Packaging: secondary and end-of-line

Beverage: process and primary
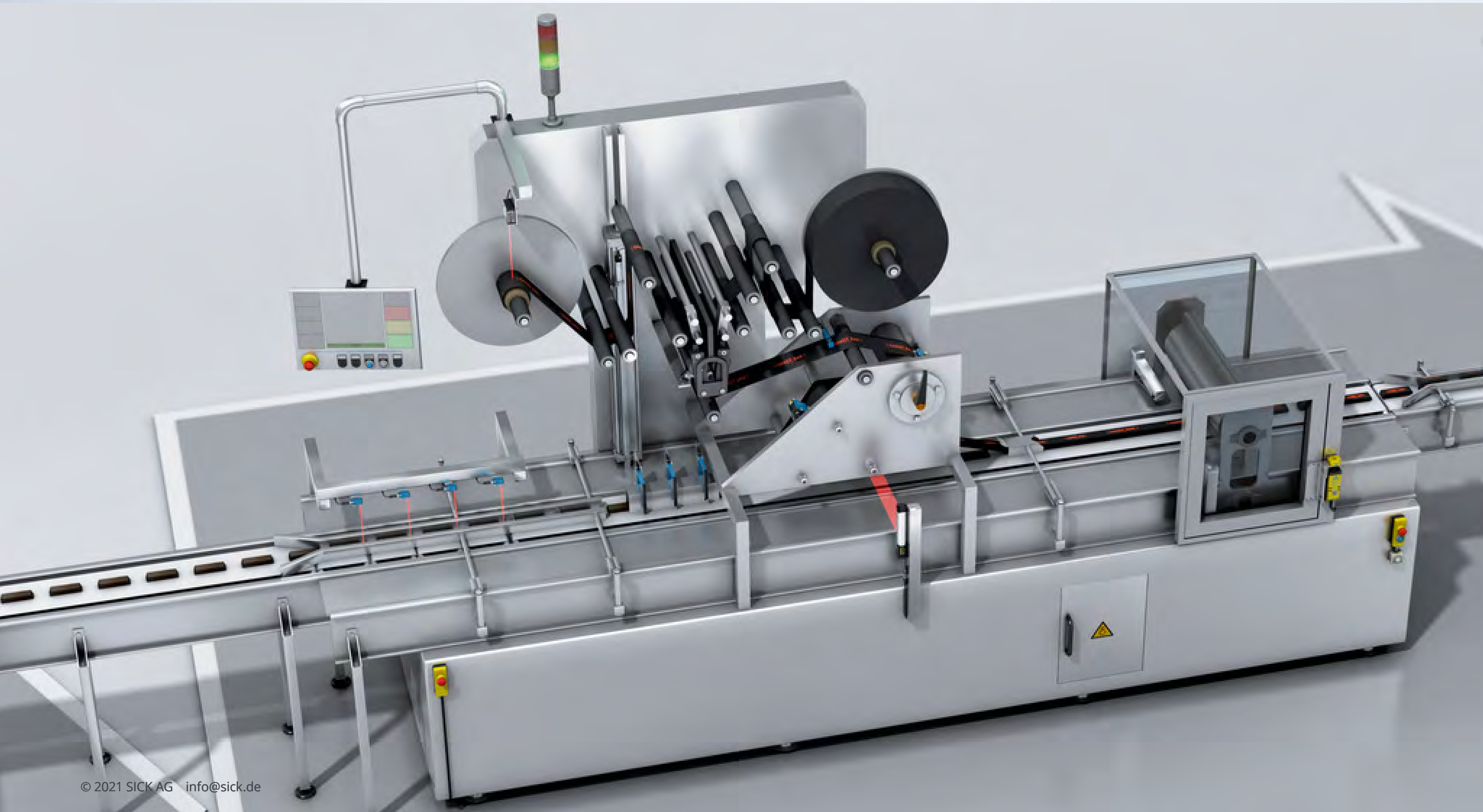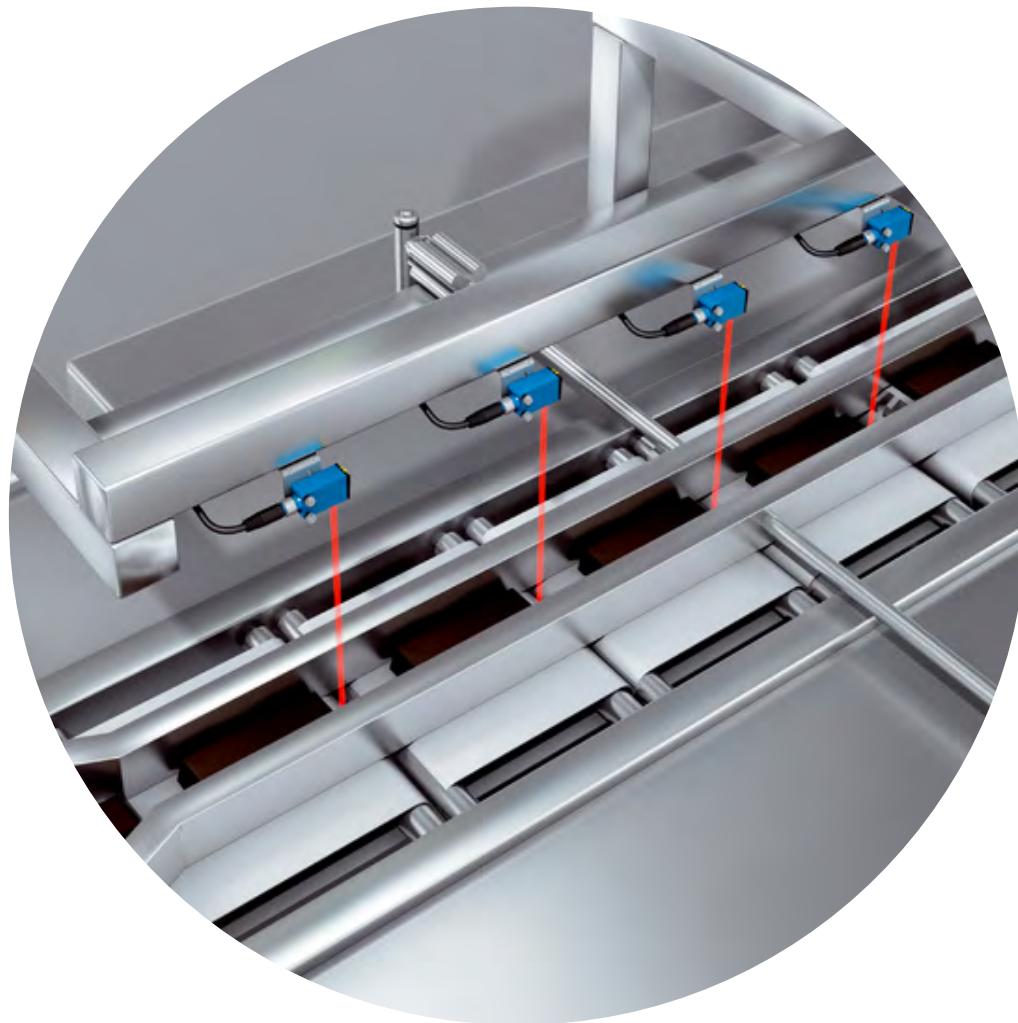
Horizontal form, fill, and seal machine

