

SMART  
**SENSOR**  
BUSINESS



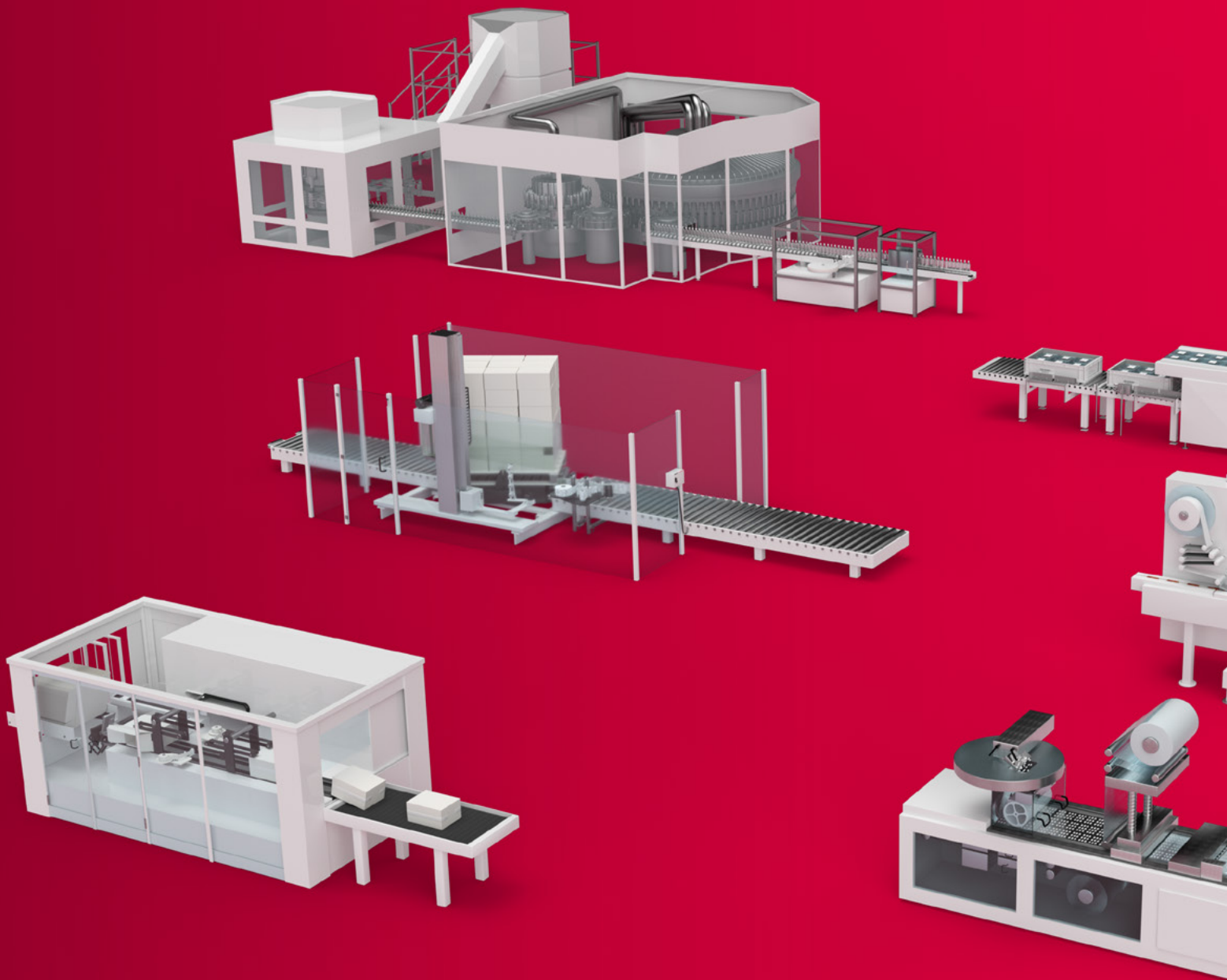
 **Leuze electronic**

the **sensor** people



Sensor solutions for  
**PACKAGING  
SYSTEMS**

# WE ARE YOUR **SENSOR SYSTEM PARTNER** FOR **PACKAGING SYSTEMS**



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**PRODUCT CREATION & PRIMARY PACKAGING**

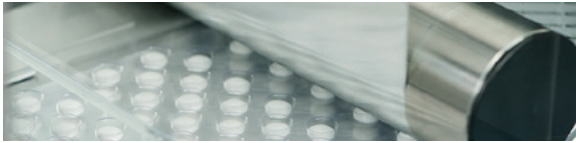
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SMART  
**SENSOR**  
BUSINESS

SMART IS  
TO THINK **EASY**,  
TO SHARE **EXPERIENCE**,  
TO BE **CLOSE**,  
TO CREATE THE **FUTURE**

More than 50 years of experience made Leuze electronic a real expert in innovative and efficient sensor solutions for industrial automation. With our wide sales- and service-network, our knowledgeable consulting and our reliable customer service we are always close to you – worldwide.



[www.smart-sensor-business.com](http://www.smart-sensor-business.com)

Felix Beintner,  
Order Management  
International



## EASY

Technology must serve people. Complex and technically sophisticated products should be as **easy** and intuitive to use as possible by our customers. This is both an aspiration and a development maxim – to the benefit of our customers.



## EXPERI- ENCE

More than 50 years of **experience** and a close relationship with our customers have made us true experts in specific industries. This is how we develop individual sensor solutions for and with our customers.



## PROXI- MITY

Think global, act local – this characterizes the sensor people. **Customer proximity** means not only being there for our customers 24/7, providing them with sound advice, and supporting them with an extensive range of services, but also responding to their individual desires and needs worldwide.



## FUTURE

Sensors are the basis for all automation and for Industry 4.0 or IIoT. Together with our customers and strategic partners we are working on **future-oriented technologies** in order to make data and information available worldwide.



## COMPETITIVE SOLUTIONS FOR THE PACKAGING INDUSTRY

Attractive design is a key factor for successful end products. And the sky's the limit when it comes to creativity. Products and product packaging change continuously in the automated packaging industry. The machines and used components are expected to process the variations in products and their packaging without problem.

*“Our customers strive to make the production processes faster, more flexible, more stable and more transparent – all of our activities focus on this objective.”*

The packaging systems sector is not a homogeneous industry, but rather an important process in segments such as beverages, foodstuffs, pharmaceuticals and other consumer goods. Expectations with regard to hygiene, robustness and speed are extremely high in the processing and packaging of the specific products. Demands with respect to safety at work are just as great or even more so.

As an industry specialist, we are familiar with the challenges of the respective industries and their specific requirements and offer customized solutions.

Until just a few years ago, sensors had to be set up manually each time a product was changed – today, connection via IO-Link provides reproducible remote calibration and continuous monitoring. This makes our solutions ready for Industry 4.0.

Roland Schricker,  
Industry Manager Packaging



## High and consistent quality

Consumers place great demands on the consistent quality of products. The primary packaging ensures that the quality of your products remains at a continuously high standard. Our sensors ensure the smooth combination of product and packaging and thereby safeguard the level of quality.



## We know your needs

Your goal is to maximize the performance of your system. You therefore need a competent partner who understands the operations involved in your industrial processes. Our employees have detailed application knowledge as well as many years of experience and, together with you, will find the best possible solution.



## Future-proof thanks to modern technology

Modern production features predictive maintenance and remote serviceability. You want to utilize the new communication technologies in factory automation and prepare your packaging system for Industry 4.0? We offer all established technologies from IO-Link for binary-switching sensors to Ethernet-based interfaces for more complex devices.



## Elimination of downtimes maximizes efficiency

The requirements are many and varied. Your packaging systems must operate with maximum stability and reliability. Our sensors are powerful and robust. The extremely high protection classes of the devices and the use of high-quality housing materials ensure a long mission time and a high level of availability, thereby reducing costs.



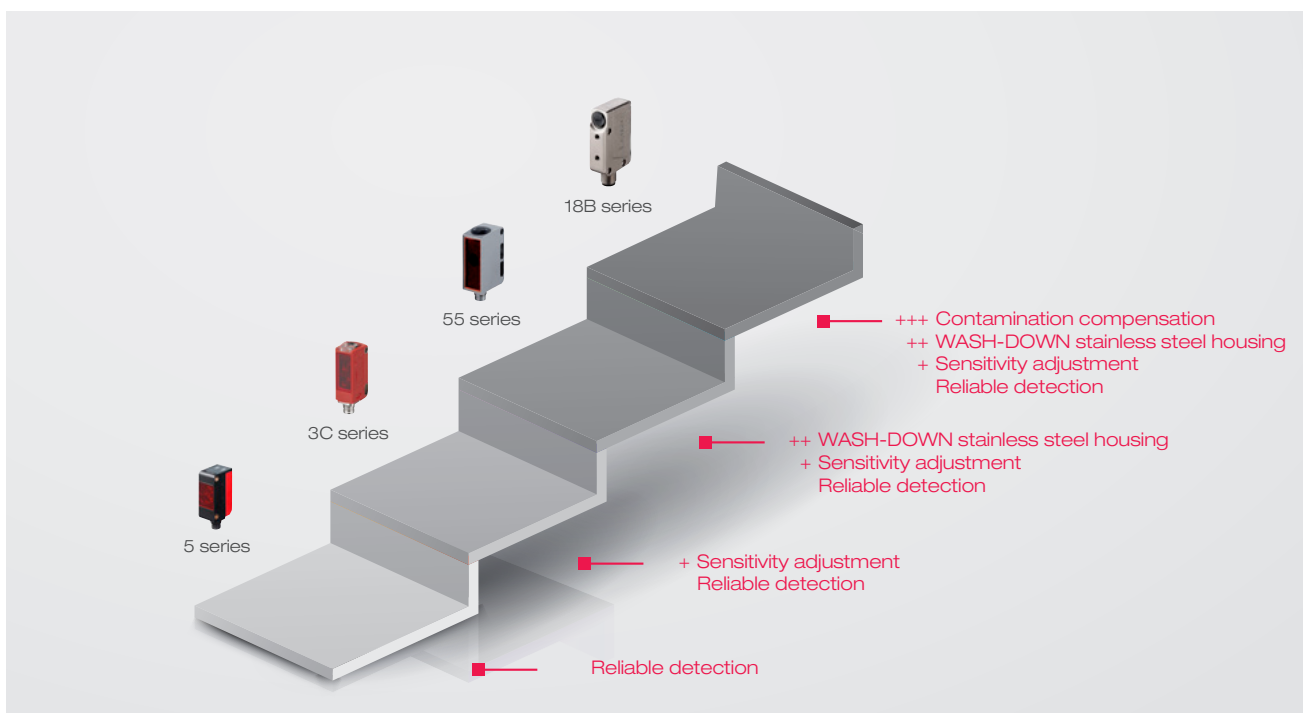
# MANY OPTIONS ENABLE THE OPTIMUM SOLUTION

We offer a scaled product range. This provides us with a wealth of possibilities from which we can choose the best and most cost-effective solution for your application.

Much more important than an attractive price is a sustainably functioning solution – tailored to the requirements of the customer and the existing production conditions. For many applications, we therefore offer a scaled product range. This means that we are able to provide various solutions for an application. For example, transparent objects are used in many areas of packaging technology. The detection of these transparent objects requires a high level of sensitivity, which all of our sensors with transparent function have. If increased loads caused by soiling or intensive cleaning are a factor, our scaled product range offers functionalities in addition to the reliable basic function.

Our sensors achieve their tasks in a targeted manner and with the best possible cost/benefit ratio so that the customer only pays for what he actually needs. Whether simple standard requirements or complex special tasks: Together with our experienced employees, you will find the best and most efficient solution. Sometimes a single product is enough, and sometimes a smart combination of optimally matched components is needed.

Our decades of experience guarantee that we always offer you a tailor-made solution which will allow you to master current and future tasks.



Detection of transparent objects



# ABSOLUTE HYGIENE

The high hygiene standards in the pharmaceutical and foodstuffs sector call for intensive cleaning processes. The sensor system must permanently withstand these processes.

Products contaminated with germs can not only endanger consumers, but also badly hurt the reputation of the company that produced the product and cause it major economic damage.

To ensure absolute hygiene, cleaning is performed continuously at regular intervals, particularly during product creation and primary packaging. All integrated components must be able to withstand not only the aggressive chemical cleaning agents, but also the strong thermal and mechanical stresses of high-pressure cleaning.

Our special housing design, with as few grooves and recesses as possible, prevents microbial contamination and ensures the safe manufacture of foodstuffs and pharmaceuticals.

The high-quality stainless steel series 53 and 55 as well as the food-neutral plastic housings of the C generation of our standard series have degree of protection IP 69K and are ECOLAB-certified. Furthermore, we subject these sensors to an extended internal long-term test that we call *CleanProof+*.



## Maximum IP protection

- Sensors with high protection classes (IP 67 / IP 69K)
- Particular suitability for all application areas because fluids and solids cannot penetrate



## ECOLAB certification

- Sensors are certified in accordance with the ECOLAB industry standard
- All components withstand all commonly used chemicals and standardized cleaning processes



## Extended resistance test

- Test specified by Leuze electronic which goes beyond the usual ECOLAB industry standard
- Resistance tests with extended temperature ranges and time cycles

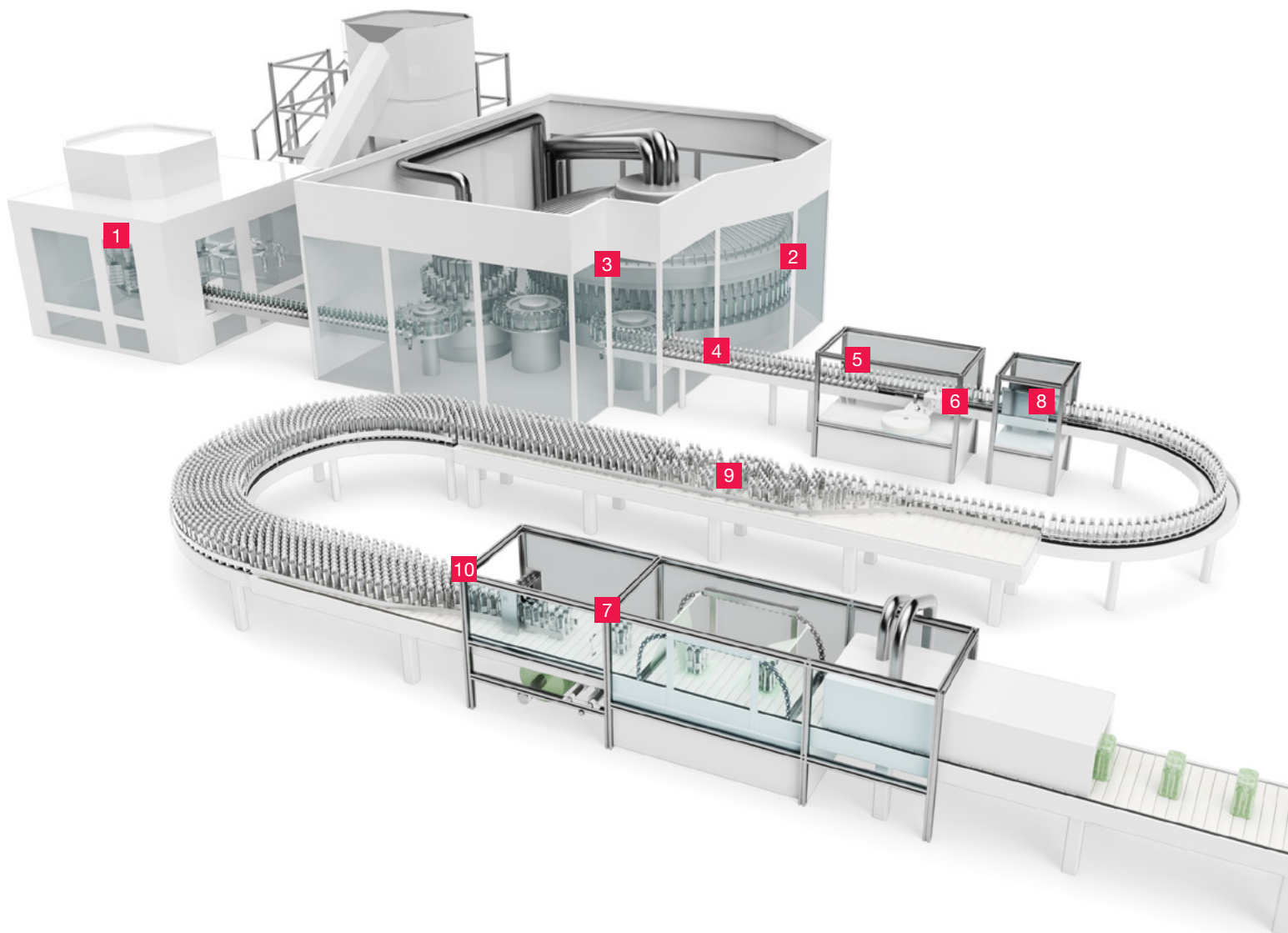
# SENSOR SOLUTIONS FOR BEVERAGE FILLING

Crystal-clear advantage: Sensitive clear-glass sensors perform their tasks safely and reliably even at extremely fast machine speeds.

In filling machines, liquids are usually filled at extremely high speeds into transparent glass and PET containers. Processes which are performed so quickly that the human eye can no longer perceive them, combined with transparent objects are a particular challenge for sensors used in filling systems.

Highly sensitive clear-glass sensors with a switching frequency of up to 5 kHz are able to detect transparent containers even at extremely

fast throughput speeds. Thanks to our 3C and 18B series clear-glass sensors with their integrated tracking function, system downtimes caused by increasing soiling are a thing of the past. The sensors are designed for use in wet applications. They are watertight and robustly withstand the permanent cleaning processes. The plastic and metal housings with protection classes up to IP 67 and 69K guarantee maximum availability of the system.



