature range: –25 °C to +75 °C
- Nickel-plated brass housing; plastic sensing face

Your benefits

- High machine availability thanks to rugged design
- Highly cost-efficient thanks to low purchase costs
- Wide selection available thanks to extensive standard portfolio
- High positioning accuracy thanks to precise switching behavior

→ www.sick.com/IME

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

IMB – At a glance

- Types: M08 to M30
- Extended sensing ranges: 2 mm to 20 mm
- Electrical configuration: DC 3-/4-wire, DC 2-wire
- Enclosure rating: IP 68, IP 69K
- Temperature range: –40 °C to +80 °C (+100 °C)
- Rugged stainless-steel housing; plastic sensing face
- Visual adjustment indicator, IO-Link-ready
- Resistant to oils and cooling lubricants; suitable for use outdoors

Your benefits

- Straightforward product selection as fewer sensor variants are required – one sensor suits a whole range of applications
- Stable processes thanks to extended, highly precise sensing ranges enabled through the use of the latest SICK ASIC technology
- Reduced machine downtimes thanks to longer sensor service life, even in harsh working conditions
- Quick and easy installation thanks to visual adjustment indicator and self-locking nuts
- High degree of flexibility and communication options thanks to IO-Link
- Easy to implement customer-specific variants within the standard product portfolio

→ www.sick.com/IMB

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

IQ Standard – At a glance

- Long sensing range up to 60 mm
- DC, AC and AC/DC versions available
- Wide range of housing and mounting options
- Variety of connection options including terminal, cable (flying leads) and connector types
- Customer-specific models and value add options are available

Your benefits

- Increased machine throughput with less machine downtime
- Maintenance cost reduction and reduced mechanical damage due to long sensing range
- Reduced maintenance cost due to longer service life
- Time-saving quick and easy installation

→ www.sick.com/IQ_Standard

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

MPS – At a glance

- Analog positioning sensor for pneumatic and hydraulic cylinders with T-slot
- Measuring lengths from 32 mm through 256 mm in 32 mm increments
- Output signals 4 mA to 20 mA as well as 0 V to 10 V in a single sensor
- Superior accuracy: typ. resolution 0.05 mm, typ. repeatability 0.1 mm, typ. linearity 0.3 mm, typ. sampling rate 1 ms
- Electric setting of zero point and end point via teach pushbutton (optional)

Your benefits

- Straightforward and time-saving installation as well as sensor replacement by means of drop-in sensor mounting
- High flexibility through measuring ranges from 32 mm through 256 mm
- Increased machine performance thanks to the sensor's minimal blind zone
- Measuring range can be customized using the teach function
- Freely selectable installation direction, enabling optimized cabling
- Easy commissioning thanks to "In-range" display
- Flexible sensor settings, monitoring, advanced diagnostics, and display thanks to IO-Link saves time and money

→ www.sick.com/MPS

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.
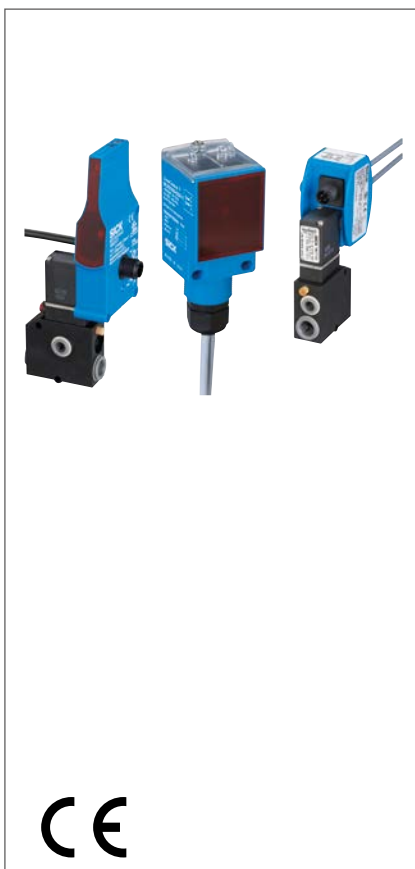
MZT8 – At a glance

- High-temperature variants: temperature-resistant up to 100 °C
- Combination screw for quick mounting
- Enclosure ratings: IP 67, IP 68, IP 69K
- Very short sensor housing for use in short stroke cylinders
- PNP or NPN switching output, PUR or PVC cable, M8 or M12 connection can be selected
- Can be used in all cylinders, linear slides, and grippers with T-slots and with many round body, tie-rod, and dove-tail groove cylinders using an adapter

Your benefits

- Can be used in temperatures up to 100 °C
- Very rugged housing with enclosure rating IP 67, IP 68, or IP 69K extends the service life of the sensor
- Increases machine performance thanks to precise, single switching
- Quick and easy mounting using Allen wrench or flat head screwdriver
- Saves time during initial installation and when replacing the device, as the sensor is very easy to insert in the slot from above. No need to dismantle the cylinder end caps
- Low maintenance costs, as the sensor is resistant to shocks and vibrations and therefore does not move out of its position in the slot

→ **www.sick.com/MZT8**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

MLG-2 Prime – At a glance

- High-resolution light grid: Available with beam separation of 5 mm, 10 mm, 25 mm, and 50 mm
- Available with three push-pull switching outputs or two analog outputs
- Display configuration with selected, pre-programmed measuring functions
- Monitoring height up to 3.2 m
- Operating range up to 8.5 m
- Optical synchronization of sender and receiver
- Cloning function via IO-Link
- Temperature range from –30 °C to +55 °C

Your benefits

- Easy concept: Time and cost savings due to simple configuration and quick commissioning
- Modular concept offers the perfect solution every time from a single source
- Two optical synchronization beams increase operational safety
- Simple maintenance without the need for specialist staff thanks to the cloning function with IO-Link
- Direct configuration on the device display for quick commissioning
- IO-Link as an interface for configuration, measured data transfer and diagnostics
- Minimal specialist knowledge required by the user thanks to the intuitive arrangement of the most essential functions
- Extremely high operational safety due to rugged aluminum housing

→ **www.sick.com/MLG-2_Prime**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

MLG-2 Pro – At a glance

- High-resolution light grid: With beam separation of 2.5 mm, 5 mm, 10 mm, 25 mm, and 50 mm
- "High-speed scan" function with triple scanning speed
- "Transparent mode" function for detecting transparent materials
- Can be switched to high-resolution evaluation with accuracy levels of up to 2 mm
- Data compression: Run length coding

Your benefits

- "High-speed scan" function offers short response times for safely detecting objects traveling at high speeds
- Modular concept offers the perfect solution every time from a single source
- "High measurement accuracy" function for detecting small objects reliably
- "Transparent mode" function for reliably detecting and measuring transparent objects
- Integrated bus interfaces and accompanying functional modules reduce the time and effort involved in the commissioning process
- SOPAS configuration software with menu-driven wizard saves time during the configuration process
- Simple maintenance without the need for specialist staff thanks to the cloning function with IO-Link
- High reliability due to ambient light immunity

→ www.sick.com/MLG-2_Pro

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

KTM Prime – At a glance

- Small, tried-and-tested housing, also available in stainless steel
- High grayscale resolution
- Very large dynamic range means reliable detection of contrasts on glossy materials
- Static and dynamic teach-in in one variant
- Switching frequency: 15 kHz
- KTM Prime with IO-LInk functions

Your benefits

- Small housing allows installation even where space is limited
- Powerful, fast contrast sensor ensures high machine throughput
- Three-color LED technology allows a reliable process, with contrast marks detected even in conditions with weak contrast ratios
- Good contrast resolution and a very large dynamic range ensure good detection performance on glossy materials, thus increasing the range of application possibilities
- Various teach-in methods enable more flexible commissioning
- Long service life, even in harsh environments, thanks to stainless steel housing; as a result, excellent system throughput and low spare parts costs
- Enhanced diagnostics and visualization of sensor parameters, as well as quick and easy format changes, since parameter settings can be downloaded via IO-Link

→ www.sick.com/KTM_Prime

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

KT10-2 – At a glance

- Very low jitter (< 10 µs)
- Precise light spot
- Best contrast resolution thanks to RGB LED technology
- Two interchangeable light exits
- Five storage banks for settings
- Automatic drift correction
- Fast switching frequency of 25 kHz
- Easy-to-read bar graph display

Your benefits

- Very precise detection of print marks enables optimal results for packaging and printing applications
- All contrast marks, even pale yellow on white paper, can be reliably detected thanks to RGB LED technology
- Automatic drift correction helps detect difficult to see marks, such as faded print marks, enabling higher production reliability
- Reliable operation, even with high-gloss reflective surfaces, increasing throughput
- Simple teach-in via an external signal can be performed while the material is moving, enabling shorter setup time
- Long-lasting, tough metal housing

→ **www.sick.com/KT10-2**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Ax20 – At a glance

- Proximity contrast line sensor in a compact housing
- Application-specific sensor functions
- Detect position of edge of material
- Diameter, width and gap detection of different objects
- Very high reproducibility of 0.03 mm
- Large measurement range: 30 mm
- Visible white LED light spot to enable accurate alignment
- Simple setup, no teach-in necessary

Your benefits

- Cost-effective solution to reliably determine edge position and width measurement
- Easy-to-integrate, compact housing can be mounted over the web so less downtime is required for maintenance
- No reflector is required, reducing maintenance and providing greater product reliability. Reduces downtime. Only array sensors available in diffuse mode, making them ideal for environments where dirt and dust can interfere with other types of solutions that require a reflector.
- High reproducibility of 0.03 mm and industry-leading resolution enable greater accuracy and quality control
- Highly visible white LED light spot ensures fast and accurate alignment, reducing time-consuming fine adjustment
- No teach, program or menu activities make setup virtually hassle free

→ **www.sick.com/Ax20**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

S300 Standard SAFETY LASER SCANNERS
S300 Mini Remote SAFETY LASER SCANNERS

S300 Standard – At a glance

- Compact design
- 2 m or 3 m protective field range
- 270° scan angle
- 1 field set
- Configuration memory integrated in the system plug
- EFI interface for safe SICK device communication
- Selectable resolution for hand, leg or body detection
- Contour as reference for vertical applications

Your benefits

- Simple integration due to compact design
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Unbeatable cost-effectiveness – 270° scan angle allows complete application protection with only two scanners
- Safety engineering – with no loss of productivity
- Quick recommissioning via configuration memory
- Easy modular expansions, simple cabling and additional functions using SICK safety controllers with EFI
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions
- Simple alignment and safe operation in vertical mode

→ www.sick.com/S300_Standard

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

S300 Mini Remote – At a glance

- Can only be used in EFI system network, e.g., with a Flexi Soft safety controller or another safety laser scanner
- Ultra-compact design
- 2 m or 3 m protective field range
- 270° scan angle
- Up to 16 switchable field sets
- Selectable resolution for hand, leg or body detection
- Extended system solutions in combination with Flexi Soft safety controller

Your benefits

- Simple integration due to ultracompact design
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Unbeatable cost-effectiveness – 270° scan angle allows complete application protection with only two scanners
- Variety of field sets guarantees safety and productivity when protecting vehicles or moving machine parts
- Easy modular expansions, simple cabling and additional functions using SICK safety controllers with EFI
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions
- Simple alignment and safe operation in vertical mode