Horizontal form, fill, and seal machine

Equidistant infeed of products

– Products are fed to the packaging process at exactly the same intervals

– Even at high cycle rates, this allows for problem-free process sequences when closing the packages and separating the products

– To do this, photoelectric proximity sensors detect the products on the conveyor belts and determine the product position

WTB4F – advantages

– Very high reliability through powerful background suppression and excellent detection of flat, highly-reflective and transparent objects

– Two switching points as well as data output of distance values expand the application possibilities

– The highly-visible light spot combined with the intuitive BluePilot operating interface enables device set-up in mere seconds

Horizontal form, fill, and seal machine

Check of product height
– Fork sensors installed on the conveyor belt precisely detect deviations from a previously defined product height

WF – advantages
– Fast response time and fine resolution ensure reliable detection even at very high object speeds

– Infrared light source provides excellent ambient light immunity

– A wide range of different fork sizes enables flexible mounting

Horizontal form, fill, and seal machine

Reliable detection of irregular product edges
– The exact detection of irregular product edges in the packaging process prevents product overhang and collisions

MLG-2 – advantages
– High measurement accuracy for detecting even very small objects reliably

– Transparent mode function for reliably detecting and measuring transparent objects

– The SOPAS ET configuration software with menu-driven wizard for quick configuration

Horizontal form, fill, and seal machine

Determining the wrapping diameter

– The speed of the film can be controlled using a brake
  or a drive, depending on the diameter of the roll

– The distance sensor reliably records the diameter and
  generates accurate measured values with a high degree
  of linearity

OD1000 – advantages

– The high measuring frequency of 3 kHz enables quick and
  precise adjustment of the film speed

– Very easy integration and measurement data output via
  the IO-Link interface

– The large measuring range from 200 mm to 1000 mm
  allows for a high level of mounting flexibility

④ **Determining
the wrapping diameter**

Horizontal form, fill, and seal machine

Detection of dancer position

– A dancer compensates for irregularities when the packaging film is unwound and enables a constant web tension for the next process step

– The installed position sensor detects any deviations from the dancer position

MPS-T and MPA – advantages

– Analog outputs (for current or voltage), switching output, and IO-Link

– Mounting possible on numerous cylinder designs using adapters (tie-rod cylinders, round cylinders, profile cylinders)

– Sensor variants with measuring ranges of 107 mm to 1,007 mm

5 **Detection of dancer position**

Horizontal form, fill, and seal machine

Edge and width measurement with format changeover
– High-precision edge and width measurement for many different materials

– Format changeover without mechanical attachments enables flexible machine configuration

MLG-2 WebChecker – advantages
– Very accurate measurement throughout the entire measuring range

– Detection of countless materials and colors

– Integrated field buses allow for up to 10 edge and 5 width measurements to be evaluated in the PLC

6 **Edge and width measurement with format changeover**

Horizontal form, fill, and seal machine


Direct recording of speed of material surfaces

– The Surface Motion products detect the speed and position of packaging materials directly on moving material surfaces without requiring the installation of measuring elements

– This is done either through contact with the surface to be measured using a measuring wheel encoder such as the MWS120 or DBV50 Core or through non-contact measurement using the SPEETEC 1D

SPEETEC 1D – advantages

– Non-contact measurement of the speed, length and position of objects without measuring elements

– Compatible with many materials, colors and surfaces

– Laser class 1

Alternatives: MWS120, DBV50 Core

⑦ **Direct recording of speed of material surfaces**

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Horizontal form, fill, and seal machine
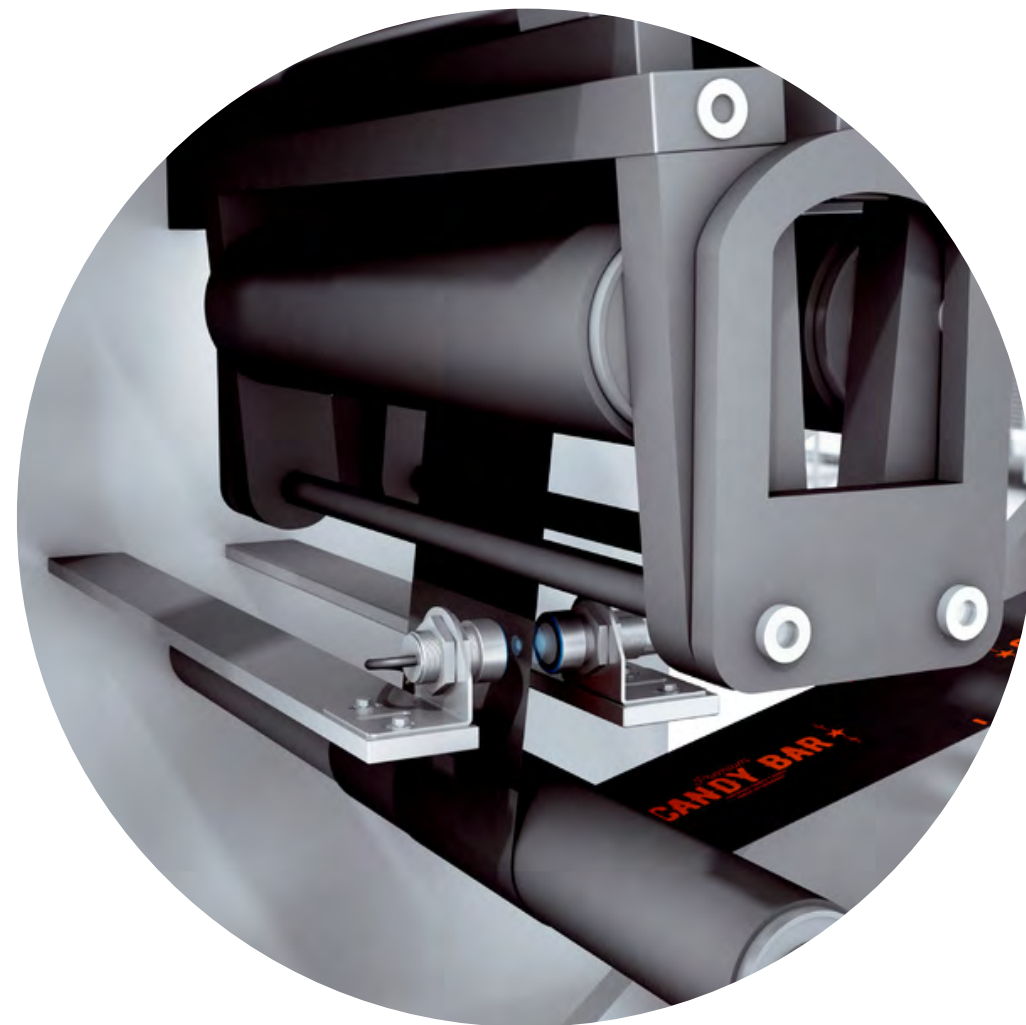
Double layer detection when splicing