**1 Detection of PET preform**  
PRK 18B

**2 Filling level measurement**  
LS 55 H<sub>2</sub>O

**3 Presence control of bottle caps**  
HT 3C.XL

**4 Bottle detection during transport**  
PRK 3C, 55, 18B

**5 Container detection for labeling**  
PRK 3C.T

**6 Cut mark detection**  
KRT, CRT

**7 Door monitoring**  
MC 300, RD 800

**8 Precise detection of positions**  
PRKL 3C

**9 Detection of conveyor load**  
HTU 318, HTU 418

**10 Single track monitoring**  
IS 218

**Detection of PET preform**



Retro-reflective photoelectric sensors  
**PRK 18B**

- High-speed, retro-reflective photoelectric sensors with autocollimation optics for reliable detection of fast, transparent objects
- Simple sensitivity adjustment via teach button or potentiometer
- Temperature compensation  $\pm 20^{\circ}\text{C}$
- Mounting holes with integrated thread for easy mounting

**Detection of PET bottles**



Retro-reflective photoelectric sensors  
**PRK 18B**

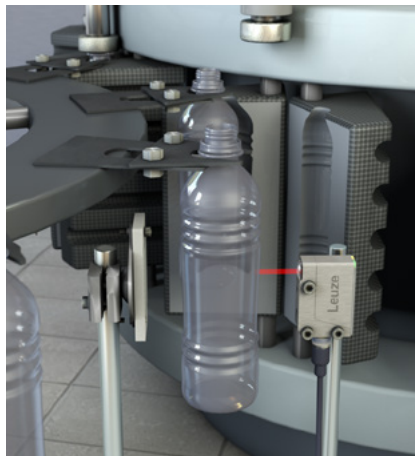
- High-speed, retro-reflective photoelectric sensors for reliable detection of highly-transparent containers
- High precision thanks to calibrated autocollimation optics
- Simple sensitivity adjustment via teach button or potentiometer
- Maximum availability through degrees of protection IP 67 and IP 69K
- Tracking function for compensating contamination

**Bottle detection in transfer star**



Diffuse sensors with background suppression  
**HRTR 55**

- Reliable container detection without reflector
- Optimized fading
- Robust WASH-DOWN V4A stainless steel housing in compact design
- High chemical resistance tested in accordance with ECOLAB
- Extended cleaning agent long-term test (CleanProof+)



## Filling level measurement



Throughbeam  
photoelectric sensors  
**LS 55 H<sub>2</sub>O**

- Reliable detection of the fill level of aqueous liquids in any container type
- Large function reserve owing to the high radiation capacity
- Adaptation to the application through multiple sensitivity levels
- Robust WASH-DOWN stainless steel housing with degrees of protection IP 67 and IP 69K

## Detection of filled bottles



Throughbeam  
photoelectric sensors  
**LS 55 H<sub>2</sub>O**

- Reliable detection of aqueous liquids in any container type
- Radiation of opaque containers and films
- Throughbeam principle for reliable detection and high function reserve
- Robust WASH-DOWN stainless steel housing with degrees of protection IP 67 and IP 69K

## Presence control of bottle caps



IO-Link

Diffuse sensors with  
background suppression  
**HT 3C.XL**

- Reliable detection of irregularly shaped objects
- Adjustable background suppression
- Reliable operation through active ambient light suppression
- Degrees of protection IP 67 and IP 69K for challenging ambient conditions
- Optional IO-Link interface



**Detection of bottle caps during infeed**

IO-Link



**Fiber optic sensors  
LV 461, LV 463**

- Suitable for all materials and transparent objects
- Low space requirements owing to the separate amplifier
- Resistant against aggressive cleaning agents
- Appropriate fiber optics available for a wide variety of applications

**Distinction of bottle caps**



**Color sensors  
CRT 448**

- Detection and distinction of bottle caps with various colors
- Multiple colors can be taught in
- Adjustable color tolerance
- High switching frequency up to 1,500 Hz

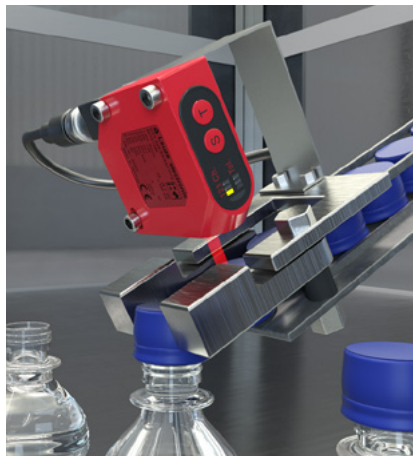
**Bottle detection during transport**

IO-Link



**Retro-reflective photoelectric sensors  
PRK 3C, 55, 18B**

- Reliable detection of highly transparent containers
- Tracking function extends the cleaning interval 50-fold
- Simple sensitivity adjustment via teach button
- Robust housing materials ensure long mission time in spite of intensive cleaning cycles



### Bottle detection during transport



Retro-reflective photoelectric sensors with special reflector  
**PRK 5**

- Set consisting of sensor and optimized reflector enables the reliable detection of transparent objects
- Quick commissioning through teach function
- Simple mounting with integrated metal threaded sleeve
- Visible red light

### Container detection for labeling

IO-Link



Retro-reflective photoelectric sensors  
**PRK 3C.T**

- Reliable detection of any container type
- Contamination compensation and extended maintenance intervals through tracking function
- Precise positioning thanks to the small light spot and high switching frequency
- Long mission time due to the robust plastic housing with degrees of protection IP 67 and IP 69K

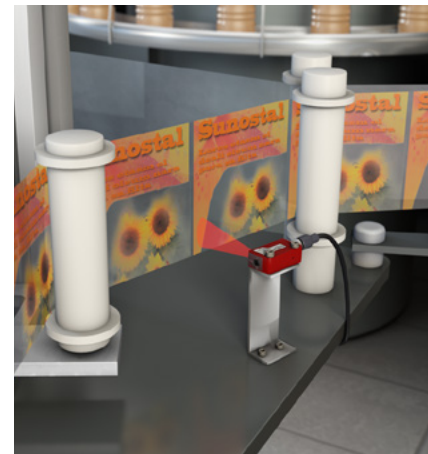
### Monitoring of label tape

IO-Link



Diffuse sensors with background suppression  
**HT 3C.XL**

- Reliable detection of transparent and partially printed plastic films
- Fault-free operation through active ambient light suppression
- Degrees of protection IP 67 and IP 69K for challenging ambient conditions
- Adjustable background suppression



### Cut mark detection



#### Contrast sensors, color mark sensors **KRT, CRT**

- Reliable detection of cut and print marks on all materials
- Optimal adaptation to the application thanks to multicolor optics
- Precise light spot and high switching frequency for exact cuts
- Easy commissioning at the device or via the IO-Link interface

### Checking of bottle alignment



#### Fiber optic sensors **LV 463**

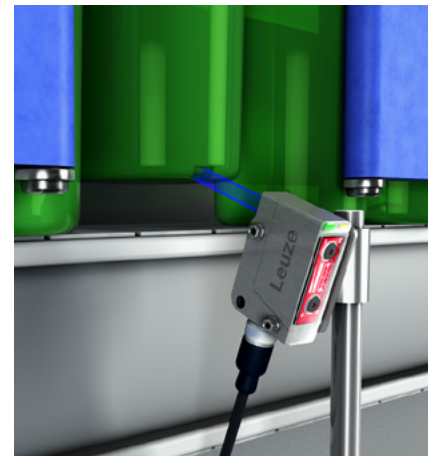
- Controlled positioning of specially shaped containers, e.g. using the bottle seam
- Minute differences and markings detectable on any container type
- Evaluation via analog output or IO-Link interface
- Different fiber optics for optimum adaptation to the application

### Container positioning



#### Contrast sensors **KRT 18B analog**

- Positioning of all kinds of object using markings
- Print mark sensor with multicolor optics for adaptation to the objects
- Signal evaluation analog or via IO-Link interface
- Convenient adjustment via dual-channel IO-Link
- Degrees of protection IP 67 and IP 69 as well as ECOLAB certification





### Measurement of roll diameter



#### Optical distance sensors ODS 9, ODS 96B

- Various measurement modes, optimized for speed or precision
- Configuration option on the device or by means of controller for optimal adaptation to the application
- Display for diagnostics and measured-value detection
- Various optics models and measurement principles available

### Monitoring of label attachment



#### Energetic diffuse sensors FT 5, FT 328

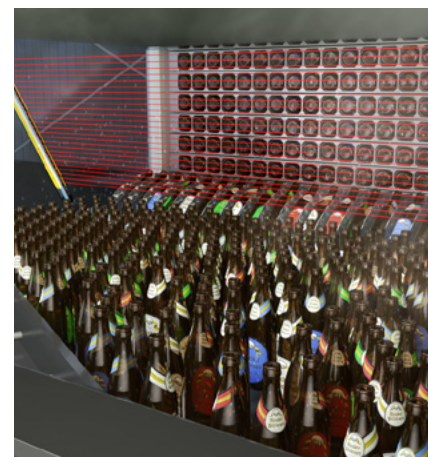
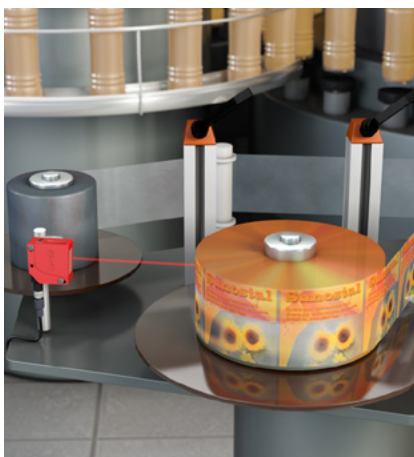
- Detection of paper and plastic labels on glossy containers
- Simple sensitivity adjustment via teach button
- Matching accessories for simple mounting

### Point of operation guarding



#### Safety light curtains MLC 510-IP

- Suitable for use in the food industry owing to degrees of protection IP 67 and IP 69K
- MLC safety light curtains pre-mounted in a transparent and encapsulated tube
- Easy alignment, setup and operation thanks to integrated LED and 7-segment display



### Detection of reusable bottles



Retro-reflective photoelectric sensors  
**PRK 96**

- Polarized retro-reflective photoelectric sensors with high operating range
- Reliable detection of transparent objects over large distances
- Preset sensitivities for differentiation between colored or clear glass

### Door monitoring



Contactless safety switches  
**MC 300, RD 800**

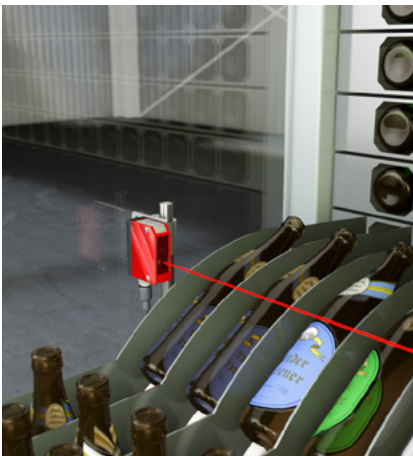
- Not sensitive to soiling
- Resistant to vibrations and physical shocks
- Tolerant to warped doors thanks to high switching hysteresis
- Integration in control systems up to category 4 and can be used for applications up to PL e
- Models with transponder and magnetically coded models available
- RD 800: Degrees of protection IP 67 and IP 69K

### Point of operation guarding



Safety light curtains  
**MLC 520-S, MLC 500**

- Time-saving installation through simple alignment and configuration by means of wiring
- Various beam distances for finger and hand safety
- Integration in control systems up to category 4 and can be used for applications up to PL e
- MLC 520-S: With extremely slimline construction for perfect integration in the machine design



## Precise detection of positions



### Laser retro-reflective photoelectric sensors PRKL 3C

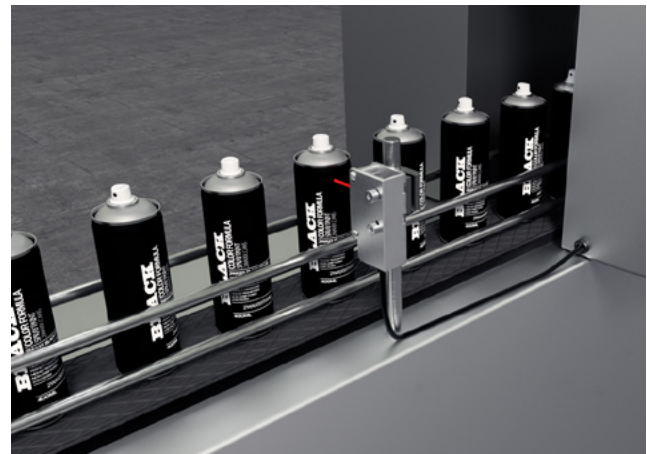
- Very precise reproducibility of the switching point
- Very visible laser light spot
- Reliable detection of highly transparent containers
- Simple setup by means of teach function at the press of a button or via a cable
- Tracking function for compensating contamination

## Detection of positions



### Retro-reflective photoelectric sensors PRK 55 Ex

- Reliable detection of highly transparent containers
- Simple setup by means of teach function at the press of a button or via a cable
- Certified for potentially explosive areas acc. to II 3G Ex nA op is IIB T4 Gc XII 3D Ex tc IIIC T 70 °C Dc IP 67 X
- Robust stainless steel housing



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## Detection of conveyor load



### Ultrasonic sensors HTU 318, HTU 418

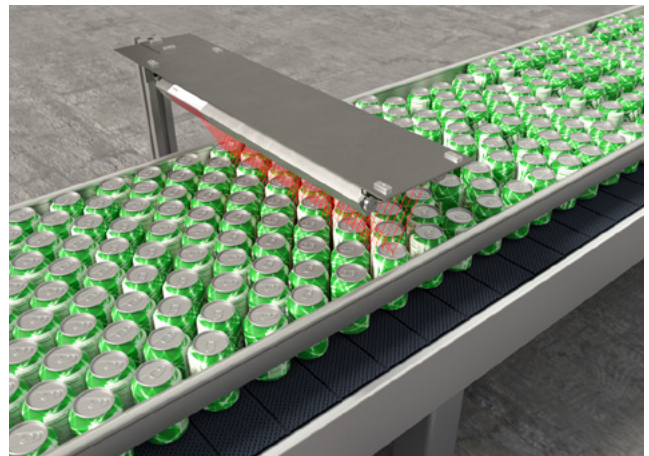
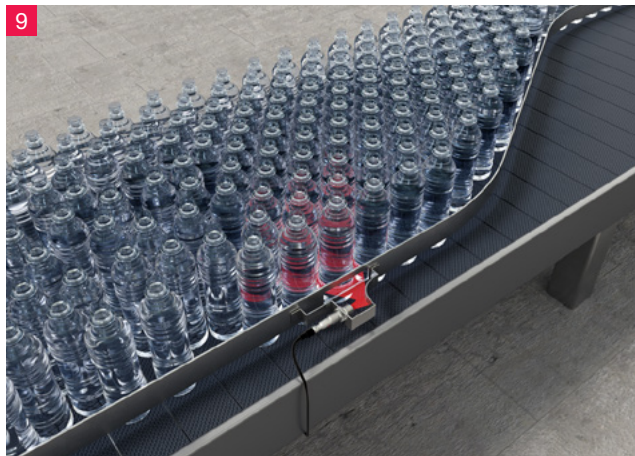
- Material-independent detection of containers in mass flow
- Resistant to moist and dry soiling
- Simple operating range adjustment via teach button
- Plastic and metal housings with degrees of protection IP 67 and IP 68 available
- Models with 2 independent switching points available
- Models with diffuse reflection principle or retro-reflective principle available

## Detection of positions in mass flow



### Measuring light curtains CML in V arrangement

- Extremely short response time per beam for the reliable detection of fast processes
- Flexible fastening concept for uncomplicated mounting
- Large, clearly legible display with a robust membrane keyboard for making settings at the device
- Measurement field length up to 3,000 mm
- Integrated PROFINET, PROFIBUS, CANopen, RS 485 and IO-Link interfaces for direct configuration via the control
- Optional plug outlets to the rear



## Overfill monitoring during bottle transport



### Retro-reflective photoelectric sensors PRK 25C

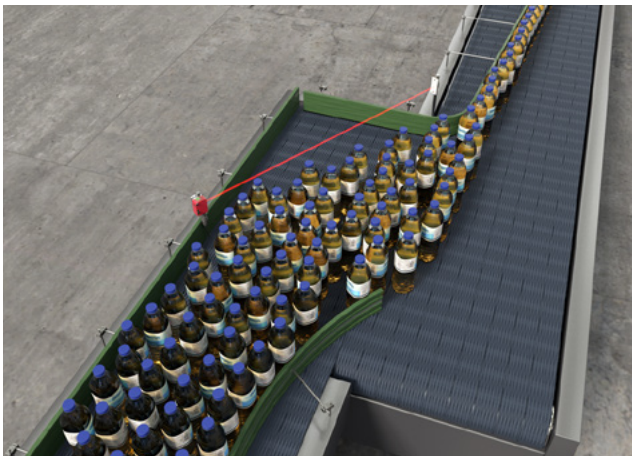
- Reliable detection of any bottle and container type
- Clearly visible red light enables quick and easy commissioning
- Large operating range and function reserve
- Robust in use thanks to degrees of protection IP 67 and IP 69K as well as ECOLAB certification
- Easy mounting owing to the threads in the fastening holes

## Single track monitoring



### Inductive proximity switches IS 218

- Different housing versions and operating ranges for optimal adaptation to the application
- Stainless steel devices for long mission time under harsh ambient conditions
- Correction factor 1 for material-independent detection
- Easy connection with cable or plug versions