→ www.sick.com/S300_Mini_Remote

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

S3000 Standard – At a glance

- 4 m, 5.5 m or 7 m protective field range
- 1 field set
- Configuration memory integrated in the system plug
- Interface (EFI) for reliable SICK device communication
- Selectable resolution for hand, leg or body detection
- Simultaneous monitoring of up to 4 protective fields
- Contour as reference for vertical applications
- Integrated external device monitoring (EDM)

Your benefits

- Large protective field range of 7 m enables a large variety of applications
- Safety technology – with no loss of productivity
- Quick recommissioning via configuration memory
- Modular expansions, low wiring effort and additional functions such as the simultaneous monitoring of up to four protective fields using a SICK safety controller via EFI
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions
- Simple alignment and reliable operation in vertical mode

➜ www.sick.com/S3000_Standard

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

S3000 Advanced – At a glance

- 4 m, 5.5 m or 7 m protective field range
- 4 switchable field sets
- Configuration memory integrated in the system plug
- Interface (EFI) for reliable SICK device communication
- Selectable resolution for hand, leg or body detection
- Simultaneous monitoring of up to 4 protective fields
- Contour as reference for vertical applications
- Integrated external device monitoring (EDM)

Your benefits

- Large protective field range of 7 m enables a large variety of applications
- Safety technology – with no loss of productivity
- Quick recommissioning via configuration memory
- Modular expansions, low wiring effort and additional functions such as the simultaneous monitoring of up to four protective fields using a SICK safety controller via EFI
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions
- Simple alignment and reliable operation in vertical mode

➜ www.sick.com/S3000_Advanced

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

deTec4 Core – At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Absence of blind zones
- Resolution of 14 mm or 30 mm
- Protective field height of 300 mm to 2.100 mm
- Automatic calibration on the protective field width up to 10 m range

- Ambient operating temperature of –30 °C to +55 °C
- Enclosure rating IP 65 and IP 67
- Flexi Loop-compatible M12 male connector

Your benefits

- Simple assembly with innovative mounting and no blind zones
- Quick commissioning thanks to integrated LED display and automatic measurement of protective field range up to 10 m sensing range
- Simply safe: rugged and reliable thanks to enclosure rating IP67 and an ambient operating temperature down to –30 °C, enabling use in harsh ambient conditions

- Intelligently standardized: M12 connectivity, 5-pin, for cost reductions and a safe series connection with Flexi Loop
- Basic function with minimal configuration effort enables quick replacement when servicing is required

→ www.sick.com/deTec4_Core

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

deTec4 Prime – At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Resolution: 14 mm, 30 mm; protective field height: 300 mm to 2,100 mm
- Ambient operating temperature: –30 °C to +55 °C; enclosure rating: IP 65, IP 67

- Option of cascading up to three deTec4 Prime safety light curtains, beam coding
- Restart interlock, external device monitoring, status output
- Scanning range up to 21 m, integrated laser alignment aid
- Flexi-Loop-ready

Your benefits

- Ideal for use in harsh environments
- Easy installation without blind zones thanks to universal brackets and interchangeable M12 system plugs
- Rapid status feedback due to comprehensive diagnostics: Alignment display, laser alignment aid, LED displays along the protective field
- Saves time as configuration does not require a computer: DIP switch in the system plug, and automated measurement of protective field range

- Beam coding to protect against mutual interference if machines are located side by side
- Less space required in the control cabinet: As a result of cascading up to three deTec4 Prime units, fewer safety capable inputs are needed

→ www.sick.com/deTec4_Prime

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

C4000 Standard – At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- 7-segment display
- PSDI mode with the UE402 switching amplifier
- External device monitoring (EDM) and restart interlock (RES)
- Configuration and diagnostics via PC
- Cascade up to three systems
- ADO (Application Diagnostic Output) signaling output for contamination indicator
- Accessory Clone Plug – for configuration memory

Your benefits

- Time-saving alignment and diagnostics by means of 7-segment display
- Beam coding protects the systems against mutual interference and thus offers a high level of availability
- Increased flexibility and reduced wiring complexity via cascading of up to a maximum of three systems
- Quick and easy commissioning by means of pre-configuration of the systems or clone plug
- Convenient configuration anddiagnostics ensure increased availability

→ www.sick.com/C4000_Standard

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

C4000 Fusion – At a glance

- Type 4 (IEC 61496), SIL 3 (EN 62061), PL e (EN ISO 13849)
- Self-teaching, dynamic blanking for application-specific access protection
- Hand and area protection in dirty environments
- Multiple sampling
- Reduced resolution
- Fixed blanking
- Two virtual photoelectric sensors
- Integrated laser alignment

Your benefits

- Increased system productivity, since the safety light curtain is not shut down as a result of falling chips
- Available: skids are detected, interference objects such as cables are blanked
- Cost-effective due to the savings made on additional muting sensors or other protective measures
- Maximum safety for access protection with automated material transport – the system reliably differentiates between man and material
- Easy integration and quick commissioning save time and costs since secondary sensors are not required
- Safe: also offers protection in areas where there is no object, in contrast to conventional muting solutions
- The integrated laser alignment aid enables time-saving alignment of the sender and receiver

→ www.sick.com/C4000_Fusion

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

M4000 Standard – At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Robust housing with three mounting grooves
- Wide scanning range, up to 70 m
- External device monitoring (EDM), restart interlock and application diagnostic output
- Standardized M12 connectivity
- 7-segment display
- Configuration keys located directly on the device
- Optional integration features: laser alignment aid, LED or AS-i interface

Your benefits

- The wide scanning range allows the device to be customized according to the application
- Robust design with a high level of resistance to environmental changes ensures high machine availability, even under special ambient conditions
- Customized protection field adaption with deflection mirror reduces installation costs
- Customer-friendly interfaces and status display simplify commissioning and maintenance

- Mounting grooves on three housing sides ensure more flexibility during mounting and simplify machine integration
- Fast start-up times due to easy alignment, using the optional laser alignment aid and performing configuration directly on the device
- Reduced downtime through 360° visible LED and diagnostics displays

→ www.sick.com/M4000_Standard

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

i16S – At a glance

- Compact plastic housing
- Rigid and mobile actuators
- Available with M20 X 1.5 cable entry glands or Flexi Loop-compatible M12 plug connector (depending on variant)
- Slow-action switching elements with two contacts
- High retaining force
- IP 67 enclosure rating

Your benefits

- High availability and safety due to the cone shaped alignment aid
- High retaining force offers machine reliability, even when exposed to shock and vibration
- Flexible electrical connectivity due to three cable entry glands

- Flexi Loop now enables a safe series connection with enhanced diagnostics capabilities and minimal wiring effort.

→ www.sick.com/i16S

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

i10 Lock – At a glance

- Narrow plastic housing
- Rigid or mobile actuators
- Available with M20 X 1.5 cable entry glands or Flexi Loop-compatible M12 plug connector (depending on variant)
- Locked by spring force and magnetic force
- Lock and door monitoring
- IP 67 enclosure rating

Your benefits

- Small design simplifies installation and makes it easy to mount directly on the guard door frame
- Flexible electrical connectivity due to three cable entry glands
- Improved diagnostics due to additional signaling contacts
- Practical, simple adjustment due to various actuators that are suitable for any door
- Different switching elements offer the appropriate solution for electrical installation
- Flexi Loop now enables a safe series connection with enhanced diagnostics capabilities and minimal wiring effort.

→ www.sick.com/i10_Lock

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

i110R – At a glance

- Standardized metal housing
- Metal turning lever with plastic roller
- 1 M20 x 1.5 cable entry gland
- Slow-action or snap-action switching element with up to four contacts

Your benefits

- Standard device design provides quick and easy mounting
- High availability due to rugged metal housing
- Different switching elements offer the appropriate solution for electrical installation
- Improved diagnostics due to additional signaling contacts

→ www.sick.com/i110R

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

RE1 – At a glance

- Response range up to 7 mm
- 2 or 3 contacts
- Up to performance level PL e (EN ISO 13849)
- Sensors with plug connector or connected cable
- Flexi Loop-compatible M12 plug connector (depending on variant)

Your benefits

- Long service life due to durable and low-maintenance design
- Space-saving mounting due to compact housing design
- Just one safety switch in conjunction with a suitable safety module makes it possible to solve applications up to PL e and Cat. 4 (EN ISO 13849)
- High level of machine availability due to high tolerances for door misalignment
- The devices are easy to clean, making them suitable for contaminated areas or environments with strict hygiene standards
- Flexi Loop now enables a safe series connection with enhanced diagnostics capabilities and minimal wiring effort.

→ www.sick.com/RE1

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

TR4 Direct – At a glance

- Response range of up to 25 mm
- Unique and universally-coded sensors up to enclosure rating IP 69K
- Up to performance level PL e (EN ISO 13849)
- Two OSSD safety outputs
- Reliable series connection of up to 30 sensors possible (depending on the variant)
- LED status indicator
- Periphery indicator and magnetic holding force (optional)
- Flexi-Loop-compatible M12 plug connector (depending on the variant)

Your benefits

- High level of manipulation protection due to individually coded actuator (depending on the type)
- High level of machine availability due to large door offset tolerances and periphery indicator
- High level of reliability due to resistance to shock and vibration
- Economical solution due to series connection of up to 30 sensors
- Long product service life due to low-wastage and low-maintenance configuration
- Fast diagnosis via LED status indicator
- The devices are easy to clean, making them ideal for use in highly contaminated areas or applications with stringent hygienic requirements
- Flexi Loop: Reliable series connection including diagnostics with minimal wiring work

→ www.sick.com/TR4_Direct

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

IN4000 Direct – At a glance

- Two OSSD safety outputs for direct connection of sensors to a single safety controller
- Response range of up to 20 mm
- LED status indicator
- Up to performance level PL e / Cat. 4 (EN ISO 13849)
- Flexi Loop-compatible M12 plug connector

Your benefits

- Direct connection to the safe control solution eliminates any additional wiring and reduces installation time
- Fast diagnostics via LED status indicator
- Long service life due to durable and low-maintenance design
- Just one safety switch in conjunction with a suitable safety module makes it possible to solve applications up to PL e and Cat. 4 (EN ISO 13849)
- The devices are easy to clean, making them suitable for contaminated areas or environments with strict hygiene standards
- Flexi Loop now enables a safe series connection with enhanced diagnostics capabilities and minimal wiring effort.