– Flying roll changes with the machine running, as the films are spliced automatically within fractions of a second at a certain point

– The ultrasonic sensor reliably detects double layers and identifies the position being sought quickly and accurately

UD18 – advantages

– Rapid commissioning thanks to plug-and-play technology plus a range of sensitivity levels to choose from

– Easy to switch between sensitivity levels during operation, preventing downtime during material changes

– Individual teaching-in of various materials, making it possible to tackle even very demanding applications

8 Double layer detection when splicing

## Horizontal form, fill, and seal machine

Accurate edge guiding
– The Ax20 array sensor detects the web edges of a wide range of films

AS30 – advantages
– No fine positioning of the sensor required thanks to the large field of view of up to 50 mm

– Very precise edge control thanks to the high repeatability of up to 30 µm

– High reliability and stable processes thanks to teach-in of contrast edges

9 Accurate edge guiding

Horizontal form, fill, and seal machine
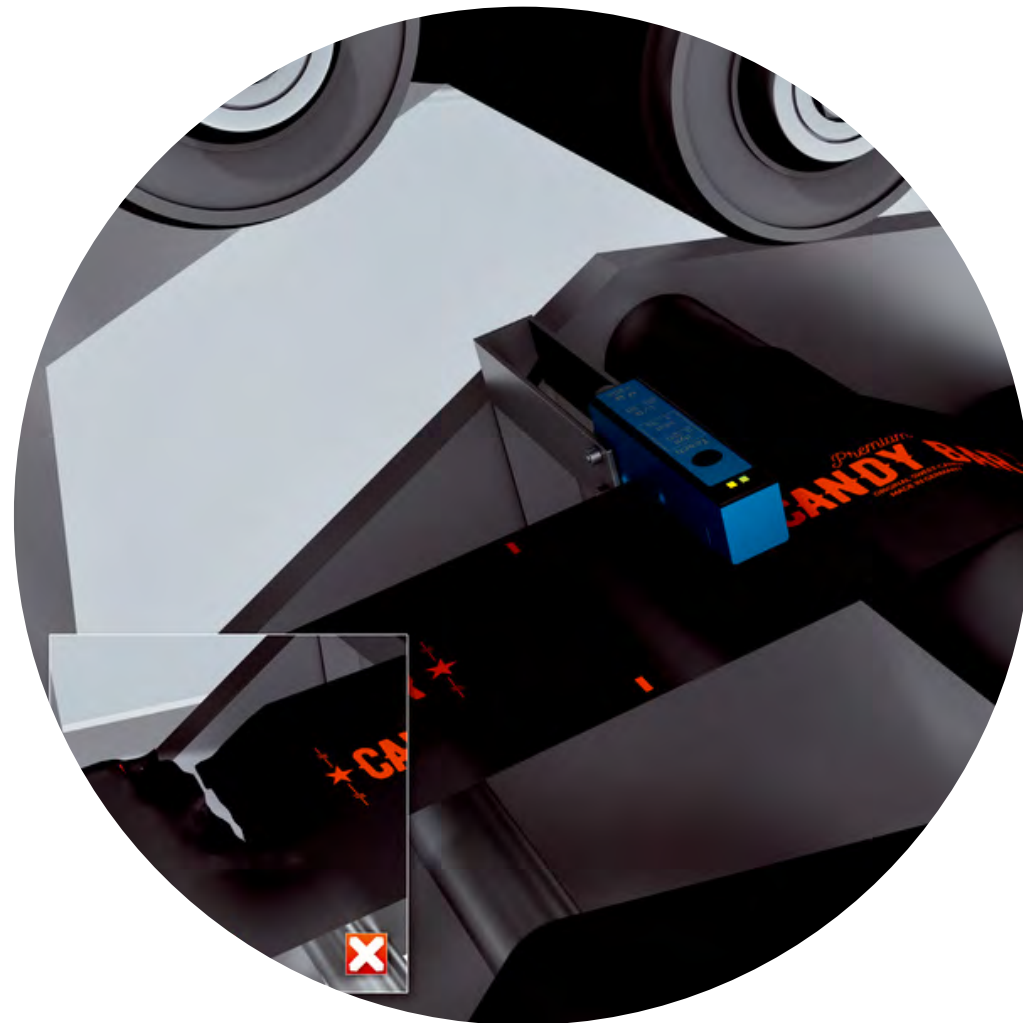
Detection of film tears in transparent materials
– The compact fork sensor reliably detects a huge variety of films, irrespective of their optical characteristics

UF – advantages
– High flexibility: Reliable detection of transparent, opaque or printed films

– Precise detection thanks to fast response times, even at very high film speeds

– High process reliability: Ultrasonic technology prevents false detection, which may be caused by ambient light or shiny surfaces

10 **Detection of film tears in transparent materials**

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## Horizontal form, fill, and seal machine

Reliable print mark detection
- Print marks help to position packaging materials correctly in automatic production processes

- The contrast sensor detects these marks reliably

KTM Prime – advantages
- Good contrast resolution and a very large dynamic range ensure good detection performance on glossy materials, thus increasing the range of application possibilities

- Thanks to the reliable detection of print marks, the three-color LED technology allows for a smooth process, even with poor contrasts

- More diagnostic and visualization options as well as quick and easy format changes, since parameter settings can be downloaded via IO-Link