# SENSOR SOLUTIONS FOR PHARMACEUTICAL PACKAGING

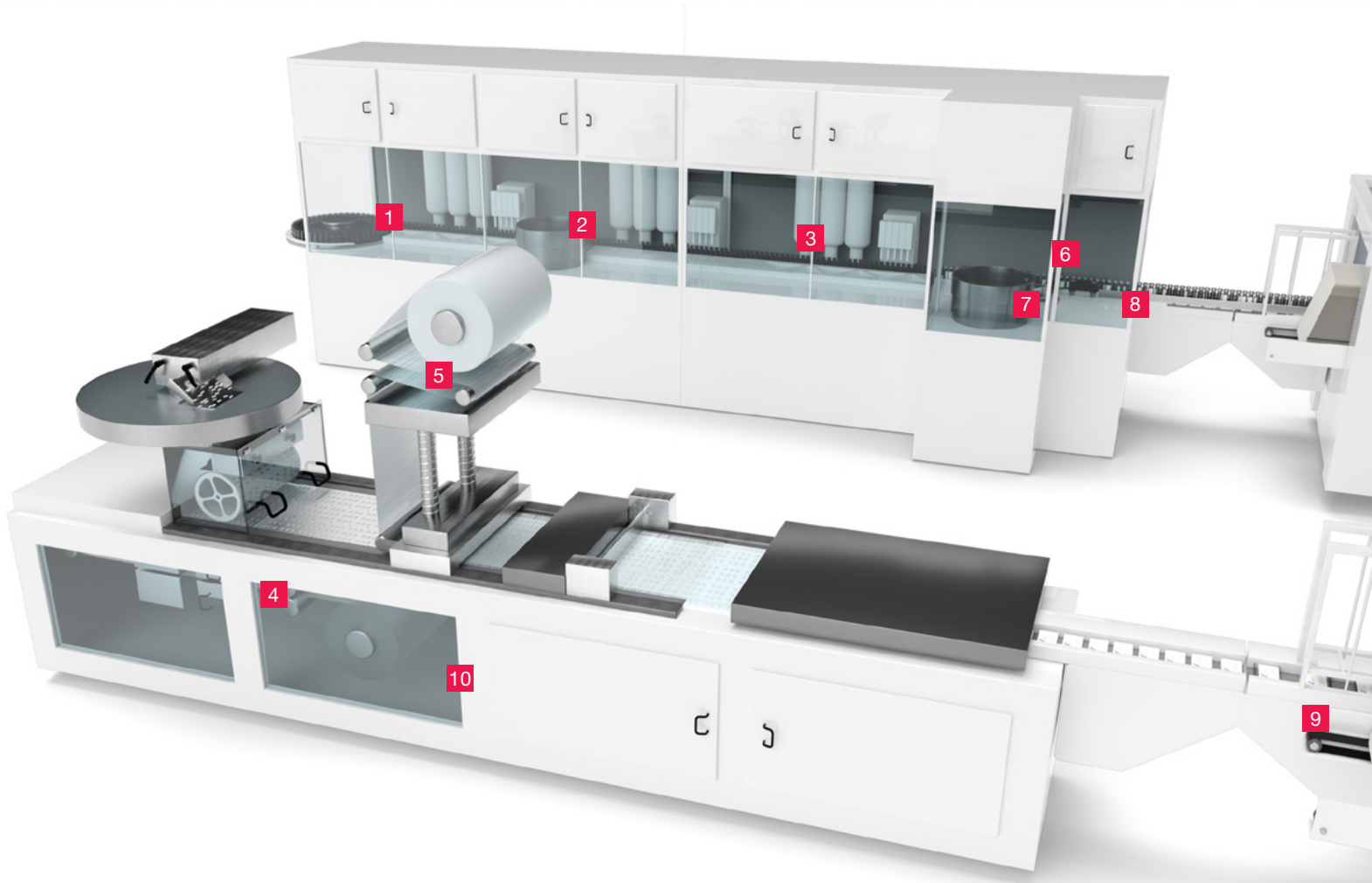
Always safe, always reliable: Extremely reliable stainless steel sensors meet the highest safety and hygiene standards.

The packaging process mainly involves tablets being packed in blisters and various liquids being filled into small glass and plastic bottles. Owing to the strict hygiene standards, stainless steel is often the only material allowed for the components used. Maximum safety requirements apply during the production and packaging of pharmaceutical products. To protect against falsification, code readers must guarantee 100% decoding.

The DCR 200i bar code scanner reads all codes and ensures the traceability of the production and packaging process for all products. With its

hygienic stainless steel housing, it is ideally suited to the demands of the pharmaceutical industry.

The hygiene design stainless steel sensors of the 53 series use laser technology to reliably and quickly detect even minute vials. Many challenges involving the detection of self-adhesive labels in the labeling station can also be mastered: For example, the GSU 14D forked sensor can reliably detect virtually invisible clear-on-clear labels. In quality control, the LRT 8 luminescence sensor also reliably checks the presence of attached paper labels.



**1 Detection of transparent vials during infeed**

LV 463

**2 Precise positioning of vials**

PRKL 53

**3 Detection of vials in screw conveyor**

HT3C.V

**4 Splice detection**

VSU 12, IGSU 14D

**5 Cut mark detection**

KRT 3B, 55, 18B

**6 Determination of trigger position**

PRK 3C, PRK 55

**7 Label detection**

IGSU 14D, GS 63B, GS 61

**8 Presence control of labels**

LRT 8

**9 Code identification**

DCR 200i

**10 Safeguarding of protective doors and protective covers**

RD 800

**Detection of transparent vials during infeed**



**Fiber optic sensors  
LV 463**

- Suitable for all materials and transparent objects
- Low space requirements owing to the separate amplifier
- Resistant against aggressive cleaning agents
- Large selection of fiber optics available

**Detection of vials in aseptic zone**



**Diffuse sensors with background suppression  
HRTR 53**

- Reliable object detection without reflectors needing to be mounted
- Gap-free hygiene design prevents bacterial carry-over
- Operating range of 5 – 400 mm
- Chemical resistance tested in accordance with ECOLAB
- Extended cleaning agent long-term test (CleanProof+)

**Precise positioning of vials**



**Retro-reflective photoelectric sensors  
PRKL 53**

- Hygienic design of laser retro-reflective photoelectric sensor and reflectors
- Integration also in confined spaces
- Highly precise positioning thanks to the small laser light spot
- Chemical resistance tested in accordance with ECOLAB
- Extended cleaning agent long-term test (CleanProof+)





**Detection of small parts  
in funnel**



Diffuse sensors with  
background suppression  
**HT 46**

- Clearly visible light spot allows easy alignment and fast commissioning
- Background suppression with easy operating range adjustment via potentiometer
- Status LEDs visible from all sides
- Robust plastic housing with degrees of protection IP 67 and IP 69K

**Detection of vials  
in screw conveyor**



Diffuse sensors with  
background suppression  
**HT3C.V**

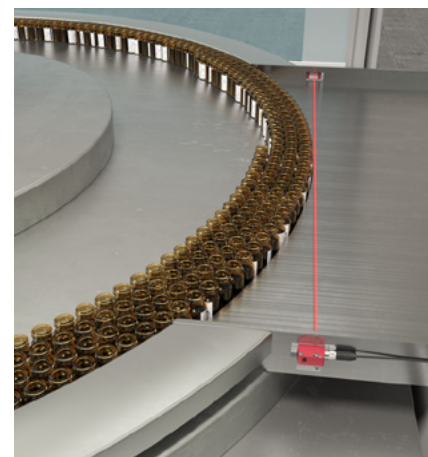
- Precise background suppression through special V-optics
- Reliable detection of transparent objects in front of a moving background
- Simple mounting with integrated metal threaded sleeve
- Robust plastic housing with degrees of protection IP 67 and IP 69K

**Projection monitoring  
during transport**



Retro-reflective  
photoelectric sensors  
**PRK 25C**

- Reliable detection of any type of transparent container
- Clearly visible light spot allows easy alignment and fast commissioning
- High function reserve even with small reflectors
- Simple mounting with integrated metal threaded sleeve
- Robust plastic housing with degrees of protection IP 67 and IP 69K



## Measurement of roll diameter



### Distance sensors DMK 318, ODS 9

- Various measurement modes, optimized for speed or precision
- Configuration option on the device or by means of controller for optimal adaptation to the application
- Display, which can be switched off, for diagnostics and measured-value detection

## Splice detection



### Splice inspections VSU 12, IGSU 14D

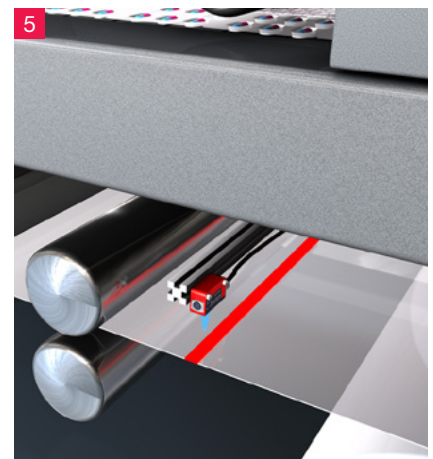
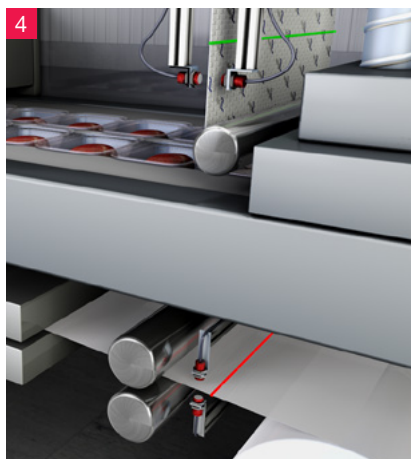
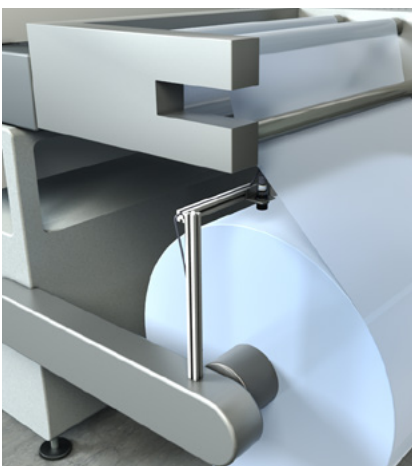
- Material-, color- and printing-independent splice detection
- Suitable for high speeds
- Film thickness from 20 – 1,200 g/m<sup>2</sup>
- Fully automatic adaptation to the film thickness
- Simple setup by means of teach function at the press of a button or via a cable

## Cut mark detection



### Contrast sensors KRT 3B, 55, 18B

- Multicolor contrast sensors with high precision and reliable switching behavior
- Easy teaching of the marks via various teach modes or potentiometer
- Convenient adjustment via dual-channel IO-Link interface
- Tracking function for compensating contamination
- Degrees of protection IP 67 and IP 69 as well as ECOLAB certification



## Determination of trigger position



Retro-reflective photoelectric sensors  
**PRK 3C, PRK 55**

- Clearly visible light spot allows easy alignment and fast commissioning
- Reliable detection of all types of containers
- Tracking function for fault-free continuous operation
- Simple sensitivity adjustment via teach button
- Plastic or stainless steel housing with degrees of protection IP 67 and IP 69K

## Label detection



Forked sensors  
**IGSU 14D, GS 63B, GS 61**

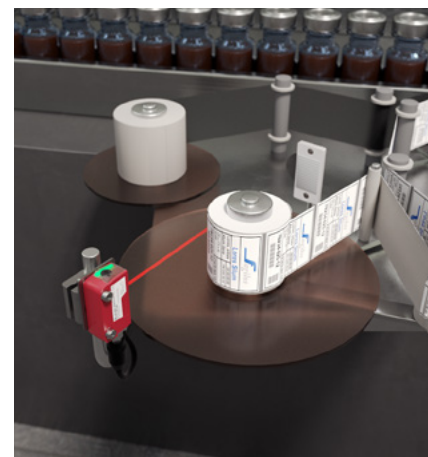
- Broad product portfolio for detecting a wide range of label materials – from paper to transparent film
- Maximum dispenser accuracy
- Conveyor speeds > 2 m/s
- Simple sensitivity adjustment via teach button or potentiometer
- Multiple parameter sets can be stored

## Tape end inspection



Retro-reflective photoelectric sensors  
**PRK 3C**

- High function reserve
- Simple sensitivity adjustment via teach button
- Reliable detection through active ambient light suppression for maximum system availability
- Status LEDs visible from all sides



**Detection of the dancer bar end position**



**Inductive switches  
IS 212, 218, 288**

- Detection of the dancer bar end position in case of tape rupture or blocked unwinding
- Operating ranges from 1.5 to 40 mm offer reliable detection on metal objects
- Easy and space-saving mounting owing to cylindrical or cubic design
- Diameter of 4 mm – M30 and cubic housings available

**Presence control of labels**



**Luminescence sensors  
LRT 8**

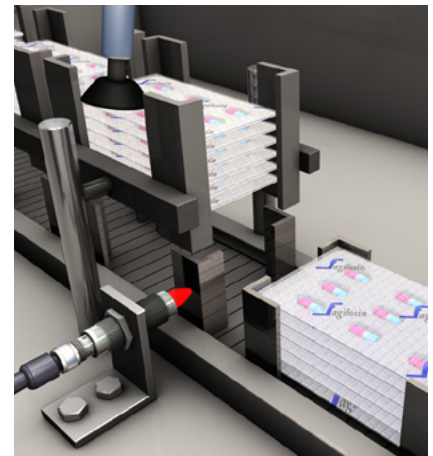
- Reliable detection of paper labels on any type of container
- Color- and gloss-independent detection
- Large operating range up to 500 mm
- Simple sensitivity adjustment via potentiometer
- Very compact metal construction
- Switching frequency 1.5 kHz

**Detection of positions**



**Inductive switches  
IS 208, 288**

- Detection of moving machine parts
- Easy and space-saving mounting owing to cylindrical or cubic design
- Diameter of 4 mm – M30 and cubic housings available
- Operating ranges of 1.5 – 40 mm enable the reliable detection of metallic objects



## Stack height measurement



### Optical distance sensors ODS 9

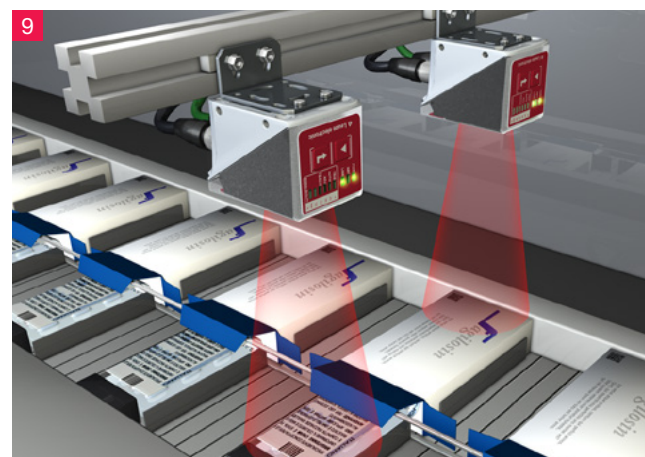
- Continuous detection of the distance to the stack
- Measurement ranges of 50 – 100 mm and 50 – 650 mm
- Resolution of 0.01 – 0.1 mm
- Configuration and measurement value display via LC display and PC
- Devices optimized for glossy objects available
- Integrated RS 485, RS 232 and Dual-channel IO-Link interface as well as analog output (current/voltage)

## Code identification



### Camera-based 1D/2D code readers DCR 200i

- Fast and reliable identification of 1D- and 2D-codes
- 3 optics models cover reading distances from approx. 40 – 360 mm
- High reading performance and powerful LED illumination enable reliable use even with low print quality and poor contrast in the code
- Easy commissioning at the device or using the install wizard in the web browser
- Degrees of protection IP 67 and IP 69K (stainless steel housing)



## Safeguarding of protective doors and protective covers



### Safety transponders RD 800

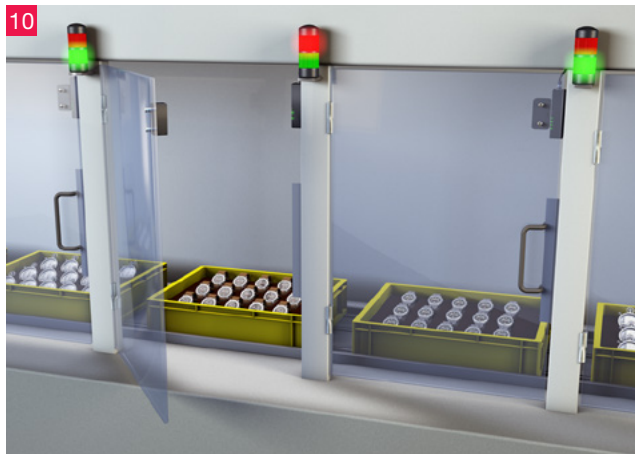
- Safety switch with transponder for maximum protection against tampering
- Standard and teachable models available
- Robust, easy-to-clean housing with degrees of protection IP 67 and IP 69K
- M12 connection on the left or right for the most possible freedom during assembly

## Checking of invisible safety marks



### Luminescence sensors LRT 8

- Operating range up to 500 mm
- Very compact metal construction
- Switching frequency 1.5 kHz
- Simple sensitivity adjustment via potentiometer
- Turnable M12 connector
- Several filter variants



## Positioning of tubes



### Contrast sensors KRT 3B

- Operating ranges of 14.5–60m
- RGB, white or laser light
- Easy sensitivity adjustment via 2 alternative teach processes
- Switching-threshold correction
- Integrated IO-Link interface

## Safeguarding of protective doors and protective covers



### Safety locking devices L100, L200, L300

- Can be used for process and personnel protection applications
- Locking device keeps the safety door locked until the machine is at a standstill and no longer poses a hazard
- Integration in control systems up to category 4 for applications up to PL e
- Simple integration in the machine safety circuit with the MSI 400 compact safety control