➔ www.sick.com/IN4000_Direct

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

IN3000 Direct – At a glance

- Response range of up to 15 mm
- LED status indicator
- Up to performance level PL d (EN ISO 13849), SILCL2 (EN 62061), SIL2 (IEC 61508)
- Flexi Loop-compatible M12 plug connector

Your benefits

- Economical solution for applications up to PL d / SILCL2
- Space-saving mounting due to small housing
- Fast diagnostics via LED status indicator
- Long product service life due to low-wastage and low-maintenance configuration
- The devices are easy to clean, making them ideal for use in highly contaminated areas or applications with stringent hygienic requirements
- With Flexi Loop: Reliable series connection including diagnostics with minimal wiring work

➔ www.sick.com/IN3000_Direct

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.
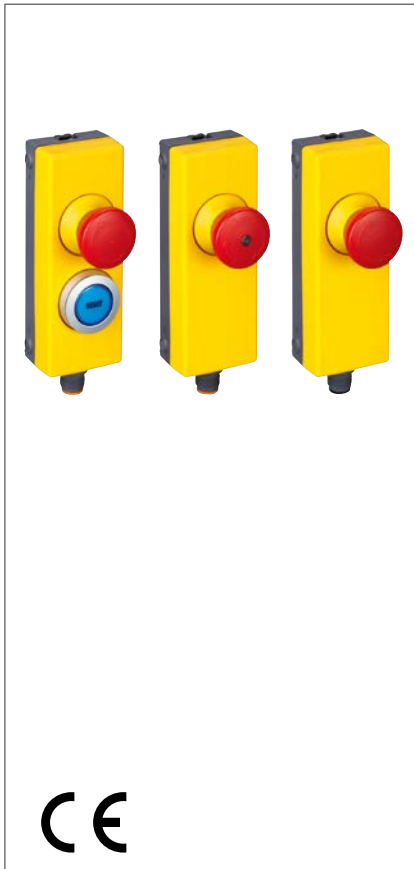
ES11 – At a glance

- Slim plastic housing with quick disconnect mounting clip
- Available as an emergency stop pushbutton or as a combined emergency stop/reset unit
- Emergency stop pushbutton with optional LED illumination
- Illuminated reset pushbutton
- Flexi Loop-compatible M12 plug connector

Your benefits

- Easy mounting with snap-in connection
- Quick commissioning and rapid replacement thanks to M12 plug connector
- User-friendly status display
- With Flexi Loop: safe series connection including diagnostics with easier wiring

→ www.sick.com/ES11

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

ES21 – At a glance

- Available either as a surface-mounted version with housing or as a built-in version (Ø 22 mm)
- Built-in version for machine control panels with self-monitoring contacts between pushbutton and switching element
- Surface-mounted version for direct mounting on different machines and systems
- Rotational or key release
- Variants with LED ring lighting
- Optionally available with protective collar to prevent inadvertent actuation

Your benefits

- Increased safety due to self-monitoring contacts
- Reduction in accidental faults due to variants with a protective collar
- User-friendly status indicator identified by a colored mark or LED ring around the pushbutton simplifies diagnostics
- Successful down to the last detail: award-winning and appealing design

→ www.sick.com/ES21

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.
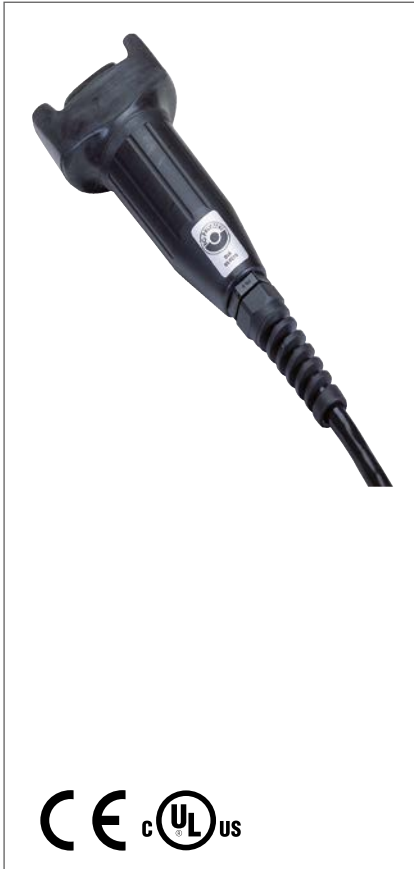
E100 – At a glance

- Plastic housing with connected cable
- 3-stage functional structure (off-on-off)
- Slow-action switching elements with four contacts
- Variant with additional plus/minus buttons
- Complies to the standard IEC/EN 60947-5-8

Your benefits

- Personal protection with enabling switches: increased safety in setup mode when protective devices are deactivated
- Plus/minus buttons for additional control of direction of movement
- Different cable lengths available to meet customer application requirements

→ **www.sick.com/E100**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Flexi Classic – At a glance

- Rotary switch for easy function adjustment
- Modular extension possible
- Direct wiring for all types of sensors
- Logic functions: AND, OR, muting, bypass, reset, EDM
- Integration into all common fieldbuses
- Integration of the Flexi Loop safe sensor cascade
- Special muting modules are able to meet all the requirements of a demanding muting application

Your benefits

- Optimal scalability prevents extra inputs and outputs, reducing hardware
- Configuration via rotary DIP switch simplifies logic configuration
- The Flexi Classic Configurator tool offers easy logic configuration and wiring help
- Complete diagnostics of the system reduces downtime
- Its compact design makes it possible to save space in the control cabinet
- Significantly reduced wiring compared with conventional safety solutions. Wiring with Flexi Loop is even easier.

→ **www.sick.com/Flexi_Classic**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Flexi Soft – At a glance

- Expansion modules, Motion Control modules, and gateways for all common fieldbuses
- Configuration data stored in the system plug
- Safe networking of up to 32 Flexi Soft stations
- Integration of sensor cascade
- Multi-language, license-free configuration software: exceptionally simple operation, plausibility check, simulation mode, wiring diagram, parts list, documentation, and data recorder

Your benefits

- Scalable for an efficient and cost-optimized safety application solution
- Cost savings: Flexi Soft offers a modular structure that is in line with your requirements, and thus offers an ideal level of granularity
- Intuitive configuration software featuring comprehensive functions enables continuous monitoring of the configuration
- Rapid verification of the safety application: The configuration software provides documentation and a wiring diagram
- Safety logic is easy to create thanks to ready-made, TÜV-certified function blocks
- The main module's diagnostics interfaces and the configuration storage facility in the system plug enable rapid commissioning, component replacement, and troubleshooting, resulting in minimum downtimes

➔ www.sick.com/Flexi_Soft

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Flexi Soft Drive Monitor – At a glance

- 7 drive safety functions: SS1, SS2, SOS, SSM, SLS, SDI and SBC
- For all common encoder interfaces
- Programmable logic
- Monitoring of up to 10 speed levels and 4 brake ramps
- Possible to monitor multiple axes

Your benefits

- Integration into a Flexi Soft system with a software tool and a project file allows quick project planning and commissioning
- Easy logic development using pre-defined, modifiable, freely configurable applications
- Maximum level of integration into higher-level controllers via all common fieldbus systems using gateways
- Documentation of the entire safety application simplifies machine acceptance and validation
- Monitoring movements instead of shutting down increases machine productivity
- Flexibility due to a wide range of drive safety functions

➔ www.sick.com/Flexi_Soft_Drive_Monitor

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Flexi Loop – At a glance

- Ability to cascade 32 sensors with up to 100 m per segment in compliance with performance level e
- Compatible with sensors from all manufacturers
- Detailed diagnostics information
- Integrated standard inputs and outputs
- Voltage supply for sensors is included
- Unshielded standard cable featuring M12 connectivity
- Enclosure rating IP 65 and IP 67
- Intelligent accessories for field diagnostics and commissioning

Your benefits

- Cascading of safety switches and safety sensors with OSSD outputs minimizes the wiring effort and the number of inputs of the safety controller, which saves costs
- Easy retrofitting of existing machines
- Simple calculation of the performance level saves time since the Flexi Loop node monitors each sensor individually
- User-friendly due to quick and easy configuration
- Ability to be used over long distances increases application flexibility
- Detailed diagnostic information minimizes system downtime
- Seamless system integration and communication with other SICK safety controllers
- Detailed status information on Flexi Loop components, diagnostics accessories, and safety controller enable quick and easy field diagnostics

→ www.sick.com/Flexi_Loop

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

UE10-3OS – At a glance

- Ideal for applications with opto-electronic protective devices and safety controllers with OSSD outputs
- Output expansion for a safe processing of OSSD output signals
- 3 safety outputs, 1 application diagnostic output
- Feedback path for external device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- Offers all needed contact paths in a compact form
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry

→ www.sick.com/UE10-3OS

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

UE48-20S – At a glance

- Ideal for the evaluation of emergency stop pushbuttons, safety switches, safety light curtains, safety laser scanners, and safety pressure sensitive mats
- Cross-circuit detection and sequence monitoring at the dual-channel input signal
- 2 safety outputs, 1 application diagnostic output
- Manual or automated reset
- External device monitoring (EDM)
- Coded version for all slots

Your benefits

- One module for all common applications simplifies machine integration
- Complete monitoring and evaluation of sensors
- The sequence monitoring takes over the evaluation of non-contact safety switches
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry

➔ www.sick.com/UE48-20S

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Lector63x – At a glance

- Code reader with 2 megapixel sensor
- Flexible optics and filter design
- Integrated, changeable high-power lighting
- Intuitive user interface, including flexible result string with code analytics options
- Function buttons, aiming laser, beeper and feedback indicator
- MicroSD card

Your benefits

- High-resolution sensor and intelligent processing ensure outstanding reading performance, even under difficult reading conditions
- Flexible optical design and high-power illumination enable small codes to be read at high speeds or in applications with a large reading distance
- Fast, straightforward commissioning thanks to the intuitive user interface; function button for rapid device setup; integrated illumination and aiming laser
- Direct results monitoring thanks to acoustic signal and colored feedback spot on the object
- Few machine downtimes in the event of faults on the production line, thanks to straightforward cloning function using microSD memory card

➔ www.sick.com/Lector63x

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Lector64x – At a glance

- 1,7 megapixel resolution; high frame repetition rate of 40 Hz
- Integrated high-power LED illumination

- Function buttons, aiming laser, optical and audible feedback signal
- Intelligent, rapid decoding algorithms

Your benefits

- Highly flexible code position, object height, and transport speed due to a large field of view and large depth of field
- Cost-effective, straightforward, modular integration of multiple devices adapted to the width of the conveyor belt
- Minimum training and installation work due to intuitive device equipment that includes function buttons, auto setup, integrated illumination, an aiming laser, an acoustic feedback signal, and a green feedback LED

- Intelligent decoding algorithms ensure maximum reading performance and high package throughput, even with codes that are difficult to read
- SICK 4D*pro* platform facilitates quick and easy integration into numerous industrial networks

➜ www.sick.com/Lector64x

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Lector65x – At a glance

- 2/4 megapixel resolution; high frame repetition rate of 40 Hz
- Dynamic focus adjustment from object to object
- Integrated high-power LED illumination

- Function buttons, aiming laser, optical and acoustic feedback signal
- Intelligent, rapid decoding algorithms

Your benefits

- Highly flexible code position, object height, and transport speed due to a large field of view and dynamic focus
- Cost-effective, straightforward, modular integration of multiple devices adapted to the width of the conveyor belt
- Minimum training and installation work due to intuitive device equipment that includes function buttons, auto setup, integrated illumination, an aiming laser, an acoustic feedback signal, and a green feedback LED

- Intelligent decoding algorithms ensure maximum reading performance and high package throughput, even with codes that are difficult to read
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➜ www.sick.com/Lector65x

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

CLV61x BAR CODE SCANNERS
CLV65x BAR CODE SCANNERS

CLV61x – At a glance

- Optimized reading field for intralogistics applications
- Available with SICK CAN sensor network
- Configuration with SOPAS, the configuration tool for all new SICK products
- Available in different versions (CAN, Fieldbus) for use in almost any application
- Adjustable scanning frequency of up to 1000 scans per second
- Compact design

Your benefits

- A suitable scanner version for any CLV61x application
- An optimized reading field for container identification on a conveyor belt, in combination with the intuitive SOPAS user interface, enables quick and easy integration into your conveyor system
- Compact design enables installation even in applications with limited space
- Less programming time required for the control system, since data can be transmitted to the control system in the desired format
- Depending on the version, the CLV61x bar code scanner can be used as a multiplexer in any SICK CAN sensor network, so additional multiplexers are not required
- The optional configuration cloning module in combination with the quick-release mounting bracket enables very fast replacement time in the event of a fault