11 **Reliable print mark detection**

Horizontal form, fill, and seal machine
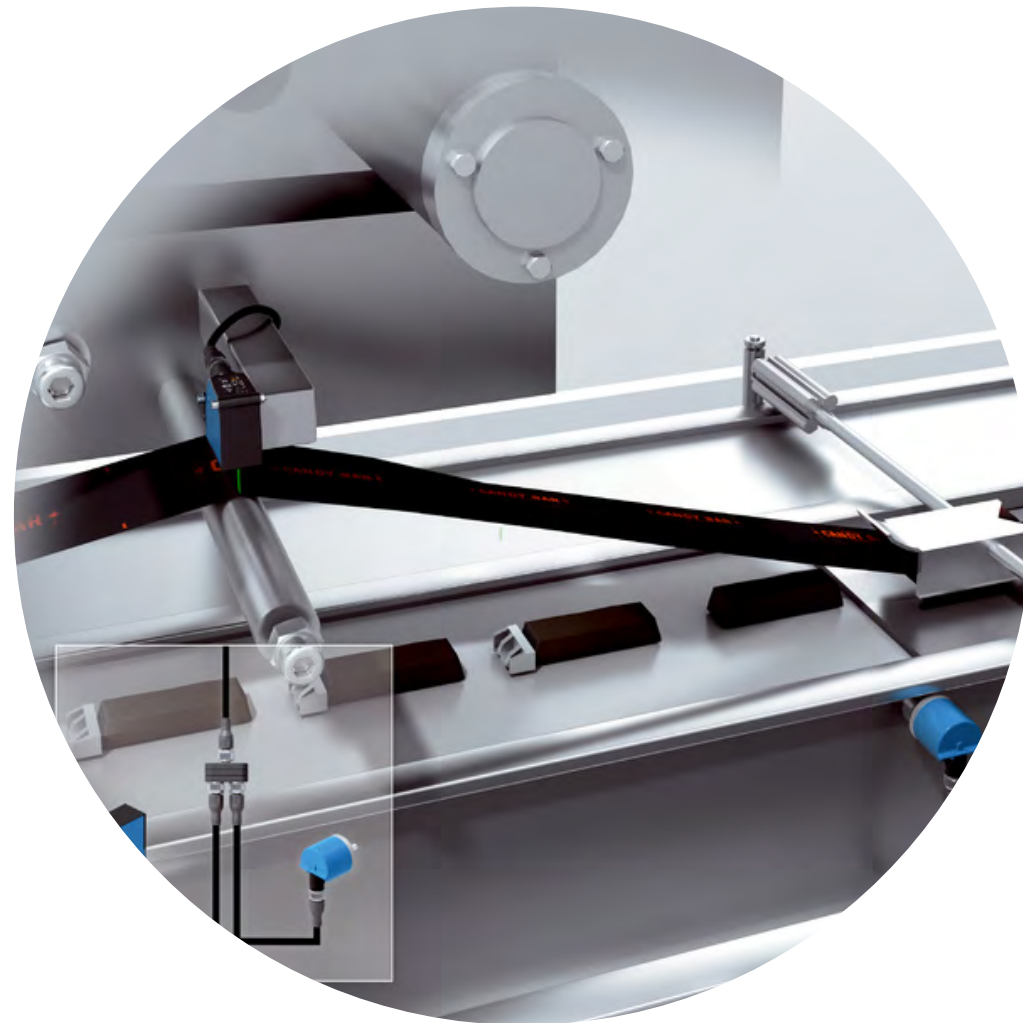

Length measurement of packaging film

– Rotative encoders from SICK indirectly detect the speed and position of material, for example by detecting the speed of a roller over which the material is guided

AHS/AHM36 – advantages

– Simple mechanical installation thanks to the rotatable male connector or cable connection and various mounting hole patterns and shafts

– Intelligent diagnostic functions evaluate maintenance intervals for entire systems

– Thanks to their decentralized intelligence, the IO-Link sensors can be successfully integrated into comprehensive edge computing concepts, which are building blocks for the implementation of Industry 4.0 and Smart Factory applications

Alternatives: DFS60 and DBS60 Core

12 **Length measurement of packaging film**

Horizontal form, fill, and seal machine
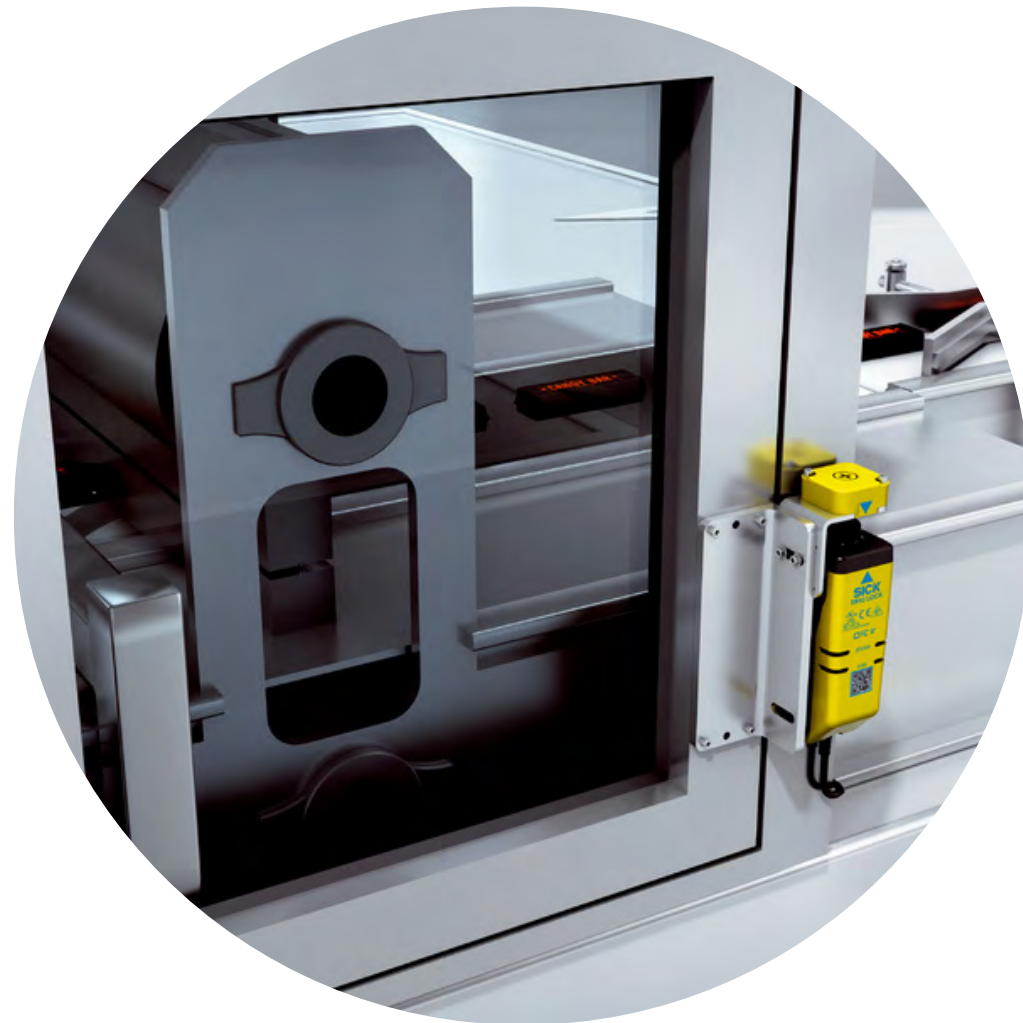
Reliable door monitoring with locking device
– Bagging machines use high-speed rotating tools to seal and cut sheet materials once the product has been fed into the system