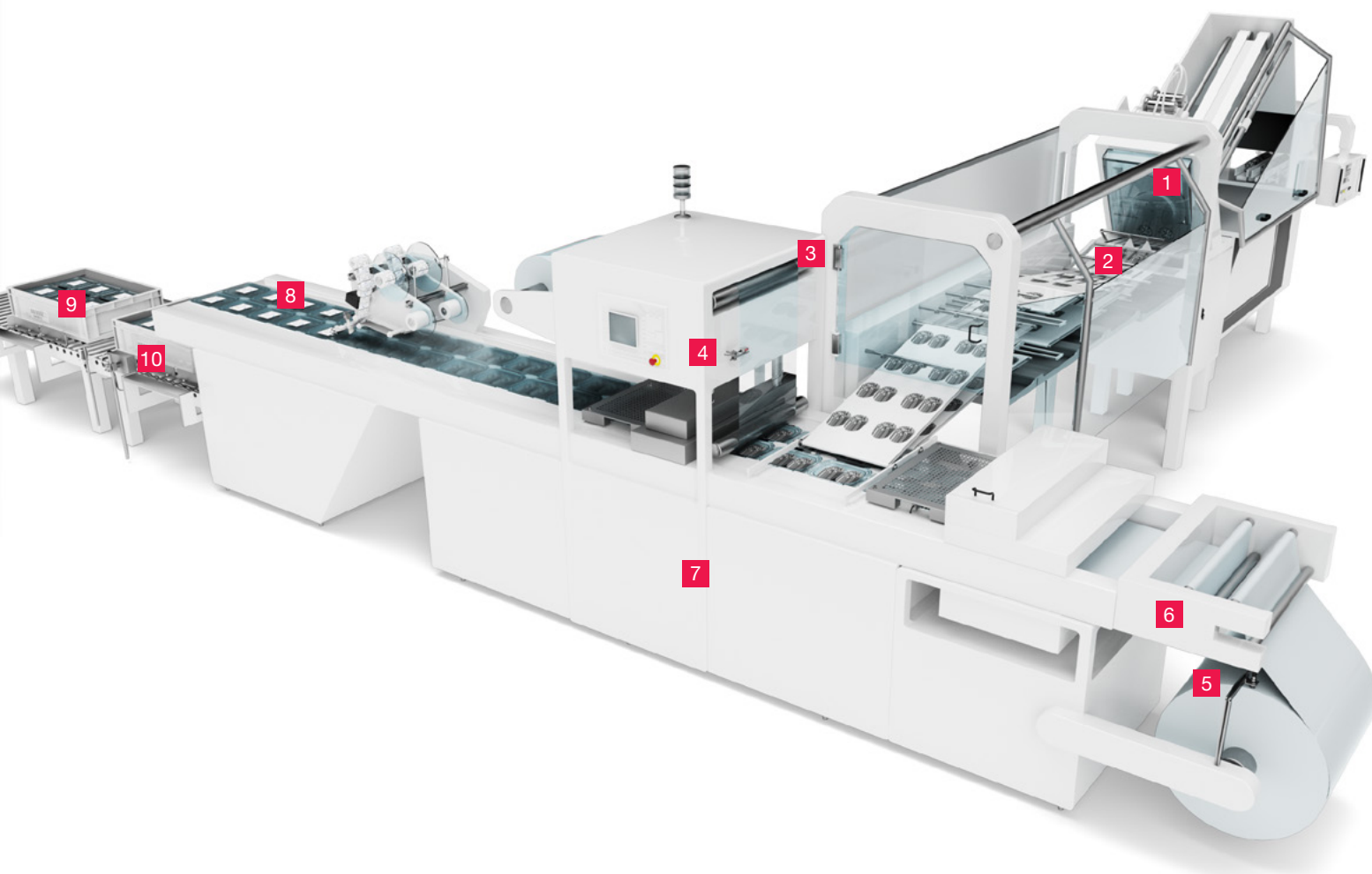
# SENSOR SOLUTIONS FOR MEAT PACKAGING

Where's the beef?: These robust sensor systems are also able to withstand aggressive and continuous cleaning.

The industrial processing of raw meat and other sensitive foodstuffs requires the highest of hygiene standards. Only regular and intense cleaning of all affected components guarantees perfectly hygienic products. The automation components used in this sector must withstand aggressive cleaning agents, high-pressure cleaning and continuous changes in temperature.

The housings of the sensors recommended below are made of resilient, food-neutral plastic or high-quality stainless steel. They are extremely robust and therefore ideal for use in the meat and food industry. The high degrees of protection IP 67 and IP 69K as well as ECOLAB certification guarantee long-term stability.





**1 Monitoring of product infeed**  
HRTR 53.S

**2 Detection of front edge of product**  
HRTL 53.C2.XL

**3 Safeguarding of safety doors**  
S 420

**4 Mark detection on film**  
KRT 3B, 55, 18B

**5 Measurement of roll diameter**  
ODS 96B

**6 Detection of film end**  
RK 18B

**7 Evaluation of safety signals**  
MSI SR, MSI 400

**8 Monitoring of code printing**  
LSIS, DCR 200i

**9 Container detection**  
PRK 46C

**10 Code identification**  
BCL 304i

### Monitoring of the product infeed



Diffuse sensors with background suppression  
**HRTR 53.S**

- Reliable and color-independent product detection
- Operating ranges of 10–150 m
- Response time 0.5 ms
- Stainless steel housing with degrees of protection IP 67 and IP 69K as well as ECOLAB certification
- Extended cleaning agent long-term test (CleanProof+)
- Ambient temperature –30 to +70 °C

### Detection of product front edge



Diffuse sensors with background suppression  
**HRTL 53.C2.XL**

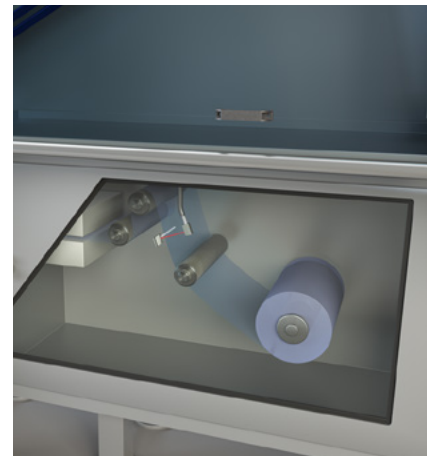
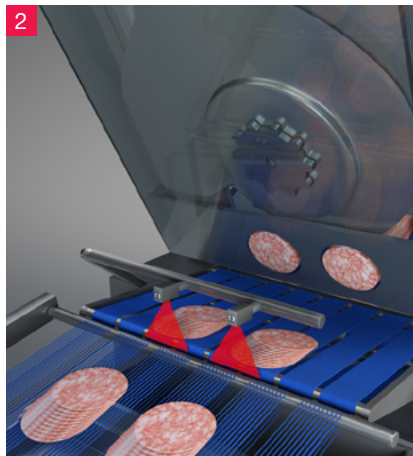
- Line-shaped laser light spot 1 x 30 mm also detects products with lateral offset
- Reliable detection regardless of the product
- Stainless steel housing in hygiene design with degrees of protection IP 67 and IP 69K as well as ECOLAB certification
- Extended cleaning agent long-term test (CleanProof+)
- Operating ranges of 20–450 m
- Ambient temperature –30 to +70 °C

### Detection of transparent films



Retro-reflective photoelectric sensors  
**RKR 53/6.42**

- Reliable detection of highly transparent films < 20 µm
- Stainless steel housing in hygiene design with degrees of protection IP 67 and IP 69K as well as ECOLAB certification
- Extended cleaning agent long-term test (CleanProof+)
- TK BR 53 stainless steel reflector identical in construction in hygiene design
- Ambient temperature –30 to +70 °C



## Safeguarding of protective doors



### Safety hinge switches S 420

- Mechanical hinge with integrated safety switch
- Hygienic 316L stainless steel housing with degrees of protection IP 67 and IP 69K
- Safety-related integration up to category 4 and applications up to PL e via contacts or OSSDs

## Recording of operational data



### RFID read/write systems RFM 12 SL 200

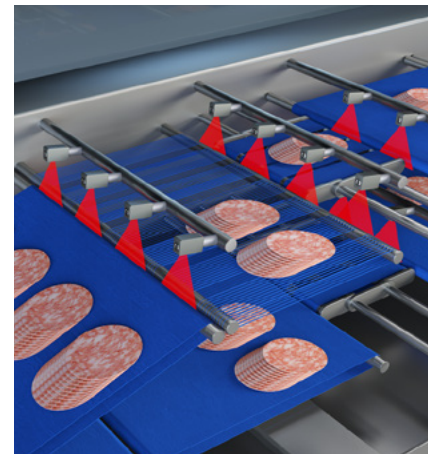
- RFID cutting knife identification and recording of operational data allows preventative maintenance
- Small construction M30x98 mm
- Operating range 40 mm with TFM 05 transponder
- Can be integrated in PROFINET, PROFIBUS, EtherNet TCP/IP, CANopen, EtherCAT, DeviceNet and EtherNet/IP using MA 2xxi gateways

## Product detection at the unloading belt



### Diffuse sensors with background suppression HRTL 53.C2.XL

- Line-shaped laser light spot 1 x 30 mm also detects products with lateral offset
- Reliable detection regardless of the product
- Stainless steel housing in hygiene design with degrees of protection IP 67 and IP 69K as well as ECOLAB certification
- Extended cleaning agent long-term test (CleanProof+)
- Operating ranges of 20–450 m
- Ambient temperature -30 to +70 °C



3

Filling-level inspection



Light section sensors  
**LRS 36**

- Monitoring of one or more lines
- Reliable monitoring of the filling level
- Easy assignment of configurable detection fields to switching outputs
- Scanning operating principle as replacement for solutions with multiple individual sensors

Detection of products on conveying belt



Retro-reflective photoelectric sensors  
**PRK 55, MTKS**

- Reliable detection of transparent media
- Small reflectors in the V4A stainless steel housing
- Robust WASH-DOWN stainless steel housing with degrees of protection IP 67 and IP 69K
- Maximum chemical resistance in accordance with ECOLAB
- Extended cleaning agent long-term test (CleanProof+)

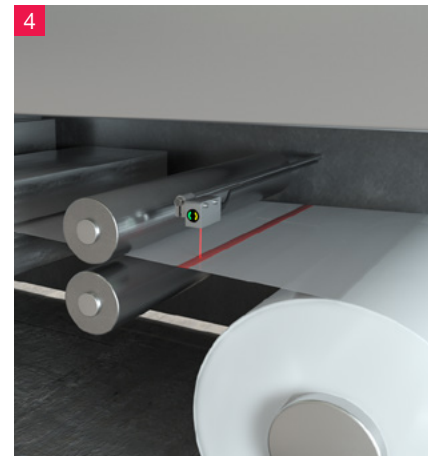
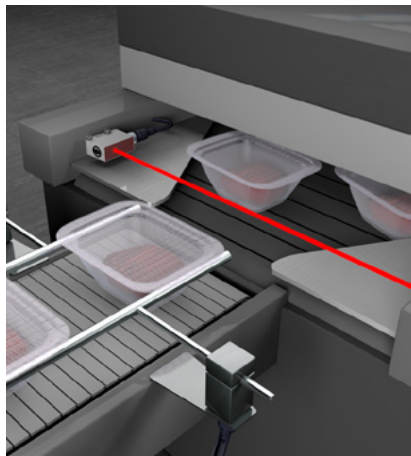
Mark detection on film

 IO-Link



Contrast sensors  
**KRT 3B, 55, 18B**

- Color-independent detection of glossy print marks
- Short response time ensures reproducible cutting positions
- Intelligent configuration and diagnostics via IO-Link interface
- Models in plastic, metal and stainless steel housing available
- Robust WASH-DOWN stainless steel housing with degrees of protection IP 67 and IP 69K



## Web edge control



IO-Link

### Retro-reflective photoelectric sensors PRK 18B

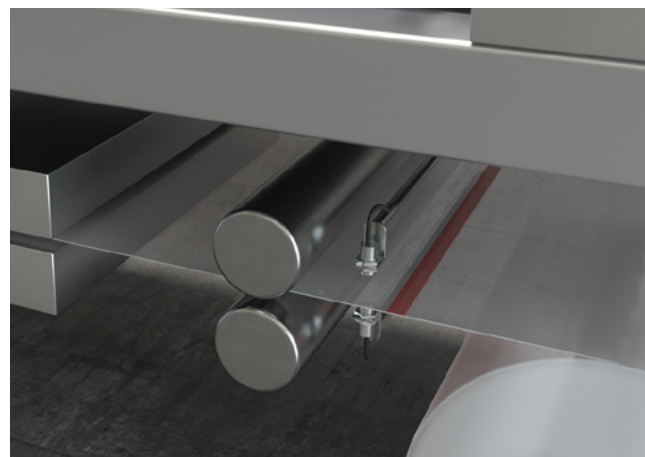
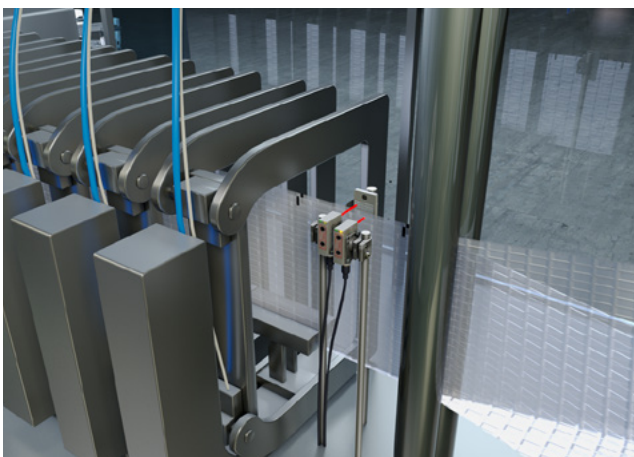
- Integrated solution for all types of film (even transparent)
- High-speed, retro-reflective photoelectric sensors with autocollimation optics for reliable detection of highly-transparent objects
- Simple sensitivity adjustment via teach button
- Temperature compensation  $\pm 20^{\circ}\text{C}$
- High accuracy through calibrated optical system
- Extremely short response time, switching frequency up to 5 kHz

## Splice detection



### Splice inspections VSU 12, IGSU 14D

- Material-, color- and printing-independent splice detection
- Suitable for high speeds
- Film thickness from 20 – 1,200 g/m<sup>2</sup>
- Simple setup by means of teach function at the press of a button or via a cable
- Fully automatic adaptation to the film thickness



## Measurement of roll diameter



IO-Link

### Optical distance sensors ODS 96B

- Various measurement modes, optimized for speed or precision
- Configuration option on the device or by means of controller for optimal adaptation to the application
- Display, which can be switched off, for diagnostics and measured-value detection
- Various operating ranges and optics models available

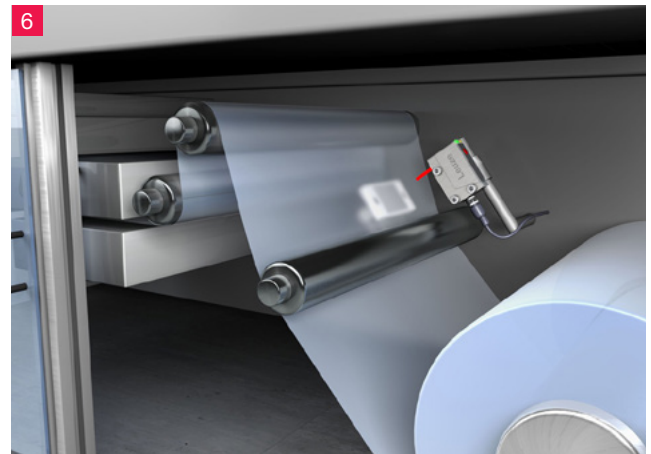
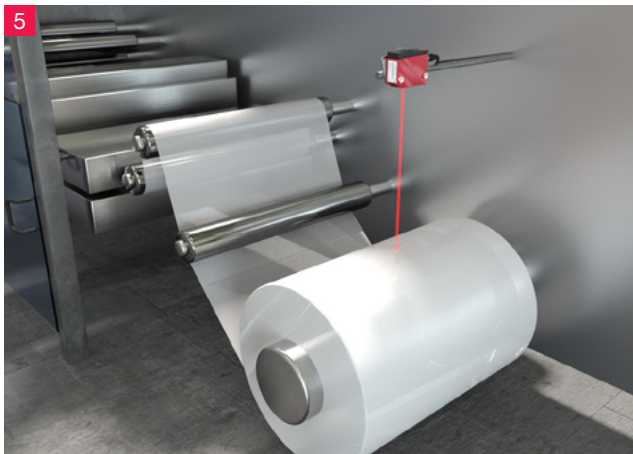
## Detection of film end



IO-Link

### Retro-reflective photoelectric sensors RK 18B

- Detection of highly transparent films and glass panes
- Simple sensitivity adjustment via potentiometer
- Operation with glass triple reflectors and any reflective tapes