➔ www.sick.com/CLV61x

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

CLV65x – At a glance

- Huge depth of field due to auto focus
- Integrated function buttons, e. g., for starting auto setup or reading quality evaluation
- CAN, Ethernet TCP/IP, PROFINET, and EtherNet/IP on board. No additional Ethernet gateway required (for "Ethernet" connection type)
- Enhanced SMART code reconstruction technology
- Flexible sorting, filtering, and logical functions
- Integrated web server for diagnostic data and network monitoring
- Advanced, easy-to-use SOPAS configuration software
- Integrated LED bar graph

Your benefits

- Cost-effective, as auto focus means no variants or additional light barriers are required for focus adjustment
- Intelligent auto setup and multi-function pushbuttons save time during commissioning
- Easily execute firmware updates using the microSD memory card: no need for a PC
- Enhanced SMART technology reads damaged and partially obscured codes, increasing read rates
- Increased scanner intelligence enables sophisticated configuration of logical operations, reducing the control system programming effort. Data is then delivered in the desired format
- Integrated web server provides remote diagnostics and monitoring; no additional software is required

➔ www.sick.com/CLV65x

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

RFH6xx – At a glance

- 13.56 MHz RFID write/read device for ranges up to 240 mm
- Transponder communication according to ISO/IEC 15693 standard
- Compact, industrial design with integrated antenna
- Embedded protocols allow interfacing with standard industrial fieldbus technologies
- Powerful micro-processor executes internally configurable logic
- Flexible trigger control
- Supports parameter cloning via microSD memory card
- Built-in diagnostics

Your benefits

- Reliable identification ensures maximum throughput
- Adapts to changing needs, ensures investment over the long term
- Simple integration saves installation time
- A wide range of functionality ensures flexible solutions
- Maintenance-free
- Uses same connectivity and configuration software as SICK's bar code scanners and image-based code readers – compatible through standardized 4Dpro platform

➔ www.sick.com/RFH6xx

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

RFU62x – At a glance

- Compact UHF RFID read/write device with integrated antenna for sensing ranges of up to 1 m
- Standard-compatible transponder interface (ISO/IEC 18000-6C / EPC C1G2)
- Supports industry-standard data interfaces and fieldbuses, as well as PoE
- MicroSD memory card for parameter cloning
- Extensive diagnostic and service functions

Your benefits

- Correct assignment and no overshoot thanks to the well-defined read/write range and intelligent filter functions
- Integrated process logic for remote solutions saves additional control and programming effort
- Can be easily integrated into industrial networks thanks to 4Dpro compatibility
- Firmware upgrades and industry-standard compliance ensure long-term reliability
- Minimum changeover times in case of failure thanks to cloning
- RFU62x can be mounted to metal directly – no loss of range
- Easy operation and installation with SOPAS ET user interface

➔ www.sick.com/RFU62x

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

IDM16x – At a glance

- Identification of all popular 1D codes, with PDF version also stacked codes
- Compact housing with up to IP 65 withstanding 50 drops from 2 m on concrete
- Good read feedback via LED, beeper and vibrator

- Supports all popular corded and cordless interfaces as well as industrial fieldbuses via SICK connectivity
- Tool-free exchange of cable and battery
- Corded and cordless versions available

Your benefits

- Increased productivity and throughput thanks to fast and reliable identification
- Reduced costs thanks to 2-in-1 scan engine: covering standard and high-density codes with a single device
- High reliability thanks to industrial grade and rugged housing
- Intuitive good read feedback for noisy industrial environment via vibration, beeper and LED

- Higher user comfort through ergonomic housing design, well balanced and light weight
- High flexibility and operator mobility with corded and cordless versions
- Quick integration in most corded and cordless PC or industrial networks

➔ www.sick.com/IDM16x

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

IDM26x – At a glance

- Identification of all current 1D, stacked, and 2D codes
- Reliable, secure, and fast code reading
- Rugged, stable housing with IP 65 enclosure rating
- Supports all common corded and cordless interfaces as well as industrial fieldbuses via SICK connectivity

- Good read feedback via LED, beeper, and vibration
- Decoding algorithms ideal for direct part marked codes (depending on type)

Your benefits

- Only one device for a wide range of different code types
- Fast and accurate identification without manual data entry
- Highly reliable thanks to industrial enclosure rating and rugged housing
- Simple and flexible integration in industrial fieldbus networks using SICK connectors

- Simple, intuitive operation thanks to multiple read confirmation
- Direct expert advice all over the world from the SICK sales and service network
- Low contrast or highly reflective DPM codes are identified reliably

➔ www.sick.com/IDM26x

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Inspector – At a glance

- High-speed positioning, inspection and measurement
- Powerful "object locator" tool, independent of position, rotation and scale
- Unique, interchangeable housing design supporting dome and various optical accessories

- Simple step-by-step configuration in PC including emulator
- Easy-to-use operator interfaces
- Flexible machine and HMI design interfaces

Your benefits

- The multi-functional vision toolbox offers smart camera-level performance but with sensor ease-of-use
- Unique, interchangeable housing design provides the easiest way to improve image quality
- The simple configuration in SOPAS, including emulator for offline configuration and testing, will reduce downtimes in production to a minimum

- The easy-to-use operator interfaces are optimized to make it easier for the operator to oversee daily work more efficiently
- Ethernet communication and web API gives excellent connectivity and freedom to customize user's HMI

→ **www.sick.com/Inspector**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

IVC-3D – At a glance

- Advanced 3D image processing made easy
- Independent of object contrast and color
- Easy-to-use graphical user interface for fast application development

- Simple connection of PLCs, robots, and other control systems, e.g., those using Ethernet/IP or OPC
- Scans up to 5,000 profiles per second
- Industrial, rugged metal housing

Your benefits

- The IVC-3D makes advanced 3D shape inspections easy, enabling cost-efficient solutions
- Contrast-independent measurement provides greater reliability even at varying object color and when the object color is the same as the background
- Factory calibrated – instantly providing true metric dimensions at production speed

- The camera's OPC server and EtherNet/IP interface enables simple communication with PLCs, robots and control systems, making integration easy
- Stand-alone operation – no PC is needed after configuration

→ **www.sick.com/IVC-3D**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Ranger – At a glance

- Fast 3D measurement at high speed and quality
- MultiScan function for simultaneously measuring the 3D shape, contrast, color, and scatter
- Sensor resolutions of up to 1,536 pixels in 3D and 3,072 pixels in grayscale and color
- High levels of flexibility in configuration, working distance, and field of view
- In-machine 3D calibration
- Gigabit Ethernet and CameraLink interfaces

Your benefits

- High-speed and high-resolution measurements allow you to increase production throughput, and still see fine details, thus ensuring production quality.
- Get accurate size and position measurements in 3D regardless of an object's height or color, ensuring reliable solutions
- High levels of flexibility in the field of view combined with the in-machine 3D calibration concept provides true millimeter dimensions
- Unique MultiScan technology enables one camera to do the work of many, reducing costs for integration, maintenance, and accessories, and creating cost-efficient solutions.
- The high level of flexibility and versatility of the Ranger makes it the ideal choice for challenging tasks

➔ www.sick.com/Ranger

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Profiler – At a glance

- Measure complex profiles with just one laser line
- Analyze up to four areas at the same time
- More than 10 integrated measurement functions, e.g., height, width, and inclination
- Sensor head and evaluation unit in one device
- Commissioning via software or integrated display with operating elements
- High-quality CMOS receiver unit

Your benefits

- Measuring a 2D profile with just one sensor saves on hardware and installation costs
- Cost-effective solution for 2D profile measurement
- Real-time visualization of the measurement results via the integrated LC display
- Intuitive and quick commissioning via the software or display reduces installation time
- Thanks to the stand-alone concept of the Profiler™ 2, there is no need for cabling or to mount an additional evaluation unit
- Reliable measuring regardless of color, material, or shape
- More than 10 integrated measurement functions allow profiles to be measured and analyzed quickly

➔ www.sick.com/Profiler

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

OD Value – At a glance

- Several measurement ranges from 26 mm ... 34 mm to 100 mm ... 500 mm
- CMOS receiving element for measurement independent of surface
- Easy, LED-based user and teach-in concept

- Wide range of models and a wide range of standard interfaces
- Laser technology for precise measurement of very small objects
- Compact stand-alone device
- Excellent price-performance ratio

Your benefits

- Reliable measurement independent of surface, minimizes machine downtime
- Extremely simple sensor teach-in makes setup faster and more costeffective
- Minimal space requirements and less wiring due to its compact, standalone design
- Many measurement ranges and output interfaces make it ideal for cost-effective integration into any production environment

- Low investment costs make consistent, regular quality inspection possible
- Non-contact measurement technology from a safe distance allows the inspection to be carried out directly during the production process
- Wear and damage-free inspection, due to non-contact measurement

➜ www.sick.com/OD_Value

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

OD Precision – At a glance

- Numerous measuring ranges from 24 mm ... 26 mm to 300 mm ... 700 mm
- CMOS receiving element for measurement independent of surface
- Maximum measurement accuracy and frequency

- Glass thickness measurement with just one sensor head
- Various light spot sizes
- Integrated calculations for up to three sensors
- Stand-alone use via RS-422

Your benefits

- Non-contact measurement improves quality inspection during production
- Surface-independent measurement algorithms ensure minimum machine downtime, regardless of surface gloss or color
- Reduced processing times as a result of the high measuring frequency of up to 10 kHz
- Simple, cost-effective solution for challenging measuring tasks due to a variety of sensor models

- Optional stand-alone operation via RS-422 means the OD Precision offers maximum performance at lower investment costs
- High visibility LC display enables simple, cost-effective setup
- Many interfaces for simple integration into an existing production environment

➜ www.sick.com/OD_Precision

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Dx35 – At a glance

- Maximum reliability, immunity to ambient light, and best price/performance ratio thanks to HDDM™ technology
- Measuring range of 0.05 m to 12 m for natural objects or 0.2 m to 35 m on reflective tape
- Devices with analog and switching output, or just switching
- Infrared or red laser in class 1 or class 2
- Repeatability: 0.5 mm to 5 mm
- Small housing size
- IO-Link

Your benefits

- Precise and reliable measurement regardless of object color extends run time and process quality
- A small size and blind zone make flexible mounting possible when space is limited
- Optimum solution thanks to flexible settings for speed, range and repeatability
- Flexible interface use: 4 mA to 20 mA, 0 V to 10 V, PNP output, NPN output, or IO-Link – making machine integration simple
- Offering easy alignment, optimal performance or inconspicuous measurement, versatile light senders make it an ideal solution for all scenarios
- Low investment costs and high performance levels guarantee a quick return on investment
- IO-Link offers full process control, from commissioning to service
- A wide variety of control options ensures rapid commissioning and fast batch changes

→ www.sick.com/Dx35

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Dx50 – At a glance

- HDDM™ technology offers best reliability, immunity to ambient light and price/performance ratio
- Measurement ranges of 10 m or 20 m directly onto the object or even 50 m on reflector
- Different performance levels depending on product and laser class chosen
- Different interfaces: switching, analog or serial interface
- Display with intuitive and consistent operating concept
- Robust die-cast zinc metal housing
- Operating temperature from –30 °C to +65 °C