– Access to the hazardous point while the machine is running must be prevented by means of a safety locking function on the door

TR10 Lock – advantages
– High coding level of the actuator fulfills the requirements for manipulation protection according to EN ISO 14119 without the need for additional measures

– Fulfills requirements of PL e for door and locking monitoring (EN ISO 13849)

– 1690 N locking force

13 **Reliable door monitoring with locking device**

Horizontal form, fill, and seal machine

Protecting the protective doors

– Concealed safety switches are attached to the protective doors in order to safely monitor them when the machine is running
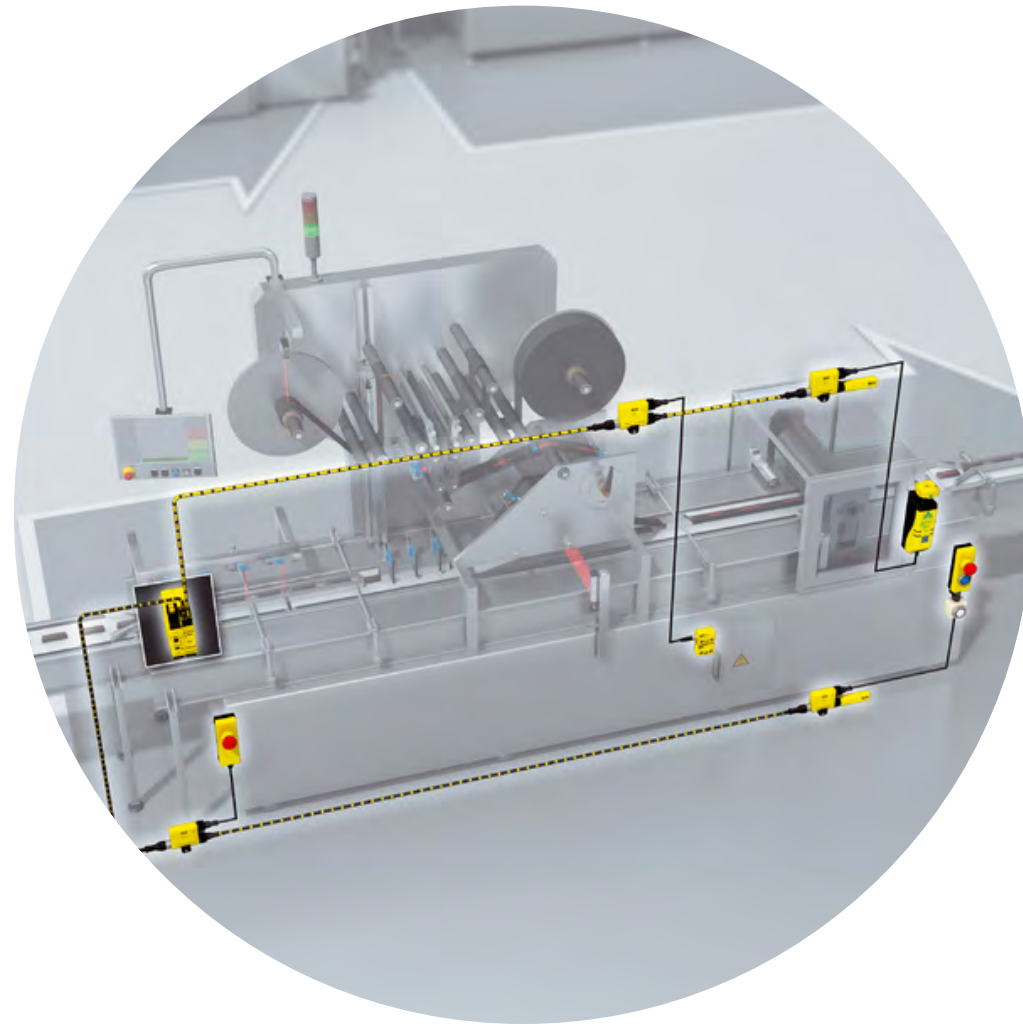
RE1 – advantages

– Proven solution, high tolerance to door offset

– Performance level up to PL e
  (depending on controller used)

STR1 – advantages

– Extremely flexible installation options, very high protection against manipulation

– PL e out of the box

– Enables series connections with up to 30 devices without compromises in the performance level

Horizontal form, fill, and seal machine


Safe machine linking
– Complex packaging lines need machines to be linked safely and flexibly

Flexi Soft and Flexi Loop – advantages
– Safe series connection of safety sensors