## Point of operation guarding



### Single light beam safety devices SLS 518, 25B

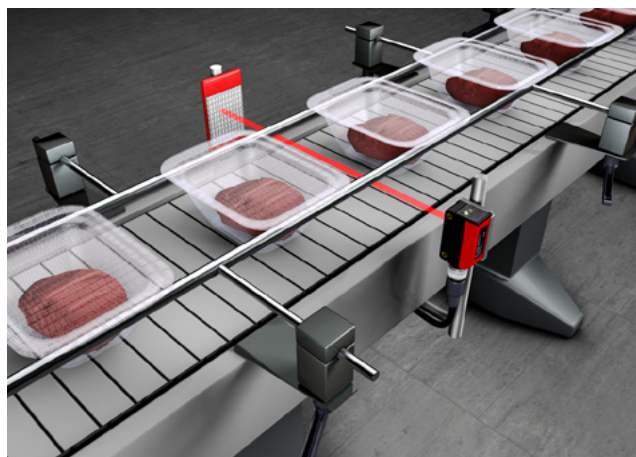
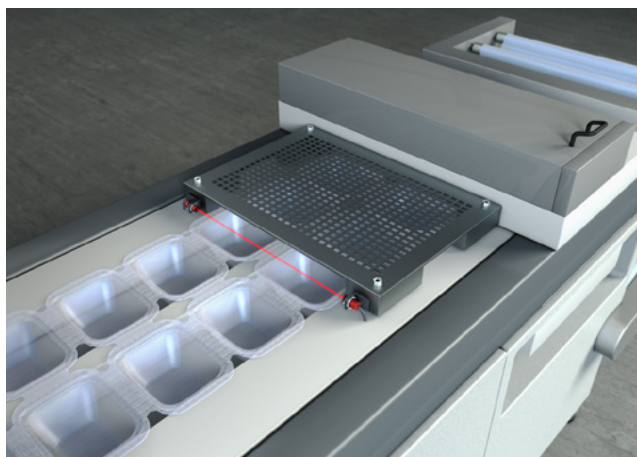
- Safeguarding of narrow openings
- Single light beam safety devices: type 2 for PL c and type 4 for PL e
- Cubic and cylindrical models available
- Compact housing allows integration even in confined spaces

## Object detection on the conveyor



### Retro-reflective photoelectric sensors PRK 5

- Large, clearly visible light spot enables quick and easy commissioning
- Simple sensitivity adjustment via teach button
- Degree of protection IP 67 for harsh environmental conditions
- Large temperature range from  $-40$  to  $+60$  °C
- Simple mounting by means of integrated threaded sleeves



## Evaluation of safety signals



### Safety relay / programmable safety controls **MSI SR, MSI 400**

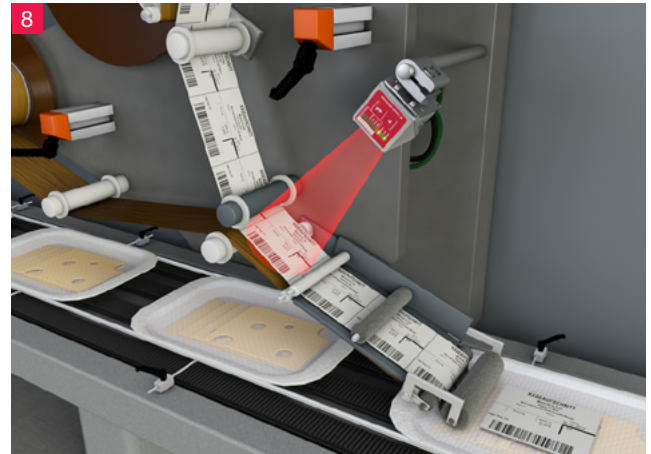
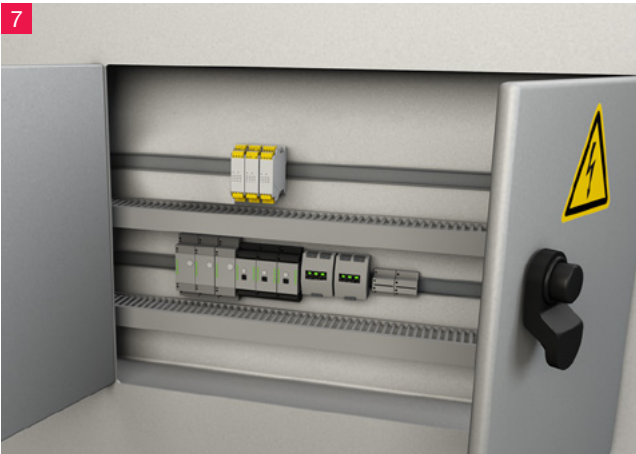
- Efficient integration of safety devices in the machine control system
- Extensive range of safety relays for all safety sensors
- Flexibly extendable safety control with 24 I/Os and an overall width of just 45 mm
- Optionally with Ethernet interface and gateway functions
- With either pluggable screw terminals or with spring-cage terminals

## Monitoring of code printing



### Camera-based 1D/2D code readers **LSIS, DCR 200i**

- Fast and reliable identification of 1D- and 2D-codes
- Various program blocks can be stored
- Integrated interfaces such as PROFIBUS and EtherNet for simple integration in controls and networks
- Degree of protection IP 67 and IP 69K (stainless steel housing)
- LSIS: motor-driven focus adjustment
- DCR 200i: 3 optics models cover reading distances from approx. 40–360 mm





## Container detection



IO-Link

### Retro-reflective photoelectric sensors PRK 46C

- Clearly visible light spot enables quick and easy commissioning
- Extended cleaning agent long-term test (CleanProof+)
- LED status indicators clearly visible from all sides
- Functional reliability owing to large operating range reserve
- Degrees of protection IP 67 and IP 69K

## Code identification



### Bar code scanners BCL 304i

- Bar codes can be read reliably under difficult ambient conditions
- Code reconstruction technology (CRT) for reliable identification of damaged codes
- Reading distances from 20–700 mm
- Available as line/raster scanner
- Integrated PROFIBUS, PROFINET, EtherNet, multiNet, RS232, RS422 and RS485 interfaces
- Robust stainless steel housing with degrees of protection IP 67 and IP 69K



# SENSOR SOLUTIONS FOR CONFECTIONERY AND BAKERY PRODUCTION

The colorful world of sweet and savory snacks: The many different shapes, films, foils and products require high-performance sensor systems that are easy to configure.

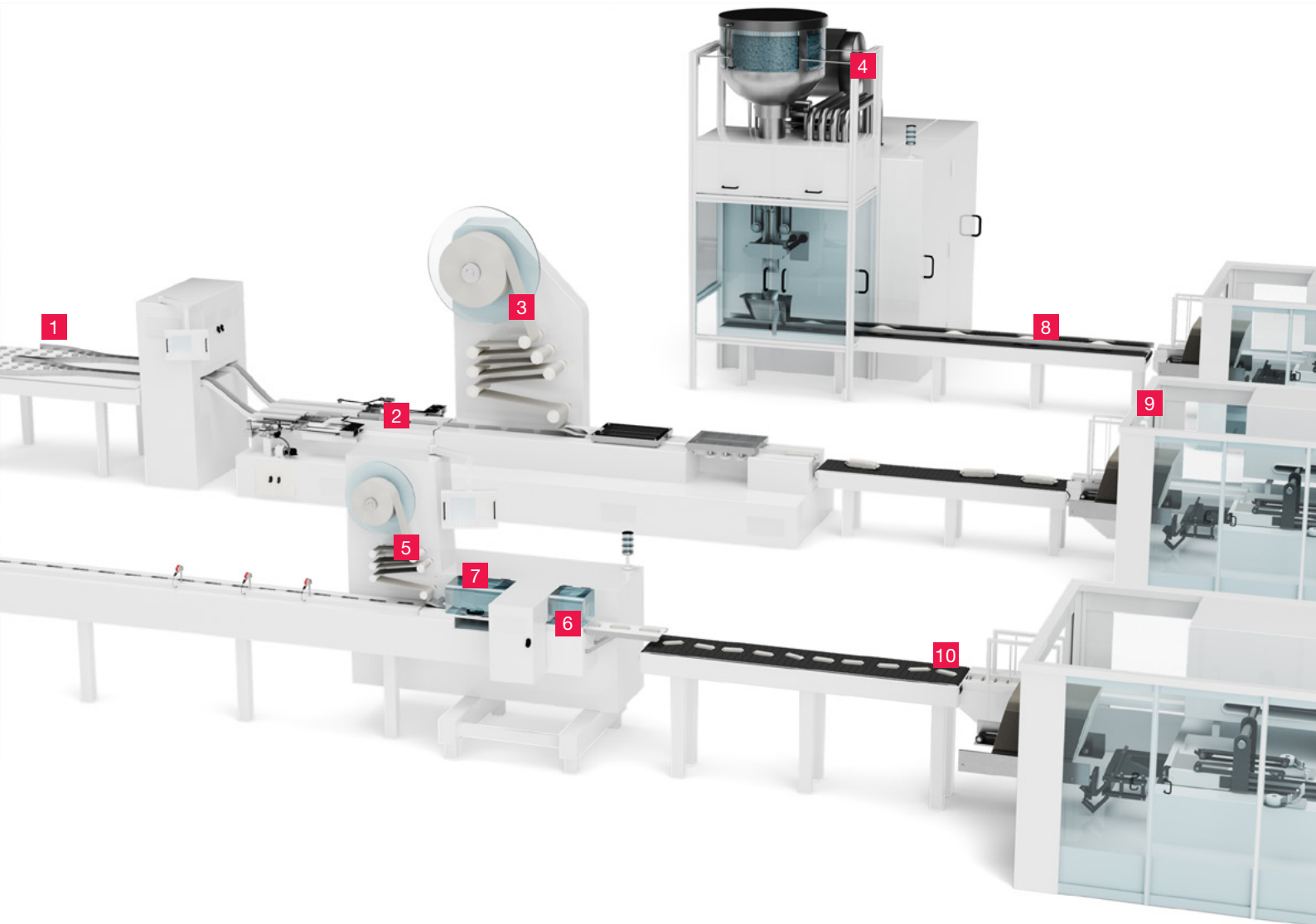
In the automated production and packaging of confectionery and baked goods, the fragile snacks are processed safely and hygienically and packed into attractive packaging. The demands on sensor systems are extremely challenging: Standard sensor systems are often not enough to reliably check irregularly shaped products or fill levels. The packaging sector places great demands on the reading performance of the sensors. Depending on the application, a huge variety of packaging materials such as high-gloss printed foils and partially or fully transparent films

have to be reliably detected by one and the same sensor.

The LS 25B throughbeam photoelectric sensors detect contents while or after the products are packed in printed or laminated films and foils.

Contrast sensors such as the KRT 18B ensure that the packaging is cut to the correct size.

Remote calibration via IO-Link or user-friendly adjustment at the device makes product change-over simple. It allows the operator to find the ideal configuration for the respective packaging material quickly and easily.



**1 Multiple-track object detection**  
LRS 36

**2 Product height monitoring**  
ODS 9

**3 Splice detection**  
VSU 12, IGSU 14D

**4 Web edge measurement**  
GS 754B

**5 Print mark detection**  
KRT 18B

**6 Monitoring of sealed seams**  
LV 463.XR

**7 Packaging content check**  
LS 25B High-Power

**8 Packaging content check**  
LCS-1

**9 Ejection monitoring**  
RK 46C VarOS, CSR

**10 Dimension and position monitoring**  
LSIS 4xx

**Code identification of empty molds**



Camera-based 1D/2D code readers **DCR 200i**

- Fast and reliable identification of 1D- and 2D-codes
- 3 optics models cover reading distances from approx. 40 – 360 mm
- High reading performance and powerful LED illumination enable reliable and flexible use even with difficult code reading applications
- Easy and intuitive commissioning
- Degrees of protection IP 67 and IP 69K

**Detection of residual quantities in empty molds**



Light section sensors **LPS 36**

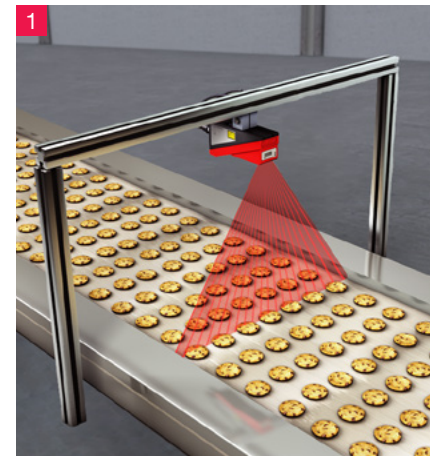
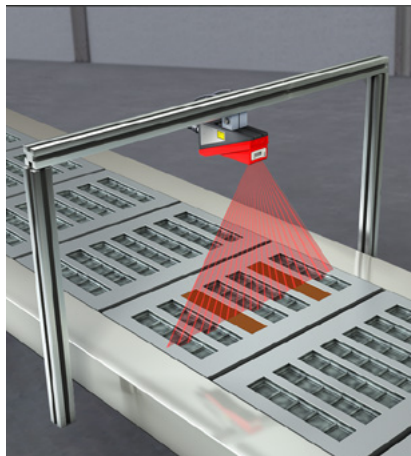
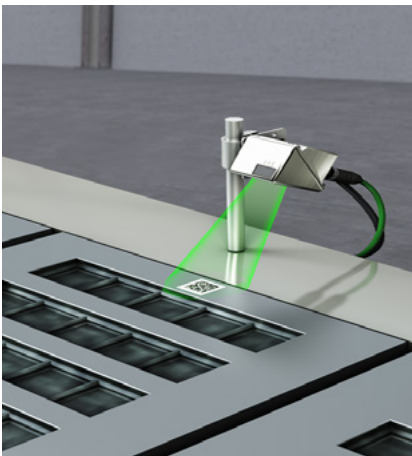
- Light section sensor for surface measurement
- Detection of object contours with millimeter accuracy
- Measurement distance of 200 – 800 mm
- Detection range up to 600 mm
- Reliable detection of small residual quantities

**Multiple-track object detection**



Light section sensors **LRS 36**

- Detection of any type of object
- Up to 16 detection fields with logical linking options instead of a large number of individual sensors
- Signal output via standard I/O
- Measurement distance of 200 – 800 mm
- Detection range up to 600 mm
- Ethernet service interface



## Completeness monitoring of products



### Smart cameras LSIS 400

- Powerful image processing system for different inspection tasks
- Simple creation of inspection routines without programming work
- Web server for configuration and remote access
- Integrated illumination and motor-driven focus adjustment
- Plastic lens cover for the food sector

## Fill level monitoring



### Capacitive sensors LCS

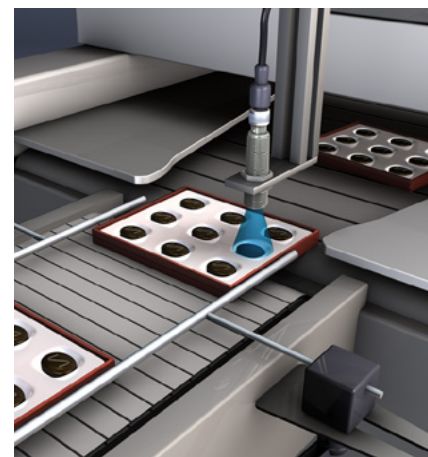
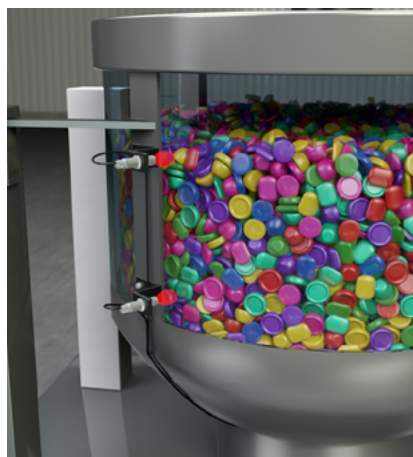
- Measurement through non-metallic outer packaging/container walls possible (up to 4 mm thick)
- Wide product range available with M12, M18, M30 and different cubic versions
- Switching distances between 1 and 30 mm
- Optional IO-Link interface
- Hygienic models for direct contact with media

## Presence control



### Retro-reflective ultrasonic sensors HTU 330

- Robust plastic housing with degree of protection IP 67
- 2 independent switching outputs
- Simple sensitivity adjustment via teach button per switching output
- Synchronization possible to avoid mutual interference



**Product height monitoring**



**IO-Link**

**Optical distance sensors  
ODS 9**

- Continuous detection of the distance to the object
- Switching outputs can be configured to any distance
- Measurement ranges of 50 – 100 mm and 50 – 650 mm
- Configuration and measurement value display via LC display and software
- Integrated RS 485, RS 232 and Dual-channel IO-Link interface as well as analog output
- Laser classes 1 and 2

**Object detection during infeed**



**Diffuse sensors with background suppression  
HT 25C.S**

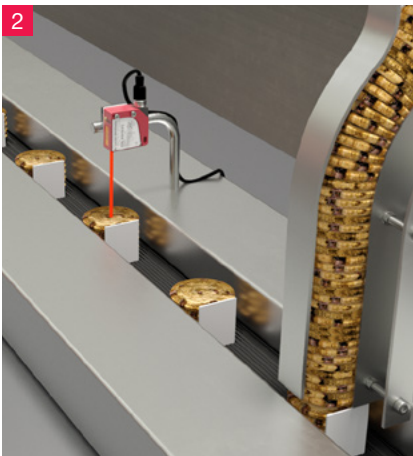
- Reliable differentiation between object and background
- Clearly visible light spot enables quick and easy commissioning
- Fading can be adjusted via potentiometer
- Fast mounting by means of integrated threaded sleeves
- Robust in application thanks to degrees of protection IP 67 and IP 69K

**Splice detection**



**Splice inspections  
VSU 12, IGSU 14D**

- Material-, color- and printing-independent splice detection
- Film thickness from 20 – 1,200 g/m<sup>2</sup>
- Simple setup by means of teach function at the press of a button or via a cable
- Suitable for high speeds
- Fully automatic adaptation to the film thickness



**Web edge measurement**



**Measuring forked sensors  
GS 754B**

- Reliable measurement results over a measurement range of 25 mm
- Resolution of 14 µm
- Configurable measurement range and measure mode
- Simple sensitivity adjustment via teach input
- Suitable for transparent media