Your benefits

- Wide measurement ranges up to 10, 20 or 50 m in combination with different interfaces allow an easy and fast integration in any production environment
- Highly reliable and precise measurement helps to increase process quality and stability
- High measurement or switching frequencies enable a fast material flow
- Dx50 product family is based on a common platform, offering multiple performance levels, making it easy to accommodate future changes
- Intuitive setup via display or remote teach reduces installation time and costs
- Temperature range from –30 °C to +65 °C allows for outdoor use without additional cooling or heating
- Up to 40 klx ambient light immunity – allows for use in optically challenging environments

→ www.sick.com/Dx50

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

UM30 – At a glance

- Integrated time-of-flight technology detects objects such as glass, liquids and transparent foils, independent of color
- Range up to 8,000 mm
- Display enables fast and flexible sensor adjustment
- Immune to dust, dirt and fog
- Available with combined analog and digital outputs
- Synchronization and multiplexing
- Adjustable sensitivity
- Three operation modes: Distance to Object (DtO), Window (Wnd) or Object between sensor and background (ObSB)

Your benefits

- Easy machine integration due to compact size
- Various setup options ensure flexible adaptation to applications
- Multiplex mode eliminates cross-talk interference for consistent and reliable detection and high measurement reliability
- Synchronization mode allows multiple sensors to work as one large sensor, providing a low-cost solution for area detection
- Display enables setup prior to installation, reducing on-site installation time
- Integrated temperature compensation and time-of-flight technology ensure high measurement accuracy
- ObSB-mode enables detection of any object between the sensor and a taught background

➔ www.sick.com/UM30

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

OLV – At a glance

- Non-contact, material-independent length and speed measurement
- Permanently calibrated, maintenance-free measuring system
- Measurement accuracy of up to ± 0.05 % (depends on total measuring length)
- Sensing range: 120 mm (optional 240 mm)
- Compact dimensions: 167 mm x 94 mm x 39 mm (l x w x h)
- Rugged aluminum housing
- Weight: approx. 1 kg
- Quick configuration and plug and play commissioning

Your benefits

- Non-contact measurement ensures high level of repeatability
- Process and quality optimization thanks to precise speed and material detection
- Significant reduction in material costs due to non-slip cutting control
- High degree of flexibility thanks to material-independent measurement
- Cost-effective solutions with an attractive price-performance ratio
- User-friendly process integration using configurable multifunctional interface
- Easy replacement of existing mechanical systems
- The maintenance-free, non-contact measuring system significantly reduces maintenance costs

➔ www.sick.com/OLV

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

TiM3xx – At a glance

- Configure without a PC using "touch and teach"
- Small, lightweight and economical measurement sensor
- Field evaluation using intelligent algorithms
- Set parameter interface is accessible while device is mounted
- One of the smallest laser scanners on the market
- Proven industrial design
- Low power consumption (typ. 3 W)

Your benefits

- Low cost of ownership
- Easily hidden from view due to small dimensions
- Low installation costs and exchange time due to M12 x 12 or D-Sub connector
- Long operation for battery-driven vehicles
- Preconfigured fields ensure short installation time
- Reduced hardware costs since only one sensor can be used for large anti-collision fields (up to 235 qm)
- No wiring necessary between sender and receiver

→ www.sick.com/TiM3xx

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

EKS/EKM36 – At a glance

- Motor feedback system with HIPERFACE DSL® interface
- Compact, robust design with 36 mm diameter
- Up to 20 bit resolution per revolution and 4,096 revolutions measurable with the multiturn system
- Facility for connecting an external temperature sensor
- E²Prom with 8 kbyte of free memory space
- SIL2-certified (only valid for EKS/ EKM36-2...)
- Service life histogram

Your benefits

- Saving all analog components on the controller part through exclusively digital data transmission
- Enormous cost saving thanks to the separate encoder cable no longer being necessary, data transmitted synchronously to the controller cycle
- Minimal cabling thanks to integration of the encoder communication into the motor cable
- Optimization of the controller circuit via automated synchronization with the controller cycle

→ www.sick.com/EKS_EKM36

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

AFS/AFM60 SSI – At a glance

- High-resolution absolute encoder with up to 30 bits (AFM60) or 18 bits (AFS60)
- Face mount flange, servo flange, blind hollow shaft or through hollow shaft
- SSI, SSI + incremental or SSI + sin/cos interface
- Resolution, offset, etc. can be programmed (depending on the type)

- Connectivity: M12 or M23 male connector or cable outlet
- Enclosure rating: IP67 (housing), IP65 (shaft)
- Operating temperature: –40 °C … +100 °C (depending on the type)

Your benefits

- The programmability of the encoder results in reduced storage, high machine availability, and easy installation
- Precise positioning thanks to high resolutions
- Large selection of mechanical interfaces and electrical contacting options: suitable for all applications

- Suitable for applications with limited space (extremely short installation depth of 30 mm)
- Excellent concentricity properties due to long bearing distance
- Suitable programming tools are available as accessories for every application

→ www.sick.com/AFS_AFM60_SSI

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

AFS/AFM60 EtherNet/IP – At a glance

- High-resolution, 30-bit absolute encoder (18 bit singleturn and 12 bit multiturn)
- Device Level Ring (DLR functionality)
- Extensive diagnostics: Min/max values for temperature, position, speed. Operating hours counter, display of flags, alarms and warnings using e.g. a fault header (32 bit)

- Status display via 5 duo LEDs
- Rotary axis function
- IP address via DHCP / DEC switches
- Ethernet/IP interface (extended profile 0x22)
- Function block

Your benefits

- DLR functionality for reliability with simple maintenance and a simple adaptation to existing network topologies
- Lower installation costs due to fewer external switches
- High level of productivity thanks to superior diagnostics with 32-bit fault header, fast communication and high level of redundancy

- Optimal machine availability thanks to early warning and fault detection system
- Simple setting for various applications thanks to rotary axis function
- Simple installation due to user-friendly on-board configuration assembly
- Industrial-application design for use in particularly cramped space conditions

→ www.sick.com/AFS_AFM60_EtherNet_IP

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

CE c(UL)us

DFS60 – At a glance

- Compact installation depth
- High resolution up to 16 bits
- Optionally programmable: Output voltage, zero pulse position, zero pulse width and number of pulses
- Connection: Radial or axial cable outlet, M23 or M12 connector, axial or radial
- Electrical interfaces: 5V & 24V TTL/ RS-422, 24 V HTL/push pull
- Mechanical interfaces: face mount or servo flange, blind or through hollow shaft
- Remote zero set possible

Your benefits

- Reduced storage costs and downtime due to customer-specific programming
- Variety of different mechanical and electrical interfaces enable the encoder to be optimally adjusted to fit the installation situation
- Excellent concentricity even at high speeds
- High resolution of up to 16 bits ensures precise measurements
- Permanent and safe operation due to a high enclosure rating, temperature resistance and a long bearing lifetime
- Programmability via the PGT-08 programming software and the PGT-10-S display programming tool allow the encoder to be adapted flexibly and quickly according to customer needs
- Programmable zero pulse position simplifies installation

➜ www.sick.com/DFS60

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

CE

EcoLine – At a glance

- Measured lengths: 1.25 m ... 10 m
- Modular measuring system with a wide selection of interfaces/measuring lengths
- Very small, slim housing (55 mm ... 190 mm) with spring integrated in the measurement drum
- Light yet shock-proof and temperature-resistant plastic housing
- Analog interface with teach-in function at the encoder

Your benefits

- Space- and cost-saving design thanks to slimline mechanics
- Numerous possible combinations of interfaces and measuring lengths
- Advanced programming options lead to a reduction in the amount of variants, save costs, and reduce storage
- Analog interface speeds up commissioning and cost-effective interface card can be used

➜ www.sick.com/EcoLine

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

DFS60S Pro – At a glance

- Encoders for functional safety technology: SIL2 (IEC 61508), SILCL2 (EN 62061), PL d (EN ISO 13849)
- Electrical interface: 4.5 V ... 32 V; sine/cosine 1 V_{PP}; 1,024 periods
- Clamping flange or servo flange, blind hollow shaft or through hollow shaft (assembly options with feather key)

- Universal cable outlet, M23 or M12 male connector, axial or radial
- Enclosure rating: IP 65
- Working temperature range: –30°C ... +95°C (depending on type)

Your benefits

- Certified safety products ensuring the best possible protection for persons, machinery, and systems
- Easy and practical handling of safety functions with all-in-one solutions from a single source, safety functions with the Flexi Soft drive monitor by SICK: safe stop 1 (SS1), safe stop 2 (SS2), safe operating stop (SOS), safe speed monitoring (SSM), safely limited speed (SLS), safe direction (SDI), safe brake control (SBC)

- Force fit and tight fit for mechanical reliability
- Certified safety products instead of standard products reduce the scope of safety engineering
- Versatile connection options for high levels of flexibility and straightforward implementation
- Compact installation depth for compatibility with applications in which installation space is limited

→ www.sick.com/DFS60S_Pro

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

LFP Cubic – At a glance

- Level sensor for liquids
- No mechanical moving parts
- Interchangeable and retractable probe from 200 mm to 2,000 mm and cable probe up to 4,000 mm
- Resistant to deposit formation
- Process temperature up to 100 °C; process pressure up to 10 bar

- 3-in-1: combined display, analog output (according to NAMUR NE 43), and binary output
- High enclosure rating of IP67, rotatable housing and remote amplifier

Your benefits

- Rugged design increases service life
- High flexibility due to cutable and exchangable monoprobe or rope probe
- Cost savings due to multiple output signals: one system for both level detection and continuous level monitoring
- Time and cost savings due to low maintenance and quick commissioning without calibration

- Titanium process connection brings high chemical resistance
- Compact and rotatable housing or remote amplifier ensures flexible installation
- No crosstalk when several sensors are mounted next to each other
- Advanced technology enables adjustment-free measurement

→ www.sick.com/LFP_Cubic

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

LFV200 – At a glance

- Housing made of 316L stainless steel
- Two electrical output versions available
- Commissioning without filling
- Process temperature up to 150 °C

- Immune to deposit formation
- Very high repeatability
- Aseptic versions with polished surface, CIP and SIP resistant
- Tube extension up to 1,200 mm

Your benefits

- Easy installation and commissioning, no pre-calibration necessary
- Easy operation and integration
- Maintenance-free system
- Sensors can be tested while installed
- Flexible, reliable system suitable for many types of applications

- Universal technology works in all kinds of liquids
- Economical solution for vertical mounting
- Can be used in containers and pipes regardless of installation conditions

➔ www.sick.com/LFV200

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

CE ⓊWHG §191

UP56 – At a glance

- Non-contact measurement up to 3.4 m operating distance / 8.0 m scanning distance limit
- Pressure resistant up to 6 bar
- Converter protected by PVDF cover for increased resistance
- 3-in-1: Continuous measurement, switching signal, and display

- Analog output can be switched 4 mA ... 20 mA and 0 V ... 10 V
- Process connector thread G 1 and G 2
- IP67 enclosure rating
- Simple operation, also via Connect+

Your benefits

- Non-contact measurement in pressurized containers – no wear over time
- Easy to set parameters, saving time
- Flexible measurement system for different container sizes – standardization and stock reduction

- One product for point level and continuous applications, reduces the number of sensors required

➔ www.sick.com/UP56

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

CE

PBS – At a glance

- Electronic pressure switch with display for monitoring pressure in liquids and gases
- Precise sensor technology with stainless steel membrane
- Integrated process connections manufactured from high-quality stainless steel
- Pressure values indicated on display. Output states are indicated separately via wide-angle LEDs.
- Unit of pressure value in display can be switched
- Min/max memory
- Password protection