– High availability: Detailed diagnosis for quick troubleshooting

– Reduces the amount of wiring and the number of safety inputs
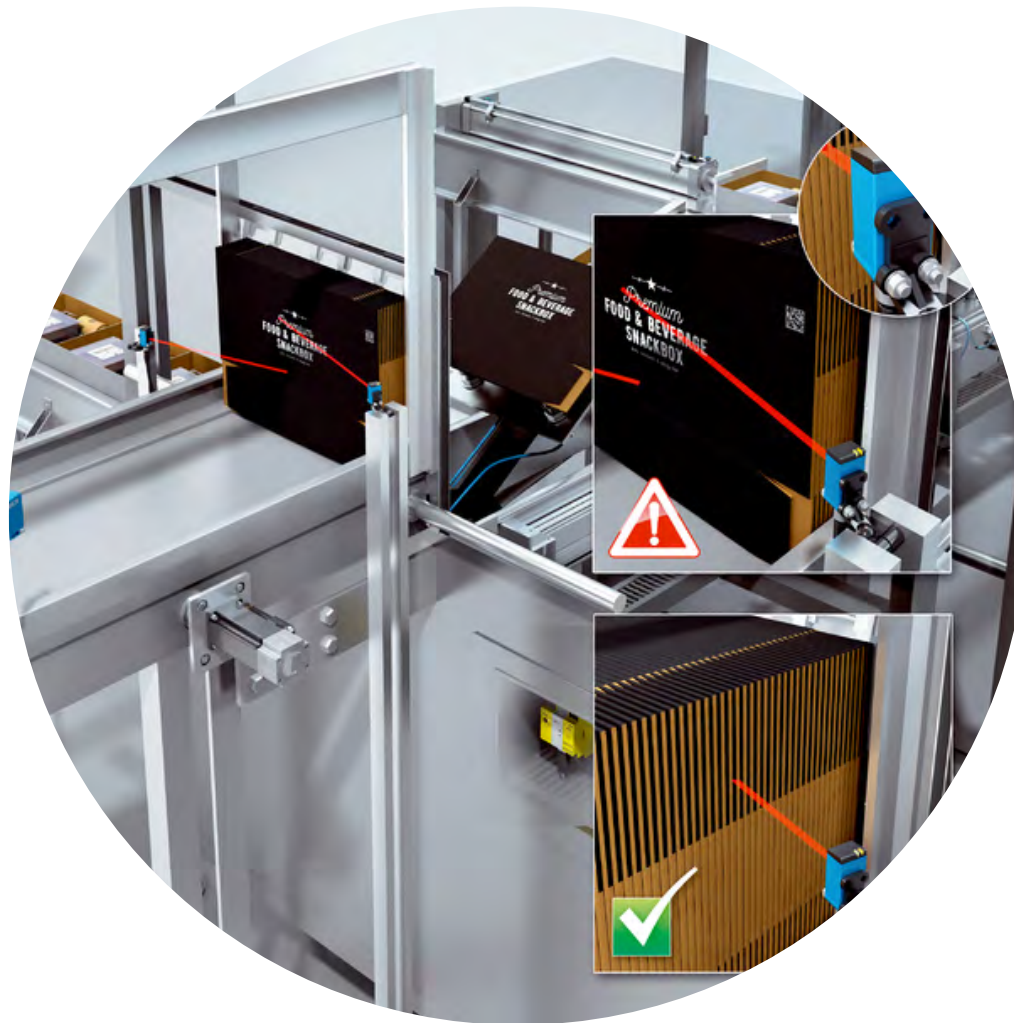
Optimized packaging processes

Secondary packaging

Side loader

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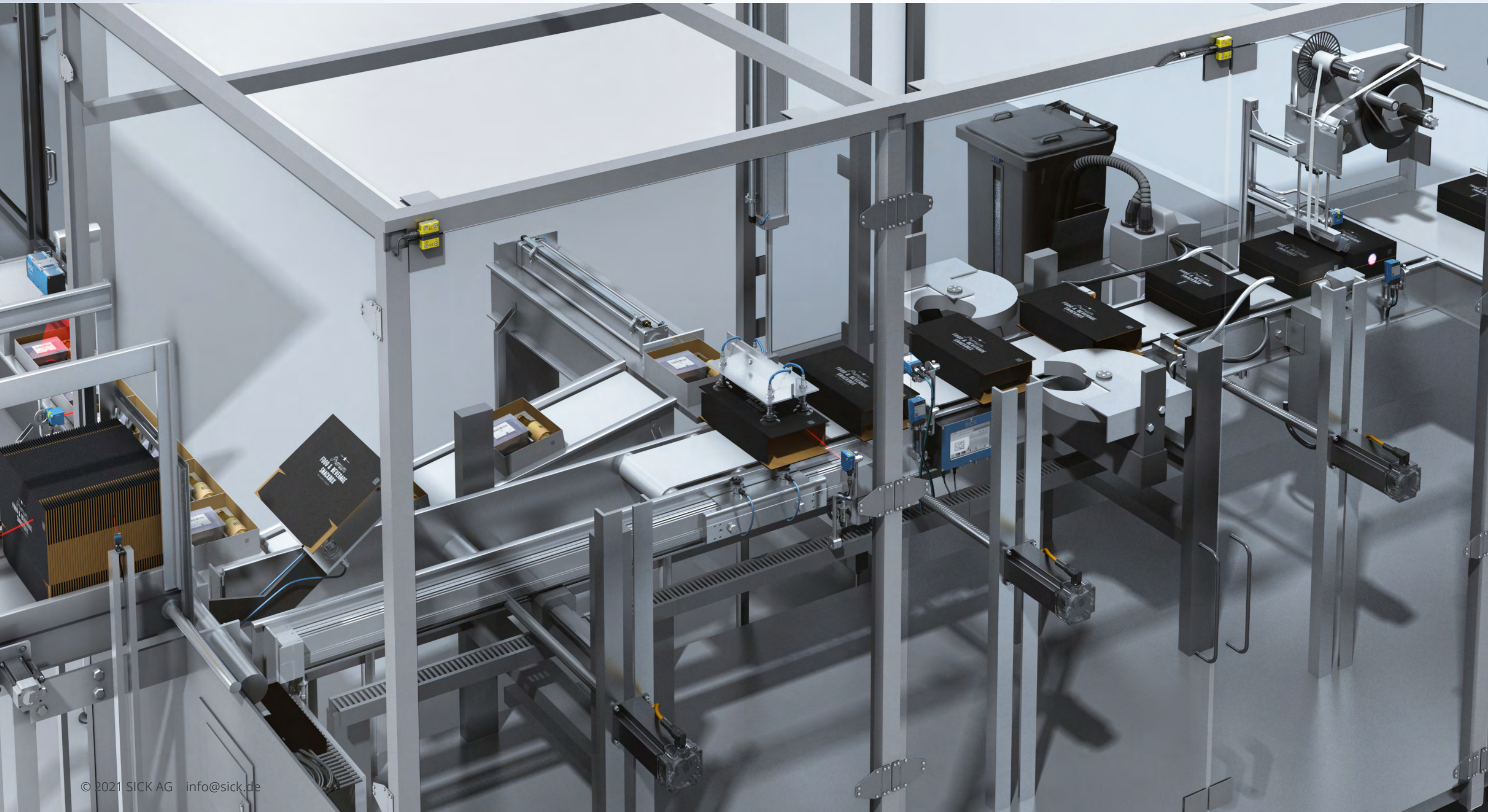
Secondary packaging

Side loader

Protection of the carton magazine

– In the case of packaging machines, and particularly when it comes to material transportation of flat carton blanks, for example, there is a danger of the operator reaching into the magazine to add more material while the machine is running

– For this reason, SICK offers a certified all-round functional safety systems to eliminate the risk of injury