**Print mark detection**



**Contrast sensors  
KRT 18B**

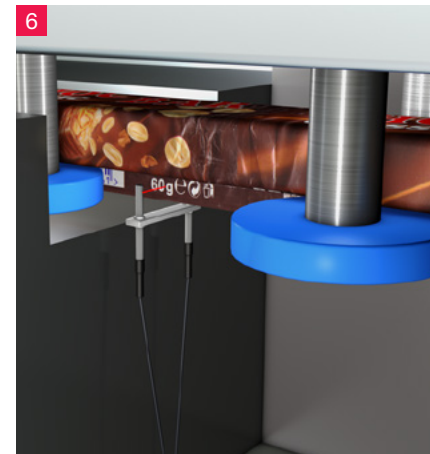
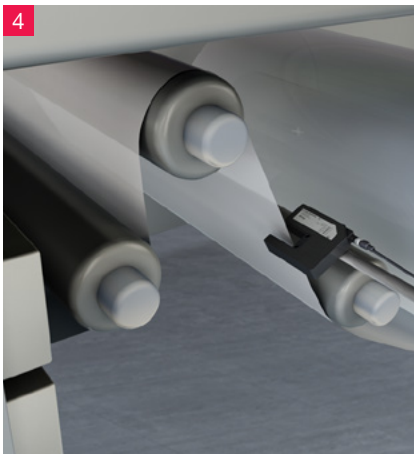
- Multicolor color mark sensor with high precision and robust switching behavior
- Simple sensitivity adjustment via teach button or potentiometer
- Convenient adjustment and diagnosis via dual-channel IO-Link interface
- Tracking function for compensating contamination
- Degrees of protection IP 67 and IP 69K and ECOLAB certification

**Monitoring of sealed seams**



**Fiber optic sensors  
LV 463.XR**

- Suitable for printed and transparent film, foil and paper
- Low space requirements owing to the separate amplifier
- Resistant against aggressive cleaning agents
- Penetration of opaque films
- Analog output for evaluation in the case of printed materials
- Large selection of fiber optics available



Packaging content check



Throughbeam photoelectric sensors  
**LS 25B High-Power**

- For all films: printed, metal-coated, colorful, black
- Infrared device with extremely high performance
- Transmitter and receiver with potentiometer for fine adjustment
- Fine adjustment also enables the detection of pitted and porous products (bread, waffles)

Detection of irregular products



IO-Link

Retro-reflective photoelectric sensors  
**RK 46C VarOS**

- Reliable detection of all, even irregularly shaped, objects
- 45 – 60 mm wide light-band from 2 mm resolution
- Versatile use thanks to preselectable sensitivity levels
- Fine correction of the teach value possible
- One sensor for 50 mm detection – replaces multiple individual sensors or light barriers

Packaging content check



Capacitive sensors  
**LCS-1**

- Contactless and wear-free monitoring of package contents
- Detection irrespective of the shape and granularity of the object
- Response time 5 ms
- Robust, industry-compatible plastic housing





Ejection monitoring



Retro-reflective photoelectric sensors  
Retro-reflective light curtains  
**RK 46C VarOS, CSR**

- RK 46C VarOS**
- 50 mm wide light-band from 2 mm resolution
  - Robust plastic housing with degrees of protection IP 67 and IP 69K
- CSR**
- Resolution of 1 mm and a measurement field length of 432 mm
  - Reliable detection of all, even irregularly shaped, objects

Dimension and position monitoring



Smart cameras  
**LSIS 4xx**

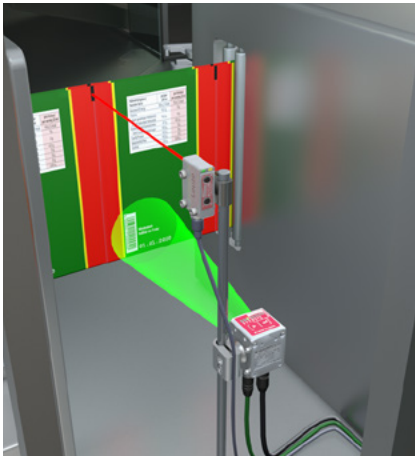
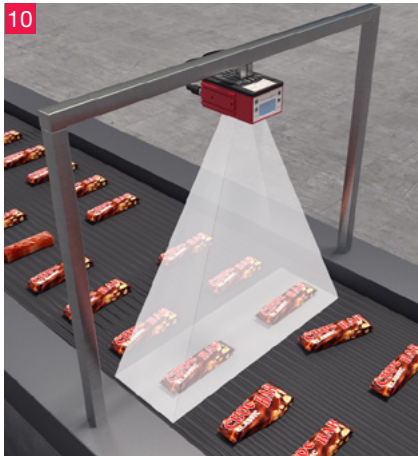
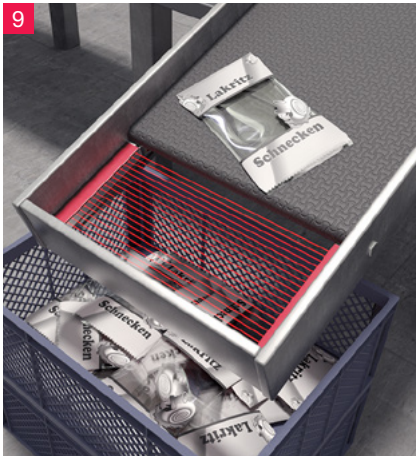
- Powerful image processing system for different inspection tasks
- Simple creation of inspection routines without programming work
- Web server for configuration and remote access
- Measurement or blob tool for creating individual and storable check programs

Code identification on flowpacks



Camera-based 1D/2D code readers  
**DCR 200i**

- Fast and reliable identification of 1D- and 2D-codes
- 3 optics models cover reading distances from approx. 40 – 360 mm
- Compact design in metal/plastic housing or stainless steel housing
- High reading performance, even with critical materials such as glossy films and foils
- Easy and intuitive commissioning at the device or using the install wizard in the web browser

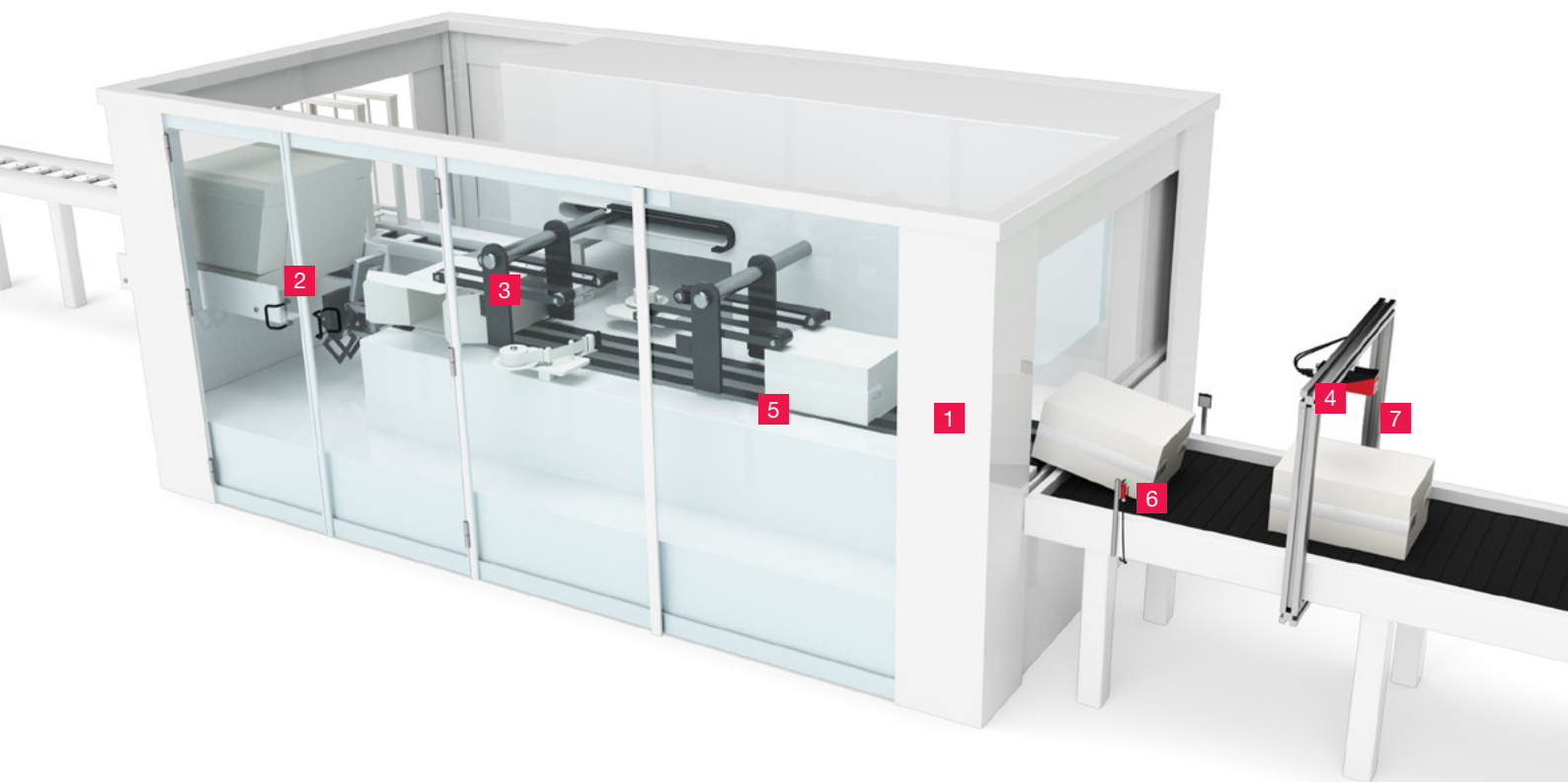


# SENSOR SOLUTIONS FOR SECONDARY PACKAGING

**Boxing clever:** These sensor systems ensure that the packaging process always runs smoothly.

The secondary packaging protects the elaborate primary packaging – typically shrink-wrapped packages in the beverages sector and boxes for most other goods. To ensure easy transport and handling, the individual units are grouped into packages. The used sensors must guarantee safe and careful packaging as well as smooth onward transport.

Retro-reflective photoelectric sensors and scanning sensors are usually used for product detection in the infeed zone. Depending on the requirements of the specific application, measuring sensors such as the ODS 9 are used for more complex tasks. Closure checks then guarantee smooth onward transport. The checking of attached bar codes using the DCR 200i ensures reliable identification during subsequent handling operations.



**1 Code identification on packaging**

DCR 200i

**2 Position and presence control of cartons**

HT 25C, HT 46C

**3 Fill level monitoring**

ODS 96B, ultrasonic sensors

**4 Closure control of packaging**

LRS 36

**5 Detection of glossy objects**

RKR 3B gloss

**6 Single-lane package monitoring**

PRK 25C, 55, 8

**7 Completeness monitoring on containers**

LRS 36

### Detection of objects with openings



#### Retro-reflective photoelectric sensors RK 46C VarOS

- Reliable detection of all kinds of objects, even objects with openings and irregular shapes
- 45–60 mm wide light-band from 2 mm resolution
- Simple sensitivity adjustment via teach button
- Fine correction of the teach value possible
- Large operating range and function reserve for reliable operation and high availability

### Monitoring of package combination



#### Optical distance sensors ODS 9

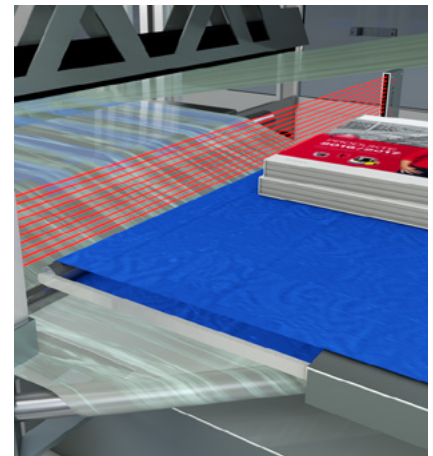
- Continual distance information on object
- Measurement ranges of 50 – 100 mm and 50 – 650 mm
- Switching outputs can be freely configured
- Configuration and measurement value display via LC display and PC
- Integrated Dual-channel IO-Link interface
- Laser classes 1 and 2

### Detection of objects of any shape



#### Switching light curtains CSL 710, CSL 505

- Low space requirements thanks to narrow housing profile
- Beam spacing 5 mm
- Response time 1 ms/beam
- Concealed light axes are automatically blanked out



## Detection of objects in film



### Measuring light curtains CML 730PS

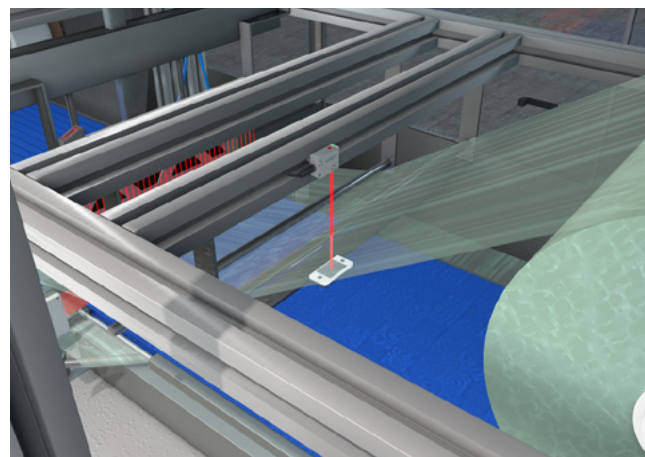
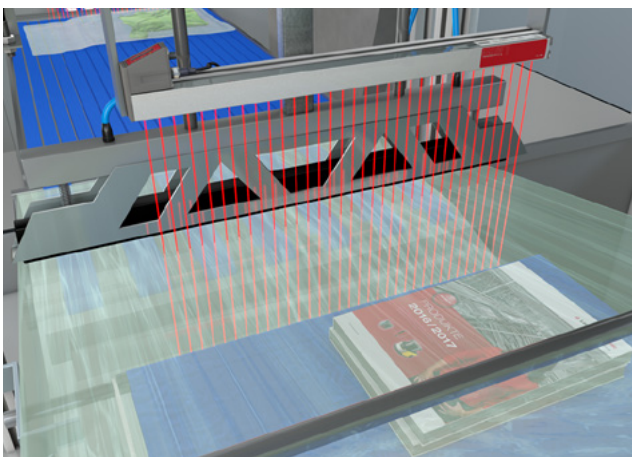
- Width of the packaged product can be detected in very milky, opaque film tube
- Can be adjusted to allow the detection of films (transparent function) or to radiate through the outer packaging
- Adjustment possible directly via the display
- Integrated IO-Link interface for the configuration, diagnosis and online monitoring of individual beams and measurement values
- Smoothing prevents faults caused by film wrinkles
- Adjustment without separate software directly via the display

## Detection of transparent films



### Retro-reflective photoelectric sensors RK 18B

- Reliable detection of highly transparent films <math>< 20 \mu\text{m}</math>
- Simple sensitivity adjustment via potentiometer
- Simple alignment with visible red light
- Integrated threads in the metal housing for easy and vibration-resistant mounting



## Detection of the packaged product in film



### Throughbeam photoelectric sensors LS 25B High-Power

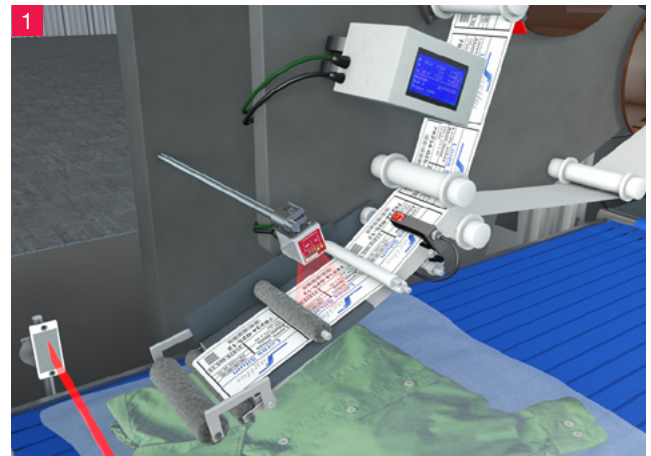
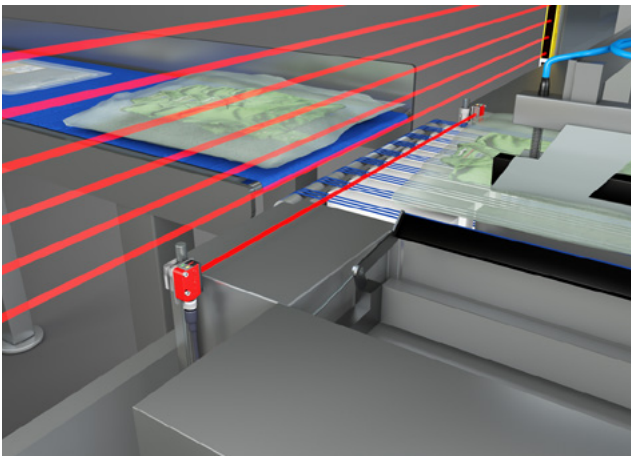
- For all films: printed, metal-coated, colorful, black
- Infrared device with extremely high performance
- Transmitter and receiver with potentiometer for fine adjustment
- Fine adjustment also enables the detection of translucent products, e.g. textiles

## Code identification on packaging



### Camera-based 1D/2D code readers DCR 200i

- Fast and reliable identification of 1D- and 2D-codes
- 3 optics models cover reading distances from approx. 40 – 360 mm
- High reading performance and powerful LED illumination enable reliable and flexible use even with difficult code reading applications
- Intuitive commissioning at the device or using the install wizard in the web browser



## Position and presence control of cartons



### Diffuse sensors with background suppression HT 25C, HT 46C

- Operating range up to 3 mm
- Color-independent detection of laminated and structured surfaces
- Adjustable, precise background suppression
- High repeatability
- Clearly visible light spot enables quick and easy commissioning