Your benefits

- Quick and easy setup and operation due to three large pushbuttons and clear display
- Perfect display readability and optimal cable routing due to rotatable housing
- No compromises: Individual solutions through a variety of configurations
- Universal application due to fully welded, highly durable stainless steel membrane
- Saves space and costs: no adapters required due to broad range of standard process connections
- Highly reliable due to application of proven technologies and high-quality materials, water resistance according to IP 65 and IP 67 as well as excellent overpressure safety
- Ultimate system availability: IO-Link enables fast, reliable parameter setting when changing over products

→ **www.sick.com/PBS**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

PAC50 – At a glance

- Electronic pressure switch for pneumatic applications
- Large display shows system pressure, output states and set switching points
- Three large function keys and intuitive menu navigation
- Measuring range for gauge pressure (vacuum and overpressure)
- Individually programmable switching outputs and optional analog output
- Installation on a mounting rail, wall or in a control panel

Your benefits

- Bi-color display (green/red) clearly shows the output state to recognize whether the pressure is within the target range
- Quick overview of important system parameters due to advanced display functions
- Intuitive operation allows simple and quick commissioning
- Pressure connections on the back and bottom, various mounting options and configurable output signals provide installation flexibility
- High reliability due to the rugged design (IP 65/IP 67 enclosure rating) and proven technology
- Low storage costs since a few product variants are able to meet a broad range of application requirements
- Reduced downtime when changing the format or replacing the sensor thanks to IO-Link

→ **www.sick.com/PAC50**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

PBT – At a glance

- Pressure measurement ranges from 0 bar ... 1 bar up to 0 bar ... 600 bar
- Relative, absolute, and ± measuring ranges
- Large number of process connections available
- No mechanical moving parts. Hence no wear, fatigue, or maintenance

- Circularly welded, hermetically sealed stainless steel membrane
- Output signal 4 mA ... 20 mA, 0 V ... 5 V or 0 V ... 10 V
- Electrical connection M12 x 1, angled plug (acc. to DIN 175301-803 A) or cable connection

Your benefits

- Compact size takes up less space
- Simple and cost-saving installation
- Available in a wide selection of configurations, enabling a perfect match to individual customer requirements

- Robust design enables higher reliability
- Excellent price/performance ratio

➜ www.sick.com/PBT

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

FFU – At a glance

- Flow sensor for conductive and non-conductive liquids
- Compact design with no moving parts
- Process temperature up to 80 °C, process pressure up to 16 bar

- High chemical resistance due to seal-free sensor design
- Large display with membrane keyboard
- Integrated empty tube detection

Your benefits

- Maintenance-free flow sensor; reduces maintenance costs
- Adjustable measuring ranges, reduced number of variants
- Can be used for conductive and non-conductive liquids, reducing both the number of variants and storage costs

- Straight measuring tube reduces pressure loss, thus reducing energy costs
- Sensor without seals increases process reliability and availability
- Flexible measuring device for all industries

➜ www.sick.com/FFU

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.
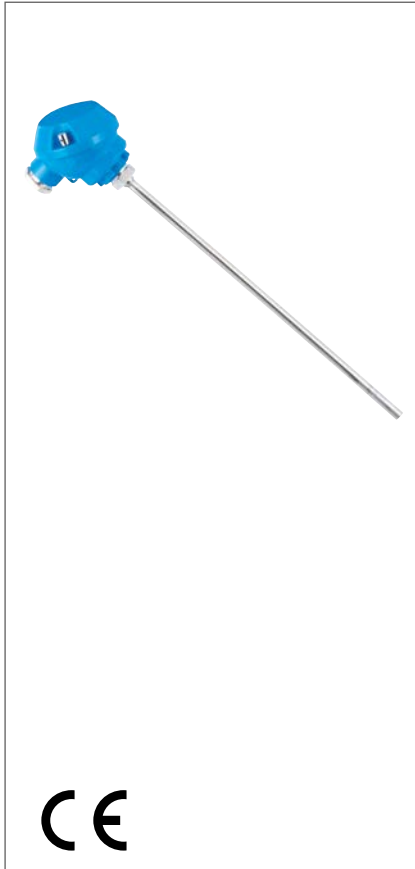
TBT – At a glance

- Pt100 element, accuracy class A according to IEC 60751
- Measuring ranges –50 °C ... +150 °C and –50 °C ... +250 °C
- Wetted parts made from corrosion resistant stainless steel 1.4571
- Various mechanical adaptations and insertion lengths
- Pt100 (4-wire) or 4 mA ... 20 mA (2-wire)
- Cable gland M16 x 1.5

Your benefits

- Reliable operation through rugged design and high-quality materials
- Very good long-term stability, accuracy and linearity
- Quick and safe installation
- Convenient system integration even in narrow installation spaces
- Optimal solutions for individual requirements due to versatile configurability

➜ **www.sick.com/TBT**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

TSP – At a glance

- Platinum resistance (Pt100 or Pt1000, 2-wire or 3-wire), accuracy class B according to IEC 60751
- Measuring range –30 °C ... +130 °C
- Various connection threads and insertion lengths
- Parts in contact with media made from stainless steel 1.4305
- Round connector M12 x 1 (IP 67)

Your benefits

- Reliable operation through rugged design and high-quality materials
- Good long-term stability
- Quick and safe installation
- Simple system integration through very compact dimensions

➜ **www.sick.com/TSP**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

TBS – At a glance

- Large display
- Individually programmable transistor outputs PNP or NPN, optional analog output 4 mA … 20 mA or 0 V … 10 V
- Round connector M12 x 1
- Measuring ranges –20 °C … +80 °C
- Pt1000 element, accuracy class A

(IEC 60751)
- Various insertion lengths and connection threads
- Wetted parts made from corrosion-resistant stainless steel 1.4571
- Enclosure rating IP 65 and IP 67

Your benefits

- Quick and safe set-up through superior ease of use
- Compact dimensions and rotatable housing facilitate integration
- Very reliable: splash-proof housing, high-grade materials, rugged design, and field-proven technology

- Very good long-term stability, accuracy and linearity
- Quick response time
- Versatile configuration allows for optimal solutions for specific requirements

➜ www.sick.com/TBS

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

IRIS-M – At a glance

- Detection independent of background
- Resistant to interference due to artificial lighting, reflections and dirt
- Short inspection times at high resolutions
- Inspection of each individual tire
- Precalibrated components

- Flexible, scalable system that can be easily extended through the addition of new modules
- Integrated self-diagnostic function
- User-friendly service and maintenance concept
- Optional remote access

Your benefits

- Prevention of complaints due to defective tires
- Reduced production costs per tire through improved efficiency and higher throughput
- Complete solution from a single supplier
- No machine vision expertise is needed in order to commission and

maintain the system
- Solution can be reproduced at sites worldwide and benefits from globally available technical service
- Minimized stoppage times on malfunctions thanks to the rapid replacement of system components using precalibrated spare parts

➜ www.sick.com/IRIS-M

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

RFMS Pro – At a glance

- Standard modules with or without antenna
- Self-supporting modules
- Proven assignment algorithm for RFID tags on objects
- Static tag detection and filtering

- Integrated service, monitoring and diagnostic tools
- Object-based data output on relevant interfaces such as Ethernet, serial interface or PROFIBUS
- Parameter cloning of all components

Your benefits

- Wide range of tunnel design options with only two standard modules requires very little planning and design work
- Quick and easy commissioning of the modules reduces installation time
- Minimal space between objects ensures a high throughput
- Simple integration with SICK's 4D*pro* makes it easy to add

bar code scanners to an application
- Maintenance-free design saves time and money
- High-quality system components are from a single source, ensuring system reliability and easy integration
- Self-supporting modules require no additional frame, eliminating additional design and material costs

➜ **www.sick.com/RFMS_Pro**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Lector65x System – At a glance

- Dynamic focus adjustment
- Big depth of field in fix focus operation
- Tracking function with MSC800
- Integration into the network concept of the MSC800

- JPEG image output in real time
- 2 or 4 megapixel resolution along with a high image capture rate of up to 40 Hz
- Highly versatile customer interfaces and protocols

Your benefits

- Dynamic focus and dynamic brightness adjustment provide sharp, uniform images for different object heights, code positioning and transport speeds
- Minimum object gaps and high package throughput in the sorting process via an integrated tracking function
- Modular system design: from low-cost to high performance
- Intelligent decoding algorithms and a

high image recording frequency provide excellent read rates, even with codes that are difficult to read
- Ability to combine multiple products to create a tailored hybrid solution
- Read adjacent objects with "side-by-side" focusing, which increases the throughput
- Easy installation due to the slim, sophisticated design and partial pre-assembly

➜ **www.sick.com/Lector65x_System**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

4DPRO – THE FLEXIBILITY YOU NEED

The sensor manufacturer SICK offers a broad portfolio of identification and vision solutions which are developed and produced in-house. Whichever solution you choose today, you can be sure of a flexible future with the 4Dpro concept. All 4Dpro sensors are compatible and interchangeable. Standardized connectivity, a standardized user interface, and a standardized accessory concept – we call this unique combination 4Dpro.
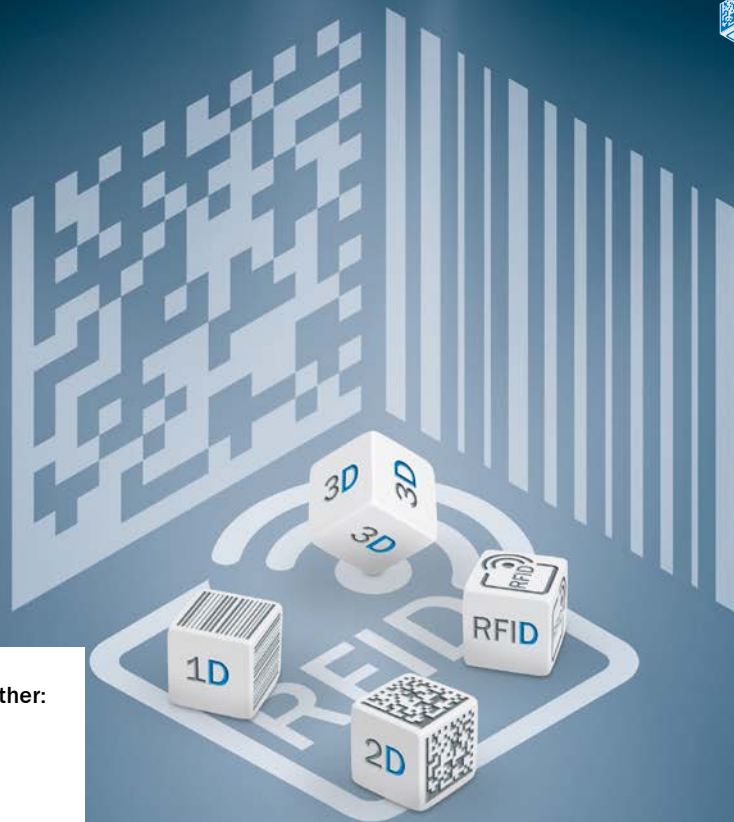
4Dpro – At a glance

Interchangeable with one another:
Identification solutions with
- identical connectivity
- identical user interface
- identical accessories

How you benefit from using 4Dpro sensors

- Security of investment thanks to the option of switching between technologies
- Simple commissioning, even with cross-technology applications
- Fast and flexible exchange thanks to standardized connectivity and cloning function
- Quick and easy integration into programmable logic controllers (PLCs) as SICK provides the function blocks free of charge
- Little time or money spent on storage thanks to reduced component variety and accessory parts

TRACK AND TRACE IN THE TIRE INDUSTRY

Tire manufacturers offer a wide and varied portfolio of products with many different material compositions.