Safeguard Detector – advantages

– Certified safety sensor saves time and money

– Performance Level: PL d (EN ISO 13849-1) – an additional safety assessment is not necessary

– Easily adaptable: Make format changeovers in an instant

– Modular system: Facilitates retrofitting of older machines

Side loader
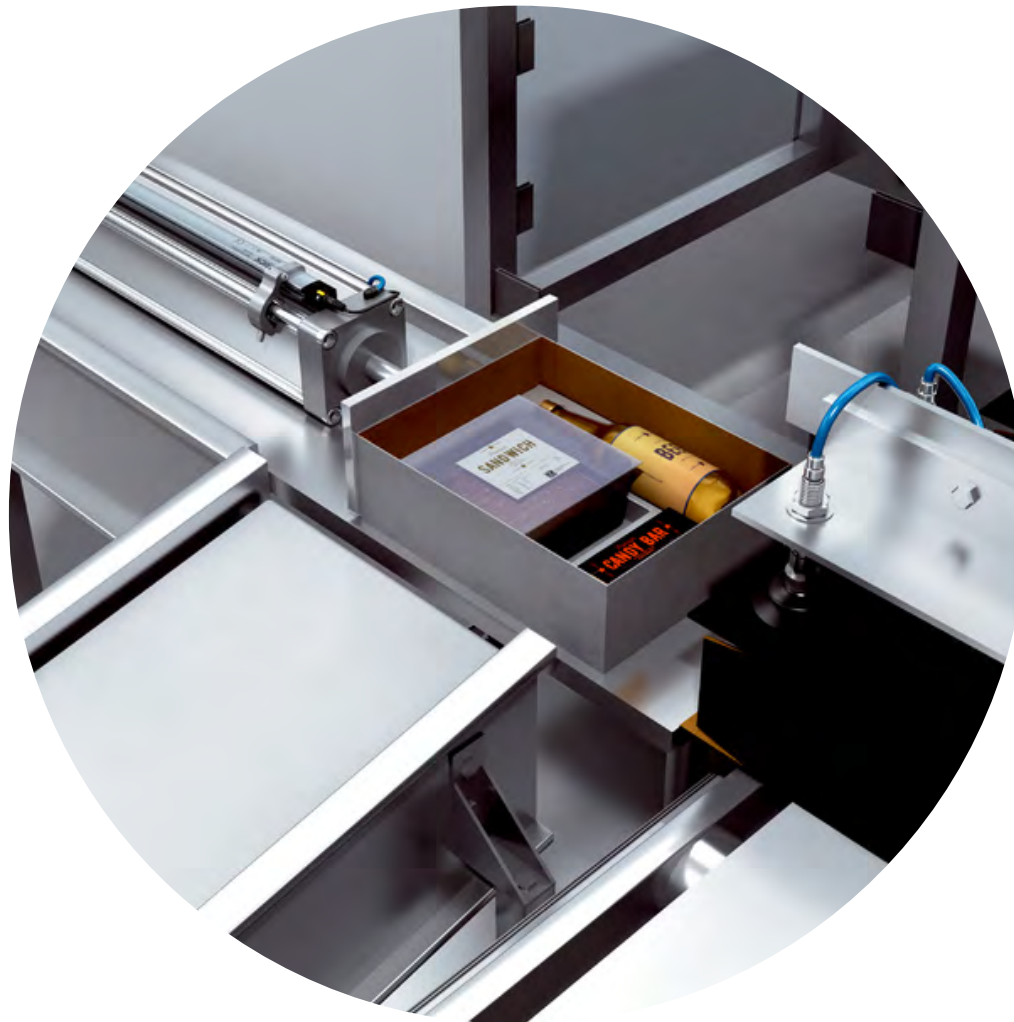
Monitoring the position of the product pusher

– On the pneumatic cylinder, the position sensor detects the piston position of the product pusher continuously, directly and without making contact, thus monitoring the piston travel simply and precisely

MPA – advantages

– Analog outputs (for current or voltage), switching output, and IO-Link

– Mounting possible on numerous cylinder designs using adapters (tie-rod cylinders, round cylinders, profile cylinders)

– Sensor variants with measuring ranges of 107 mm to 1,007 mm

Secondary packaging

# Side loader

Format adjustments on the side loader

– For format changeovers, the side loader must automatically convert its stops with a high degree of accuracy so it can guide the new products precisely

– Servo motors with the compact motor feedback system move the adjustment axle of the side loader dynamically and precisely

EKS/EKM36 – advantages

– Saving all analog components on the controller part due to exclusively digital data transmission

– Great cost savings as no separate encoder cable is required

– Data transmission is synchronized with the controller cycle

– Minimal cabling thanks to integration of the encoder communication into the motor cable

③ **Format adjustments on the side loader**

Side loader
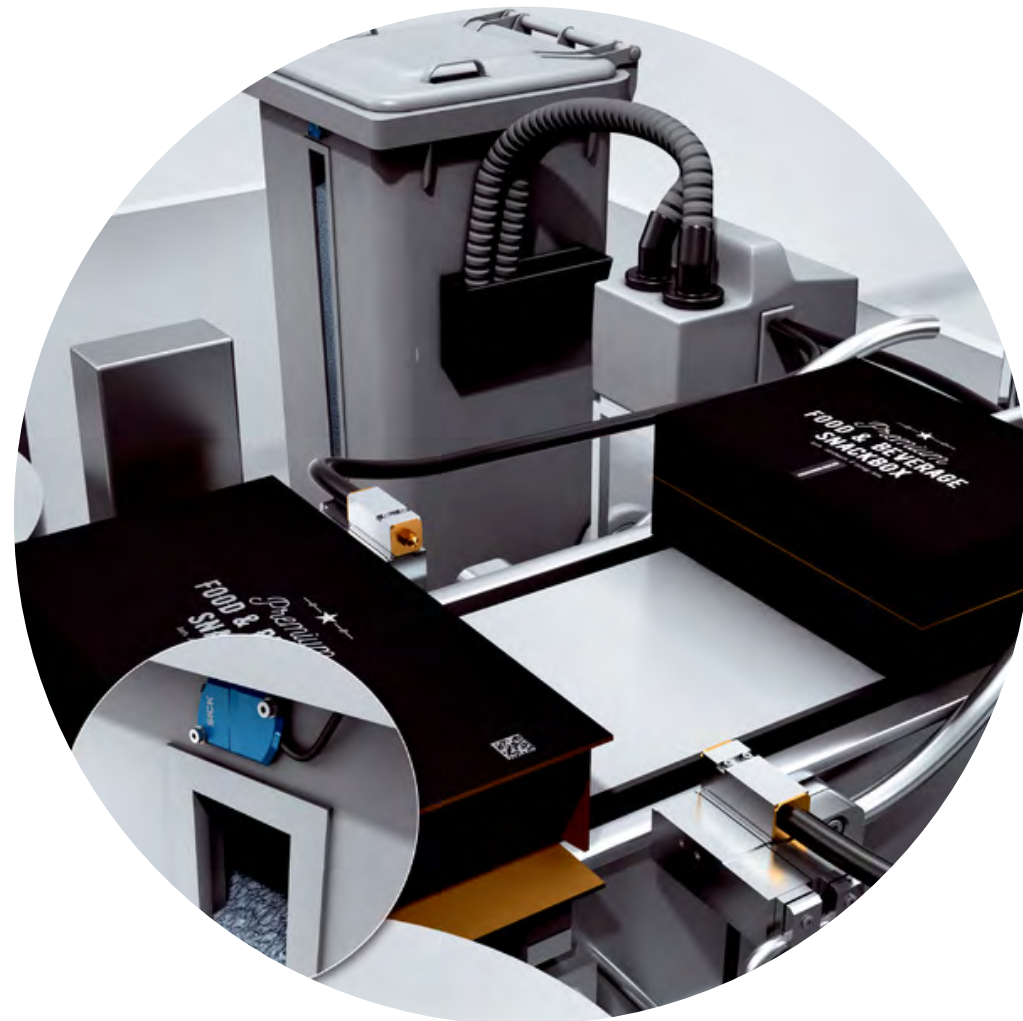
Level measurement on the adhesive container
– Capacitive proximity sensors are suitable for monitoring the level of the adhesive container, since they can measure levels without contact, even through walls