## Fill level monitoring



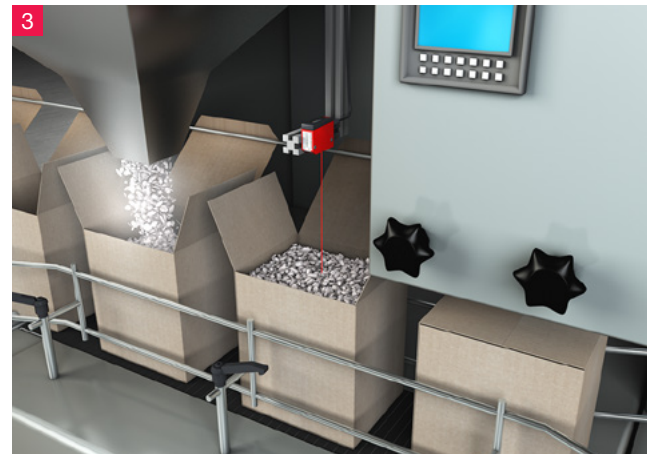
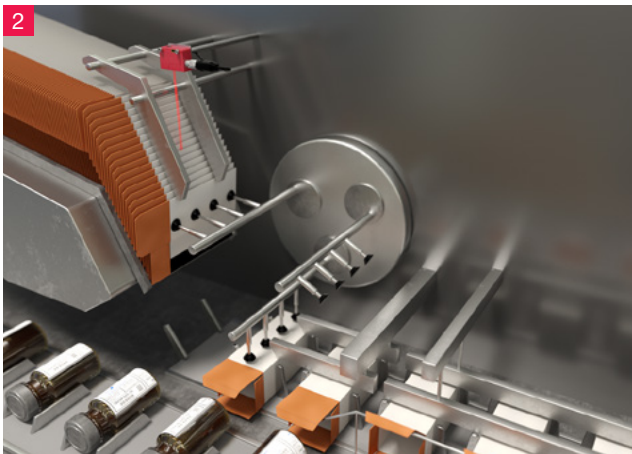
### Distance sensors ODS 96B, ultrasonic sensors

#### ODS 96B

- For measurement on solid media
- Measurement range of 60 – 10,000 mm
- Resolution up to 0.1 mm

#### Ultrasonic sensors

- For the measurement on transparent and liquid media
- Measurement range up to 6,000 mm
- Resolution up to 1 mm



## Closure control of packaging



### Light section sensors LRS 36

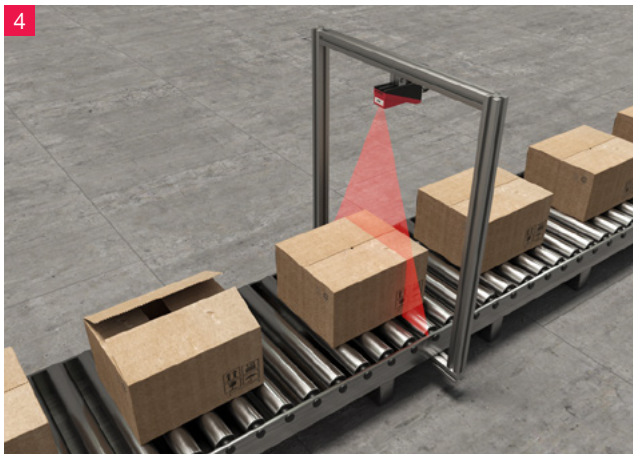
- Reliable monitoring of defined contours
- Simple detection of deviations
- Up to 16 detection fields with logical linking options instead of a large number of individual sensors
- Signal output via standard I/O
- Measurement distance: 200–800 mm
- Detection range up to 600 mm
- Integrated I/O, EtherNet and PROFIBUS interface

## Detection of glossy objects



### Retro-reflective photoelectric sensors RKR 3B gloss

- Special version for detection of high-gloss objects
- Visible red light and high function reserve
- High switching frequency for detection of fast events and precise positioning
- Reliable operation through active ambient light suppression





## Checking content of packaging



### Capacitive sensors LCS

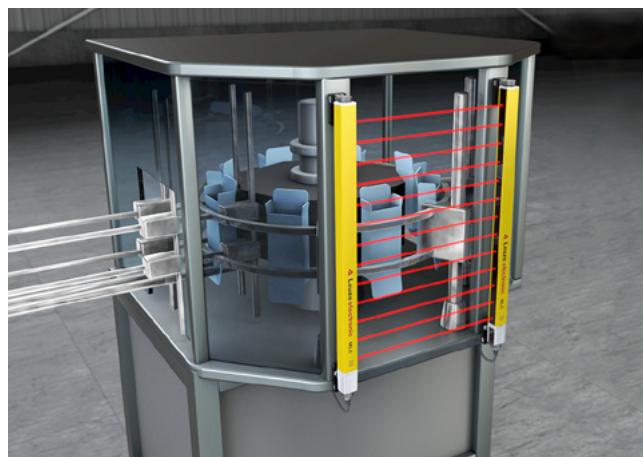
- Measurement through non-metallic outer packaging / container walls possible (up to 4 mm thick)
- Wide product range with M12, M18, M30 and different cubic versions
- Switching distances of 1 – 30 mm
- Optional IO-Link interface

## Point of operation guarding



### Safety light curtains MLC 520-S, MLC 500

- Integrated blanking
- Integrated 3-zone alignment aid
- Easy alignment, setup and operation thanks to integrated LED and 7-segment display
- Flexible and easy mounting - and without dead zone
- Integration in control systems up to category 4 and PL e
- Robust metal housing



## Single-lane package monitoring



### Retro-reflective photoelectric sensors PRK 25C, 55, 8

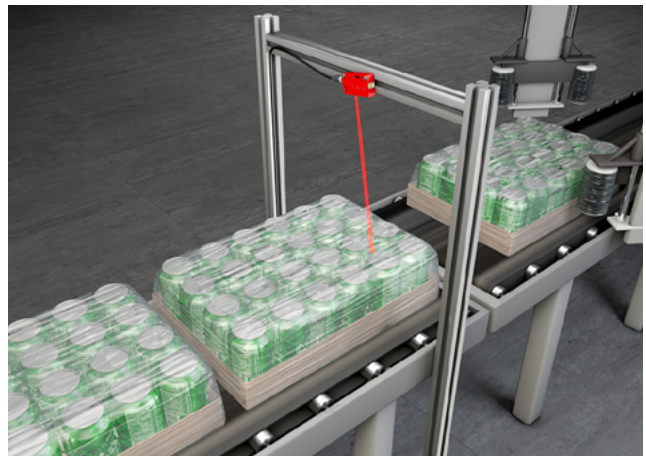
- Reliable detection, e.g. of six packs
- No erroneous switching in the case of film-wrapped packages
- High function reserve even with small reflectors
- Degrees of protection IP 67 and IP 69K

## Multiple-track package monitoring



### Reference diffuse sensors HRTR 46

- Detection of PET and can packages from above
- Detection of gaps > 20 mm between the packages
- Also detects extremely dark, high-gloss or transparent shrink-wrapped objects
- Simple sensitivity adjustment via teach input



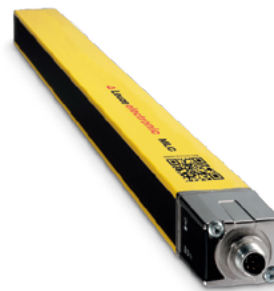
## Completeness monitoring on containers



### Light section sensors LRS 36

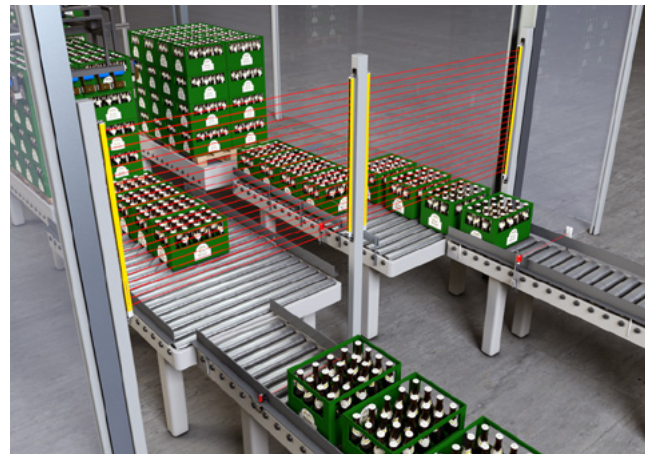
- Detection of any type of object
- Up to 16 detection fields with logical linking options instead of a large number of individual sensors
- Signal output via standard I/O
- Measurement distance: 200–800 mm
- Detection range up to 600 mm
- Integrated I/O, EtherNet and PROFIBUS interface

## Point of operation guarding at the entry point



### Safety light curtains MLC 530

- Different resolutions for optimum adaptation to the available safety distance
- Easy installation and alignment using integrated 7-segment display as well as configuration by wiring
- Integration in control systems up to category 4 and PL e
- Flexible and easy mounting - and without dead zone



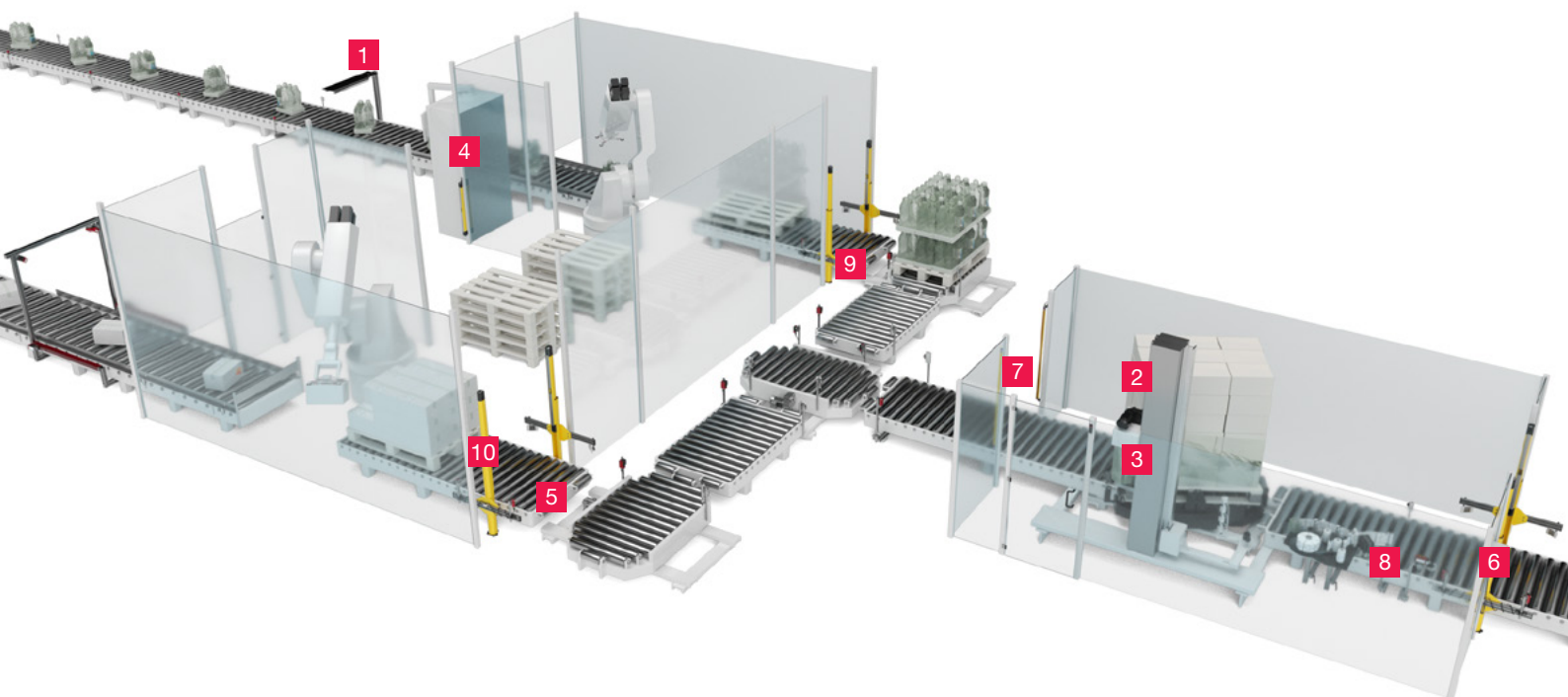
# SENSOR SOLUTIONS FOR END-OF-LINE

On the right path: Identification and sorting that is efficient and safe for people and machinery.

End-of-line in factory automation refers to the transition from production to storage and transport logistics. The machines used are characterized by an extremely high level of automation with standardized processes. In addition, the machines must have optimum safeguarding in order to comply with all occupational health and safety regulations. The reliable identification of packages ensures a precise and fault-free flow of material.

As far as the efficient and safe design of operational safety zones is concerned, the MLC SPG safety light curtains are streets ahead of compa-

rable solutions because they enable space-saving and tamperproof muting without the need for additional sensors. The RK 46 VarOS retro-reflective photoelectric sensors supply interruption-free presence signals, even in the case of irregularly shaped objects or objects with openings such as pallets or cages. As sensors for interruption-free muting, they also do more than standard sensors, e.g. if gaps in the load are to be detected. The 25C and 46C series sensors reliably suppress interference caused by reflective films in order to ensure that the object is detected correctly.



**1 Alignment monitoring for packages**  
CML in V-arrangement

**2 Monitoring of end positions**  
IS 244

**3 Foil detection**  
PRK 3C, 25C

**4 Integration of safety sensors**  
MSI 400

**5 Interruption-free muting**  
RK 46C VarOS

**6 Access guarding**  
MLD-SET

**7 Access guarding**  
MLC 530 SPG

**8 Code identification**  
BCL 500i

**9 Pallet detection**  
RK 46C VarOS

**10 Detection of projections on pallet load**  
CSL 710, CSL 505

## Object detection



Retro-reflective photoelectric sensors **PRK 5, 25C**

- Reliable detection, even in the case of film-wrapped objects
- Short response time
- Large function reserve ensures functional reliability even in the case of soiling
- Clearly visible light spot enables quick and easy commissioning

## Alignment monitoring of packages



Measuring light curtains **CML in V-arrangement**

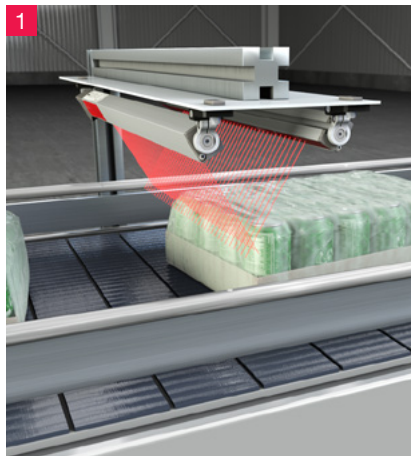
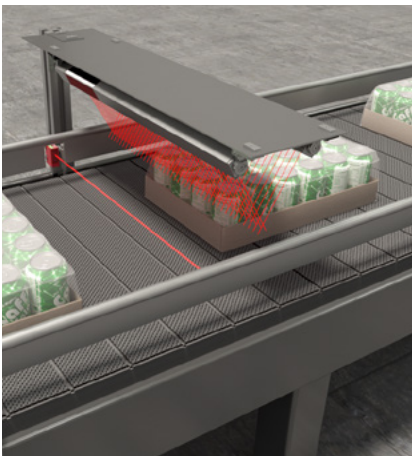
- Extremely short response time per beam for the reliable detection of fast processes
- Measurement field length up to 3,000 mm
- Low and consistent mounting height even in the case of various measurement field lengths
- Integrated interfaces, such as PROFINET and IO-Link
- Optional plug outlets to the rear

## Height measurement of pallet stacks



Optical distance sensors **ODS 96B**

- Various measurement modes, optimized for speed or precision
- Configuration option on the device or by means of controller for optimum adaptation to the application
- Display, which can be switched off, for diagnostics and measured-value detection
- Various optics models and measurement principles available



## Pallet monitoring



### Measuring light curtains CML in V-arrangement

- Extremely short response time per beam for the reliable detection of fast processes
- Measurement field length up to 3,000 mm
- Preprocessed measurement values, e.g. number of uninterrupted/ interrupted beams, make evaluation easier
- Integrated interfaces, such as PROFINET

## Object detection



### Retro-reflective photoelectric sensors PRK 46C

- Retro-reflective photoelectric sensor with extremely large operating range and function reserve
- Clearly visible light spot enables quick and easy commissioning
- Robust plastic housing with degrees of protection IP 67 and IP 69K

## Monitoring of end positions



### Inductive switches IS 244

- Detection of moving machine parts
- Further inductive switches with a diameter of 4 mm – M30 and cubic housings available
- Operating ranges of 1.5 – 40 mm enable the reliable detection of metallic objects



## Film detection



Retro-reflective photoelectric sensors  
**PRK 3C, 25C**

- Reliable detection of highly transparent films by means of special optics
- Clearly visible light spot enables quick and easy commissioning
- LED displays guarantee quick function checks at a glance

## Determination of residual quantities



Diffuse sensors with background suppression  
**HT 3C, 25C**

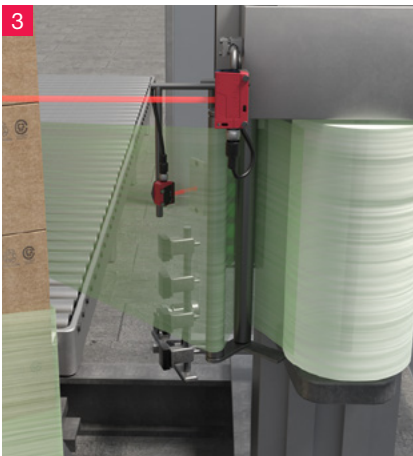
- Detects all materials almost regardless of the surface
- Reduces time and costs for adjustment work when changing the film material
- Clearly visible light spot enables quick and easy commissioning
- LED displays guarantee quick function checks at a glance
- All materials can be detected without a reflector – less expenditures for material, mounting and commissioning time