The challenge in production, then, is to create a flow from this mixture of materials that is as efficient as possible and at the same time ensures traceability. Established identification solutions like hand-held scanners, bar code scanners, image-based code readers, and RFID read/write devices can be used for this purpose. Identification solutions by SICK combine the ability to identify tires and the materials used in their manufacture with end-to-end traceability. They also help to ensure that the right tires are delivered on the right day.
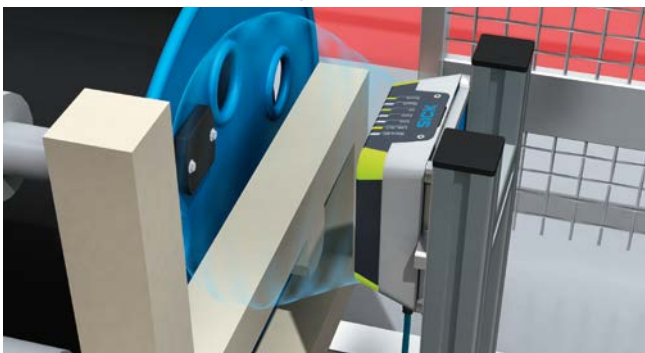
Automatic identification of materials and components in production

A variety of tire components are manufactured in production. Mobile hand-held scanners from the IDM16x product family or stationary bar code scanners from the CLV6xx family are used on the machines that are integral to this process. Automatic identification with passive UHF RFID technology offers an alternative approach. Material totes and bobbins equipped with transponders can be detected across larger sensing ranges and their precise locations pinpointed. The addition of RFID gates for direction detection creates complete transparency in the material flow. RFID read/write devices from SICK's RFU6xx product family are used for material identification.

Advantages in the application:
- Automatic material identification in the machine
  – no more non-productive times for operators
- End-to-end traceability in the production process
- Productivity is increased as less time is spent searching for materials thanks to RFID technology
- 4Dpro makes migrating the application from bar code to RFID easy

Tire identification in tire building, vulcanization, and quality control

Managing and controlling production processes are central tasks in automation. The latest generation of SICK image-based code readers has impressively mastered these tasks. The code readers combine unparalleled intelligence and autonomy with innovative technologies such as dynamic focus and adaptive illumination. Thanks to this combination, the Tire Lector Array can detect even poorly printed 1D or 2D codes on tires regardless of height size, or alignment. The Tire Lector Array is perfectly adapted to the width of the belt. Its modular structure allows customers to select the most cost-effective solution. The Tire Lector Array is the perfect addition to the range of SICK identification devices.

FROM YOUR SAFETY APPLICATION TO A COMPLETE SOLUTION

safetyPLUS® – SAFE MACHINERY AND MORE.

safetyPLUS® is the range of machine safety products and services provided by SICK for protecting people and investments. The PLUS means comprehensive, individual support for our customers regarding the functional safety of their machines and plants. Comprehensive means the best possible support from development of the machine through commissioning and use to retrofitting and modernizing – all over the world.

We help to ensure customer requirements for legal compliance and reliable production are met with:

- Safety products and systems, services, training, and tools
- Expert knowledge passed on through consultancy and online services
- Safety tools for a simplified engineering process
- Functionality to support production efficiency

WE PROTECT PEOPLE.

Advantages for your design engineering and productivity – our pioneering safety products prove these day in and day out. And they have been for more than half a century.

Products that are more than the sum of their parts equal **added efficiency** for your application. With clever product combinations or turnkey systems.

Do you export or utilize machinery worldwide? We have the expertise to ensure your **compliance with legal requirements** all over the world.

Services and training courses in 80 countries – functional safety knowledge **at your location.**
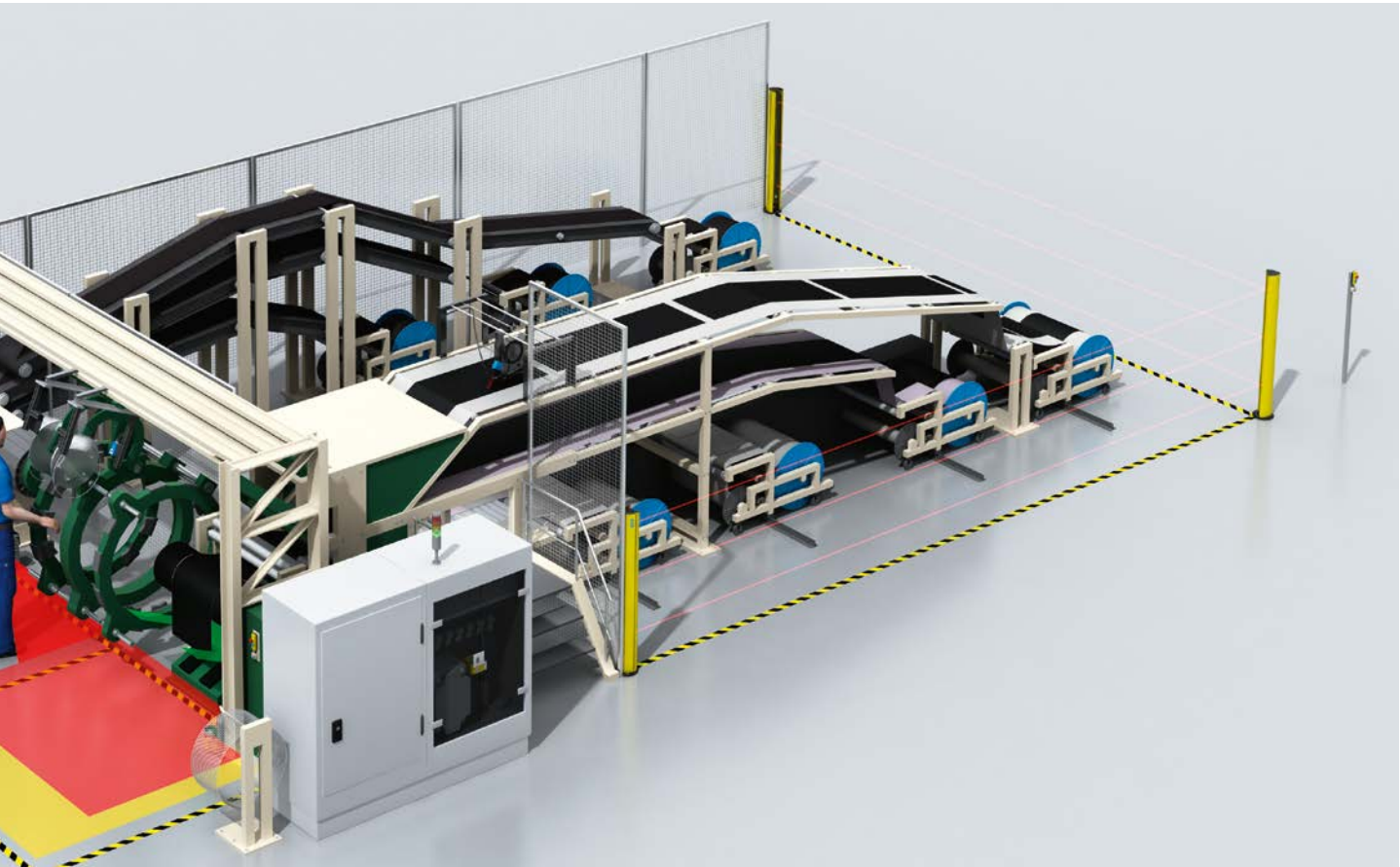
SICK – Your partner for machine safety

When it comes to international business, employees responsible for safety and decision-makers are faced with a complex fabric of laws, regulations, labeling measures, and guidelines – it isn't easy to retain an overview. We have experience with the details and know exactly how to fulfill the numerous requirements. Our services are accredited, and this independent confirmation of our expertise proves that we perform the specified activities with the utmost reliability, at the required standards of quality. And that guarantees objective results, which are also internationally recognized. You can trust in our decades of experience as a market leader in the area of industrial safety – when it comes to both current machinery as well as planning and purchasing new plants.
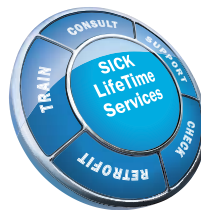
Consulting & design

- Risk assessment
- Safety concept
- Safety hardware and software design
- Installation and commissioning
- Validation of functional safety
- CE-conformance check
- Plant walk-through

Training and education

- User training
- Seminars
- Web training

Verification and optimization

- Inspection
- Machine safety inspection
- Electrical equipment check
- Accident investigation
- Stop time measurement

sens:CONTROL – SAFE CONTROL SOLUTIONS

Intelligent machine design focuses on increasing productivity, but also provides the highest level of quality and safety. sens:Control – safe control solutions by SICK embody this principle. The product portfolio includes safe sensor cascades, safety controllers, motion control safety controllers, and safety relays. It features easy commissioning, modularity, and optimum integration into automation processes. The goal of sens:Control is to optimize interaction between man and machine.
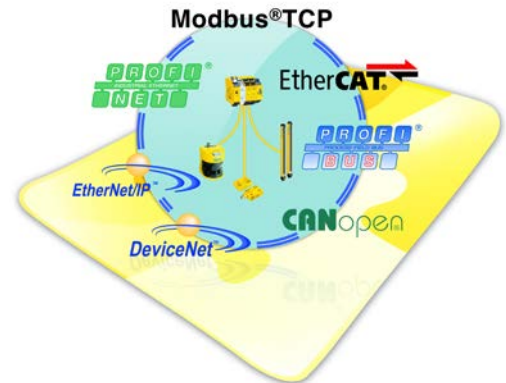
Select the control solution you require for your application:

Safety relay

For flexible and cost-effective machine integration
- Anything from a single-channel emergency stop pushbutton up to a safety laser scanner with PNP outputs can be connected
- Minimum amount of wiring
- Rapid device replacement using removable terminals
- Coded version for all slots
- Application-oriented variants available

Flexi Soft

The software-programmable safety controller
- Scalable for an efficient and cost-optimized safety application solution
- Expansion modules, Motion Control modules, and gateways for all standard fieldbuses
- The main module's diagnostics interfaces and the configuration storage facility in the system plug enable rapid commissioning, component replacement, and troubleshooting, resulting in minimum downtimes
- Cost savings: Flexi Soft can have a modular structure that is in line with your requirements, and thus offers an ideal level of granularity
- Integration of the Flexi Loop safe sensor cascade

Flexi Soft drive monitor

Safe drive monitoring
- Ideal integration of safety applications with drives
- Increased flexibility thanks to independent drive system
- Open to all standard motor feedback systems and encoders
- Minimized switch-off and change-over times thanks to numerous drive safety functions
- Detection of machine downtime, enabling rapid intervention in the machine and workpiece replacement

RETROFITTING TIRE VULCANIZING MACHINES WITH SAFETY TECHNOLOGY

Tire vulcanizing machines are generally considered the machine type with potentially the most dangerous working environment in the tire industry. Conventional safety systems for tire vulcanizing machines exhibit significant safety gaps when it comes to minimizing dangers. Accidents occur in every operating mode: in manual mode during maintenance and fault repair, in tool-change mode, and in standard automatic mode. This situation led to international efforts to standardize safety standards for new machines. Retrofitting existing curing machines with modern safety devices that meet the most recent international safety standards improves the safety level while simultaneously increasing productivity.

SICK is your partner for future international standards for tire curing presses, such as the European standard EN 16474 and the Chinese standard GB 30747-2014.

Changing from your previous safety application to a SICK safety solution increases the profitability of your investment and creates additional saving potential as it makes processes more efficient. This means that you can always keep an eye on the most important objective – occupational and machine safety.

SICK offers ultra-efficient complete solutions from a single source: from safe control solutions, to opto-electronic protective devices and safety switches, right through to the SICK LifeTime Services. The services portfolio offers product-independent consulting services through to traditional product service. What makes it really special is SICK's extensive industry knowledge and more than 60 years of experience.

WE DELIVER "SENSOR INTELLIGENCE."

SICK sensor solutions for industrial automation are the result of exceptional dedication and experience. From development all the way to service: The people at SICK are committed to investing all their expertise in providing with the very best sensors and system solutions possible.

A company with a culture of success

More than 7,400 people are on staff, with products and services available to help SICK sensor technology users increase their productivity and reduce their costs. Founded in 1946 and headquartered in Waldkirch, Germany, SICK is a global sensor specialist with more than 50 subsidiaries and agencies worldwide. The people work with pleasure at SICK.

This is demonstrated by the accolades that the company is regularly awarded in the "Great Place to Work" competition. This lively corporate culture holds strong appeal for qualified and skilled persons. In SICK, they are part of a company that ensures an excellent balance between career progression and quality of life.

Innovation for the leading edge

SICK sensor systems simplify and optimize processes and allow for sustainable production. SICK operates at many research and development centers all over the world. Co-designed with customers and universities, our innovative sensor products and solutions are made to give a decisive edge. With an impressive track record of innovation, we take the key parameters of modern production to new levels: reliable process control, safety of people and environmental protection.

A corporate culture for sustainable excellence

SICK is backed by a holistic, homogeneous corporate culture. We are an independent company. And our sensor technology is open to all system environments. The power of innovation has made SICK one of the technology and market leaders – sensor technology that is successful in the long term.

"SENSOR INTELLIGENCE." FOR ALL REQUIREMENTS

SICK is a renowned expert in many industries, and is entirely familiar with the critical challenges they face. While speed, accuracy and availability take center stage in all industries, technical implementations vary greatly. SICK puts its vast experience to use to provide with precisely the solution you need.

For applications worldwide

Hundreds of thousands of installations and applications go to prove that SICK knows the different industries and their processes inside out. This tradition of uncompromising expertise is ongoing: As we move into the future, we will continue to design, implement and optimize customized solutions in our application centers in Europe, Asia and North America. You can count on SICK as a reliable supplier and development partner.

For your specific industry

With a track record of proven expertise in a great variety of industries, SICK has taken quality and productivity to new heights. The automotive, pharmaceutical, electronics and solar industries are just a few examples of sectors that benefit from our know-how. In addition to increasing speed and improving traceability in warehouses and distribution centers, SICK solutions provide accident protection for automated guided vehicles. SICK system solutions for analysis and flow measurement of gases and liquids enable environmental protection and sustainability in, for example, energy production, cement production or waste incineration plants.

For performance across the board

SICK provides the right technology to respond to the tasks involved in industrial automation: measuring, detecting, monitoring and controlling, protecting, networking and integrating, identifying, positioning. Our development and industry experts continually create groundbreaking innovations to solve these tasks.

➜ **www.sick.com/industries**

SERVICES FOR MACHINES AND SYSTEMS:
SICK LifeTime Services

SICK LifeTime Services is a comprehensive set of high-quality services provided to support the entire life cycle of products and applications from plant walk-through to upgrades. These services increase the safety of people, boost the productivity of machines and serve as the basis for our customers' sustainable business success. LifeTime Services range from product-independent consulting to traditional product services and are characterized by extensive industry expertise and 70 years of experience.

Consulting and design

- Plant walk-through
- Risk assessment
- Safety concept
- Safety software and hardware design
- Validation of functional safety
- CE-conformance check

Product and system support

- Installation
- Commissioning
- Start-up support
- Calibrations
- Telephone support
- 24-hour helpline
- SICK Remote Service
- Troubleshooting on site
- Repairs
- Exchange units
- Extended warranty

Verification and optimization

- Inspection
- Stop time measurement
- Machine safety inspection
- Electrical equipment check
- Accident investigation
- Initial verification
- Performance check
- Maintenance

Upgrade and retrofits

- Upgrade services

Training and education

- Training
- Seminars
- Web training

VERSATILE PRODUCT RANGE FOR INDUSTRIAL AUTOMATION

From the simple acquisition task to the key sensor technology in a complex production process: With every product from its broad portfolio, SICK offers a sensor solution that best combines cost effectiveness and safety.

➔ **www.sick.com/products**

Photoelectric sensors

- Miniature photoelectric sensors
- Small photoelectric sensors
- Compact photoelectric sensors
- Cylindrical photoelectric sensors
- Fiber-optic sensors and fibers
- MultiTask photoelectric sensors

Proximity sensors

- Inductive proximity sensors
- Capacitive proximity sensors
- Magnetic proximity sensors

Magnetic cylinder sensors

- Analog positioning sensors
- Sensors for T-slot cylinders
- Sensors for C-slot cylinders
- Sensor adapters for other cylinder types

Registration sensors

- Contrast sensors
- Markless sensors
- Color sensors
- Luminescence sensors
- Fork sensors
- Array sensors
- Register sensors
- Glare sensors

Automation light grids

- Measuring automation light grids
- Switching automation light grids

Opto-electronic protective devices

- Safety laser scanners
- Safety light curtains
- Safety camera systems
- Multiple light beam safety devices
- Single-beam photoelectric safety switches
- Mirror columns and device columns
- Upgrade kits for opto-electronic protective devices

Safety switches

- Electro-mechanical safety switches
- Non-contact safety switches
- Safety locking devices
- Safety command devices

sens:Control – safe control solutions

- Safe sensor cascade
- Safety controllers
- Motion Control safety controllers
- Safety relays

Gas analyzers

- Gas transmitters
- In-situ gas analyzers
- Extractive gas analyzers

Dust measuring devices

- Scattered light dust measuring devices
- Transmittance dust measuring devices
- Gravimetric dust measuring devices

Analyzer solutions

- CEMS solutions
- Process solutions

Traffic sensors

- Tunnel sensors
- Overheight detectors
- Visual range measuring devices

Ultrasonic gas flow measuring devices

- Volume flow measuring devices
- Mass flow measuring devices
- Flow velocity measuring devices
- Gas flow meters

Identification solutions

- Image-based code readers
- Bar code scanners
- RFID
- Hand-held scanners
- Connectivity

Vision

- 2D vision
- 3D vision
- Sensor integration machine

Distance sensors

- Displacement measurement sensors
- Mid range distance sensors
- Long range distance sensors
- Linear measurement sensors
- Ultrasonic sensors
- Optical data transmission
- Position finders

Detection and ranging solutions

- 2D laser scanners
- 3D laser scanners
- Radar sensors

Motor feedback systems

- Motor feedback system rotary HIPERFACE®
- Motor feedback system rotary HIPERFACE DSL®
- Motor feedback system rotary incremental
- Motor feedback system rotativ incremental with commutation
- Motor feedback system linear HIPERFACE®

Encoders and inclination sensors

- Absolute encoders
- Incremental encoders
- Linear encoders
- Wire draw encoders
- Safety encoders
- Inclination sensors
- Measuring wheel encoders

Fluid sensors

- Level sensors
- Pressure sensors
- Flow sensors
- Temperature sensors

System solutions

- Customized analyzer systems
- Driver assistance systems
- Robot guidance systems
- Object detection systems
- Profiling systems
- Quality control systems
- Security systems
- Track and trace systems
- Functional safety systems

Softwareprodukte

- SICK AppSpace
- Analytics Solutions
- Integrated Managing Solutions

EASY INTEGRATION INTO YOUR AUTOMATION WORLD

Sensor integration with SICK is easy and fast for you: Our intelligent sensor solutions and safety controllers provide different integration technologies which allow easy access – from HMI, PLC, and engineering tools – to data from our sensors. In this way, we support you towards solving your application rapidly and easily and increase machine reliability with a continuous diagnostic concept.

PLC and engineering tool integration

Function Blocks	
IO-Link devices Level sensors Pressure sensors Presence detection sensors Distance sensors	**Bar code scanners, Image-based code readers** 1D und 2D
Vision sensors Inspector	**RFID** RFH6xx RFU62x, RFU63x
Absolute encoders AFS60/AFM60	**Laser volume flowmeter** Bulkscan® LMS511

Function blocks

The SICK function blocks quickly allow you to establish acyclic communication to our sensors within your PLC program. Additionally, complex and variable process data can be parsed into their individual information contents without programmer effort.

DTM (Device Type Manager)

FDT/DTM is a cross-manufacturer concept, with which configuration and diagnosis of devices from different manufacturers can be done with just one engineering tool.

TCI (Tool Calling Interface)

The Tool Calling Interface (TCI) makes it possible to call up a tool used to carry out parameterization and diagnosis of a field device via the existing communication infrastructure.

HMI integration

OPC server

OPC technology is used to exchange data between field devices and Windows-based applications. The SOPAS OPC server from SICK follows the OPC DA specification and thus can be used on Windows operating systems.

Web server

The SOPAS web server from SICK can be used everywhere, where a web browser is available. The web server is distinguished by its ability to both carry out pure data exchange and also to provide visualizations for the devices, which is a big advantage, particularly for vision sensors.

## Fieldbus Communication Interface

Our fieldbus and network solutions allow SICK sensors and safety controllers to be connected to all conventional automation systems. This guarantees an easy and fast access to the available data.

➜ www.sick.com/industrial-communication

REGISTER AT WWW.SICK.COM TODAY AND ENJOY ALL THE BENEFITS

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- ☑ View the status of quotations and orders at any time. Receive e-mail notifications of status changes.
- ☑ Easily repeat previous orders.
- ☑ Conveniently export quotations and orders to work with your systems.
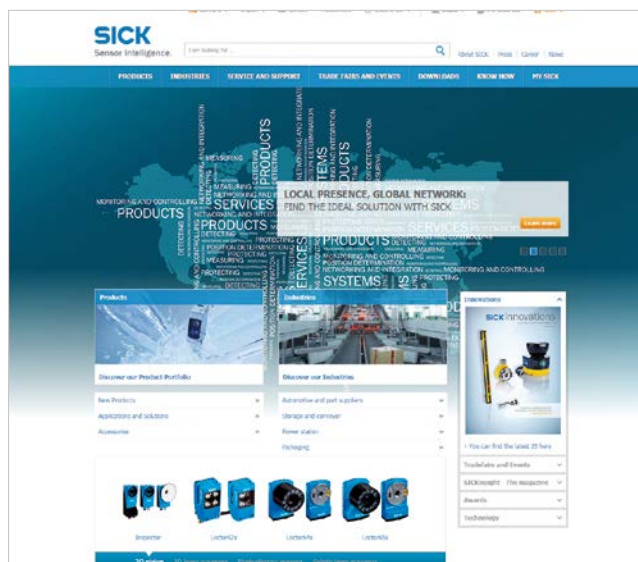
SERVICES FOR MACHINES AND SYSTEMS: SICK LifeTime Services

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 7,400 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, 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.