## Object detection and positioning



Retro-reflective photoelectric sensors  
**PRK 318, 28, 25C, 46C**

- Operating range up to 30 m
- High repeatability through optimized light-spot profile
- Laser variants available
- Short response time
- High function reserves ensure reliable function even when soiled
- Clearly visible light spot enables quick and easy commissioning





### Integration of safety sensors



Programmable safety controllers  
**MSI 400**

- Efficient solutions for integrating multiple safety sensors
- Compact design saves space in the switch cabinet
- Modularly expandable to up to 116 safe inputs and 54 safe outputs
- Easy programming using MSI.designer software

### Access guarding



Multiple light beam safety devices  
**MLD 500**

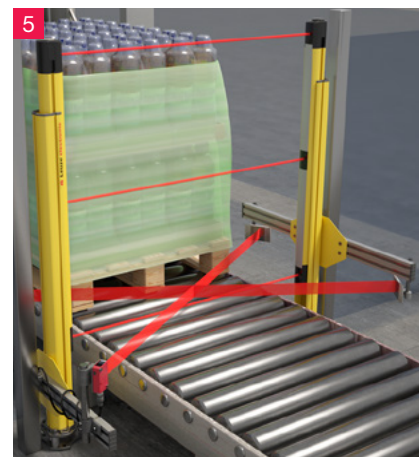
- 3-beam transceiver for simple installation
- Fast commissioning through configuration without software
- Device exchange by means of Plug & Play with no programming possible
- Integrated muting functions, can be configured by wiring
- Clear status display by means of optional indicator lights

### Interruption-free muting



Retro-reflective photoelectric sensors  
**RK 46C VarOS**

- 60 mm wide light-band also detects irregular objects and objects with openings
- Fewer muting errors compared to normal retro-reflective photoelectric sensors
- Clearly visible light spot enables quick and easy commissioning



Access guarding



Multiple light beam safety devices  
**MLD-SET**

- 2- or 3-beam transceiver with integrated muting functions
- Complete muting set, including device columns and accessories
- Plug & Play complete solutions with pluggable connections: efficient setup and fast start-up

Access guarding



Safety light curtains with Smart Process Gating  
**MLC 530 SPG**

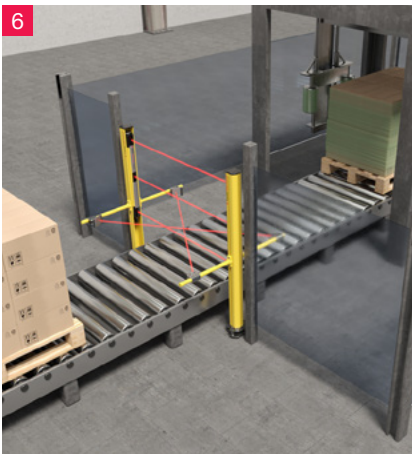
- No muting sensors required for bridging
- Allows systems to be very compact and thus saves valuable space
- High security against tampering and high availability
- No alignment of the sensors necessary when changing the transport material
- Suitable for low temperature environments as low as  $-30^{\circ}\text{C}$

Code identification



Bar code scanners  
**BCL 500i**

- CRT (code reconstruction technology) for the reliable detection of damaged codes
- webConfig: graphical user interface based on web technology, integrated in the scanner and independent of the operating system
- Scanning rate of 800 – 1200
- Integrated interfaces, such as PROFINET, PROFIBUS, EtherNet, CANopen and serial interfaces



Surface measurement



Light section sensors  
LPS 36, LES 36

- Measurement range of 200 – 800 mm
- Length of laser line up to 600mm
- Resolution of 1 – 3 mm
- Measurement time 10 ms

LPS 36

- For position, contour and volume measurement
- Creation of 3D data via encoder connection

LES 36

- For width, height and position determination
- System connection via analog output, EtherNet, PROFIBUS

Pallet detection



IO-Link

Retro-reflective photoelectric sensors  
RK 46C VarOS

- 60 mm wide light-band also detects irregular objects and objects with openings
- More reliable operation and easier alignment compared to conventional photoelectric sensors
- Clearly visible light spot enables quick and easy commissioning
- Greater functional reliability compared to standard photoelectric sensors

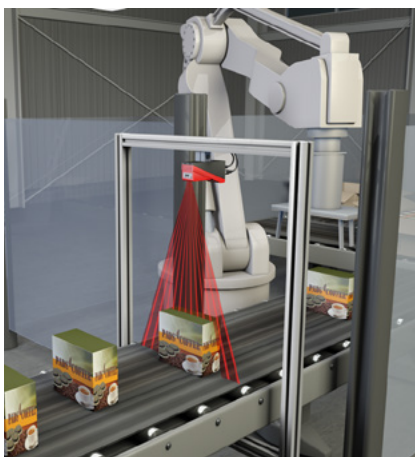
Detection of depolarizing objects



IO-Link

Retro-reflective photoelectric sensors  
25C, 46C series

- Highest functional reliability even when soiled
- Clearly visible light spot enables quick and easy commissioning
- No erroneous switching in the case of film-wrapped or shrink-wrapped pallets, packages and containers



## Detection of projections on pallet load



### Switching light curtains CSL 710, CSL 505

- Narrow profile – less space required
- Beam spacing 5 mm
- Response time 1 ms/beam
- Installed light axes are automatically blanked out

## Pallet measurement



### Measuring light curtains CML 700i

- Extremely short response time per beam for the reliable detection of fast processes
- Large, easy-to-read display with robust membrane keyboard and bar graph display for easy alignment
- Measurement field length up to 3,000 mm
- Robust and warp-resistant metal housing
- Integrated PROFINET, PROFIBUS, CANopen, RS 485 and IO-Link interfaces for direct configuration via the control



## Measurement of object contours



### Measuring sensors ROD4plus

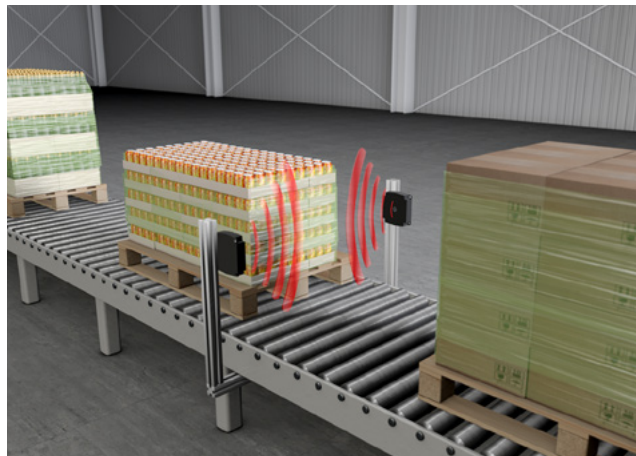
- Measurement range of 0–65,000 mm
- Scanning rate 50 Hz
- Almost object-independent measurement
- Measurement data transfer via Fast EtherNet
- Integrated measurement data preprocessing (x-, z-coordinates, extreme values)

## Identification of RFID transponders



### RFID read/write systems HFM 3500D, RFM 12/32/62

- Frequency: 13.56 MHz (HF)
- Reading distance up to 400 mm (HF)
- Time-optimized writing while driving by via pre-transmission of data to the write unit
- Option for very flexible connection to fieldbus interfaces
- Broad range of matching transponders
- RFM 32 Ex-n with EX certification zone 2



# ALL PRODUCTS FROM A SINGLE SOURCE

Full performance with the right accessories and attuned components.

In addition to device functionality and quality, optimally adapted accessories are necessary for the reliable and efficient use of sensors. No matter

if you need easy mounting and connecting or reliable signal provision – it takes the right accessories to unleash the full power.





### Cables

To facilitate the integration of our sensors, we offer a large variety of connection and interconnection cables with M8, M12, and M23 connectors – straight or angled, and with or without LED.



### Connection units

Today, sensors, safety switches and cameras are linked together via active or passive sensor distribution boxes with fieldbus interfaces from our product range to ensure more flexibility and transparency during installation.



### Power supply

A reliable and machine-independent power supply with 1- and 3-phase power supplies is an elementary part of an optimum and efficient sensor system. For this reason, we also offer load circuit monitoring modules to ensure a higher level of safeguarding against failure.

### Mounting accessories

We place great emphasis on our products being easy to mount and simple to align. For this reason, you will find specially-attuned mounting systems in our product range such as mounting brackets, rod holders or device columns.



### Reflectors

Just how reliably retro-reflective photoelectric sensors can detect depends upon the selected reflector, among other things. That is why we offer various fitting solutions made of plastic, film, and glass for all conceivable conditions.



### Signal elements

For signaling in automated systems, we offer an extensive product range of single- and multi-colored transducers in order to ensure productivity and efficiency.



# ALWAYS THE **RIGHT SERVICE** FOR YOUR PROCESS

Legal security and efficient safety at work are successfully combined quickly and easily with our range of services.



For many people, complex planning or engineering tasks or the management of functional safety make the set of issues related to safety at work a closed book. In the area of legal security in particular, information gaps often exist. With our extensive, qualified offer on safety at work, you are on the safe side legally and can fulfill all legal guidelines easily.

We support your service department and, in the event of limited resources, make available the appropriately qualified team. We work with our experts to ensure the safety of your machines and systems. Your production and service team is free to perform its actual tasks. Our product range is accompanied by an extensive range of training courses tailored to your needs.

## Our service offerings include



Status check  
Safety technology  
(MSSC)



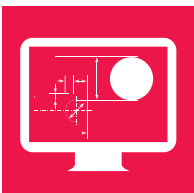
Status check  
CE (MCSC)



Risk analysis /  
assessment  
(MRAS)



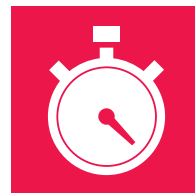
Conformity assess-  
ment of machines  
(MCMS)



Development  
support for  
machine safety  
(MSEN)



Safety inspection  
(MSIN)



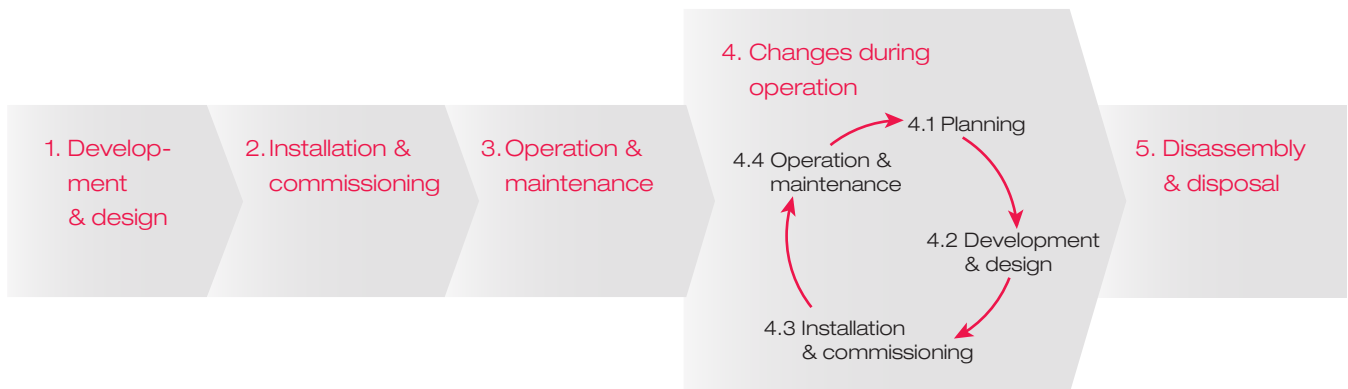
Functionality  
of protective  
devices (MSPT)











Validation and  
verification of  
safety functions  
(MSVV)



### Stages of a machine life cycle



### The right services at a glance

Services	1. Development & design	2. Installation & commissioning	3. Operation & maintenance	4.1 Planning	4.2 Development & design	4.3 Installation & commissioning	4.4 Operation & maintenance	5. Disassembly & disposal
 Status check Safety technology		●	●				●	
 Status check CE	●		●		●	●	●	
 Risk analysis / assessment	●		●	●	●		●	●
 Conformity assessment of machines	●			●	●			
 Development support Machine safety	●				●			
 Safety inspections		●	●			●	●	
 Functionality of protective devices		●	●			●	●	●
 Validation and verification of safety functions		●				●		

SMART  
**SENSOR**  
BUSINESS

# WE ARE THE **SENSOR PEOPLE**

For more than 50 years, we have been developing, producing, and marketing efficient sensor solutions for industrial automation.

## Leuze electronic at a glance

Foundation	1963
Company structure	GmbH & Co. KG, wholly family-owned
Executive management	Ulrich Balbach
Headquarters	Owen, Germany
Distribution companies	18
Production locations	5
Technological competence centers	3
Distributors	42
Employees	> 1,000

## Product range

Switching sensors  
Measuring sensors  
Products for safety at work  
Identification  
Data transmission systems  
Industrial image processing  
Accessories

## Industry expertise

Intralogistics  
Packaging industry  
Machine tools  
Automotive industry  
Medical technology

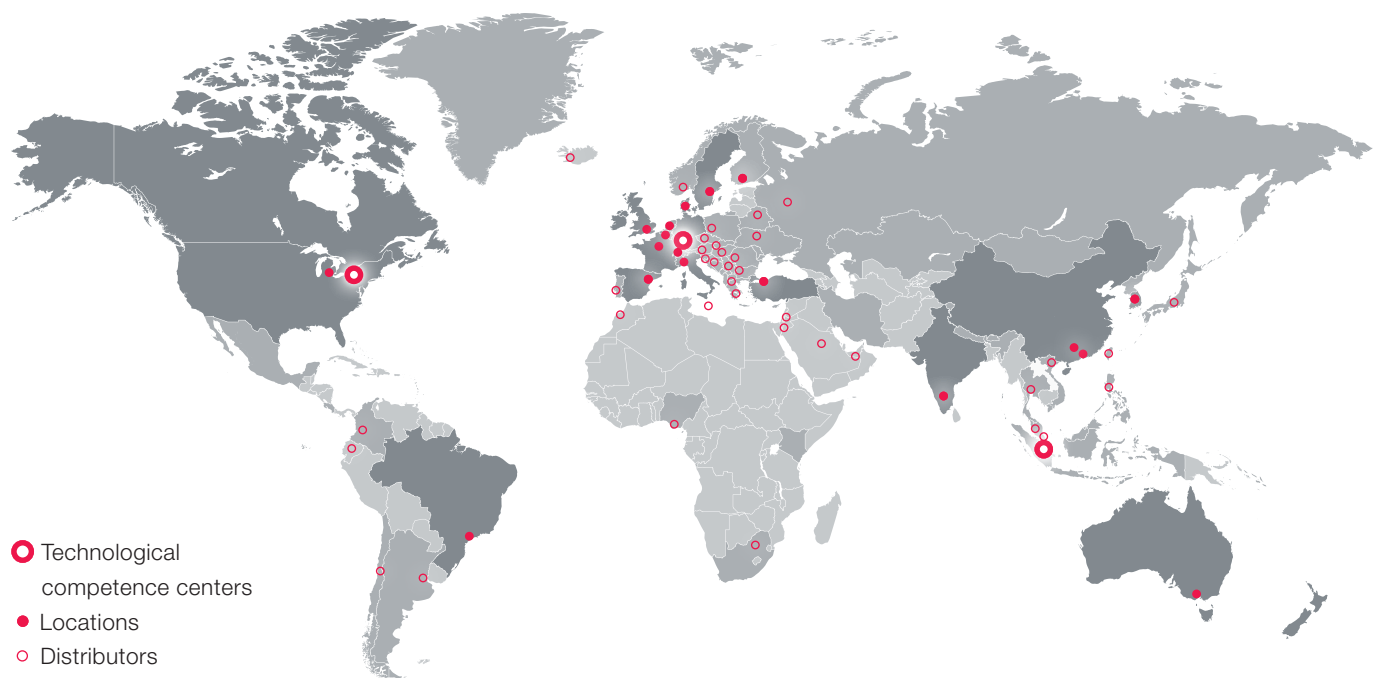


## Leuze electronic GmbH + Co. KG

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73277 Owen  
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E-mail: [info@leuze.com](mailto:info@leuze.com)  
[www.leuze.com](http://www.leuze.com)

# ALWAYS CLOSE TO YOU

Short distances are important to us – both within and outside of our company. We therefore place great value on being personally, quickly, and easily accessible to you at our locations around the world. We produce our sensors on four continents, allowing us to offer you reliable product availability.



Australia/New Zealand | Belgium | Brazil | China | Denmark/Sweden | France | Germany | Great Britain | Hong Kong  
India | Italy | the Netherlands | Switzerland | Singapore | Spain | South Korea | Turkey | USA/Canada

## **Switching Sensors**

Optical Sensors  
Ultrasonic Sensors  
Fiber Optic Sensors  
Inductive Switches  
Forked Sensors  
Light Curtains  
Special Sensors

## **Measuring Sensors**

Distance Sensors  
Sensors for Positioning  
3D Sensors  
Light Curtains  
Forked Sensors

## **Products for Safety at Work**

Optoelectronic Safety Sensors  
Safe Locking Devices, Switches and Proximity Sensors  
Safe Control Components  
Machine Safety Services

## **Identification**

Bar Code Identification  
2D-Code Identification  
RF Identification

## **Data Transmission / Control Components**

MA Modular Connection Units  
Data Transmission  
Safe Control Components  
Signaling Devices  
Connection Technology and Passive Distribution Boxes

## **Industrial Image Processing**

Light Section Sensors  
Smart Camera

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info@leuze.com  
www.leuze.com