CQ und CQF – advantages
– Non-contact level monitoring even through walls This reduces assembly work

– Quick and simple setting of the switching point via teach-in button or external teach-in

– Reliable level measurement – compensation for foam, moisture and deposits

④ **Level measurement on the adhesive container**

Secondary packaging

Side loader

The right product in the right packaging
– Food safety is becoming more and more important

– Quality control systems solve food safety tasks by comparing different 1D and 2D codes (code matching) on packaging

– This makes it possible to check whether a product is in the right packaging

MQCS – advantages
– Quick and easy product changeover using saved system settings (recipe management)

– Easy integration into existing plants

– Digital outputs for user-defined alarms

– No expert knowledge is required to operate the system

> 5 **The right product in the right packaging**

Secondary packaging

Side loader

**Flexible parameterization of the sensor for different packaging**

– In production processes, there are order-specific packaging formats for the product to be produced

– The packaging can vary significantly, in particular with regard to shape and surface properties

– When using a smart sensor, the sensor parameter sets for a wide range of different packaging formats can be created and stored in the controller

PowerProx and W12-3 – advantages

– Reliable object detection over long sensing ranges and at large detection angles

– Precise, simple adjustment using a potentiometer, teach-in button or display

– Suitable for a wide range of applications: The variants of the photoelectric sensors are designed to cover a variety of detection requirements

6 **Flexible parameterization of the sensor for different packaging**

Secondary packaging

Side loader
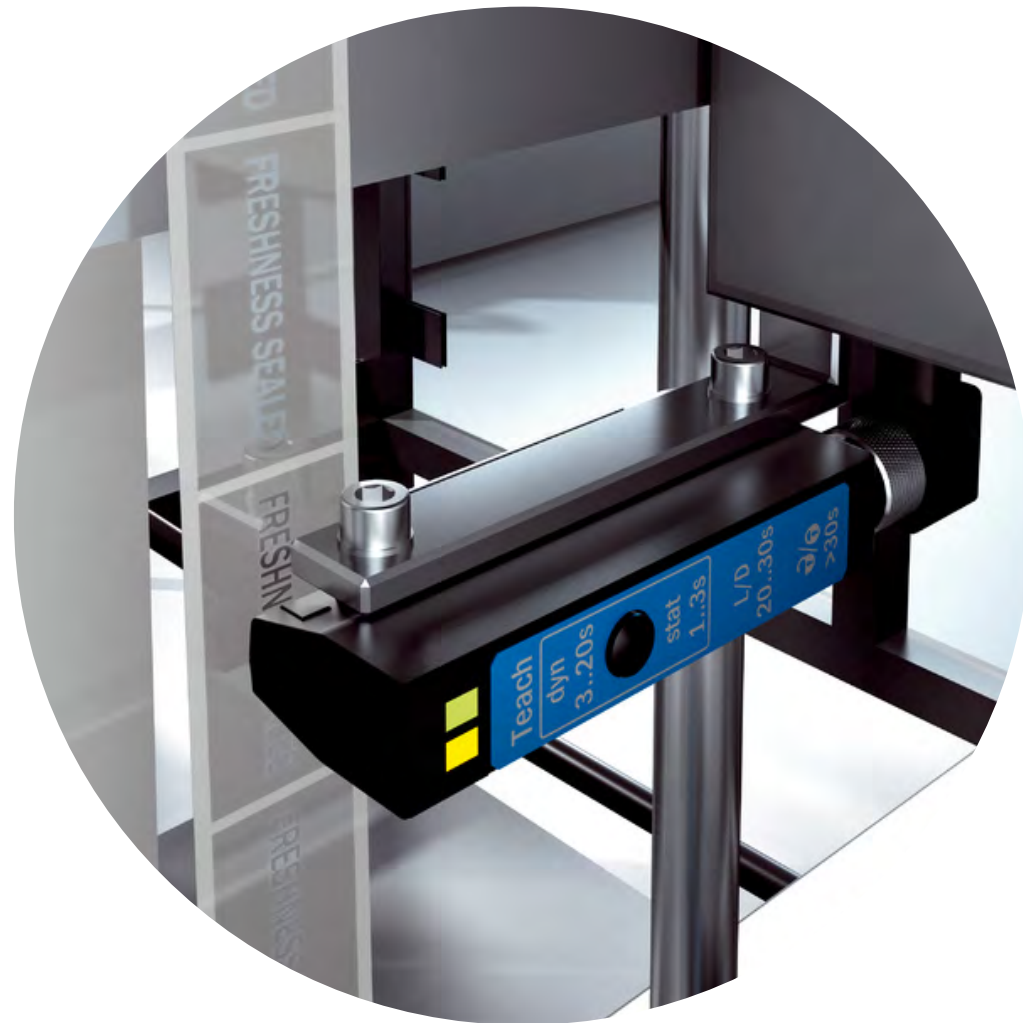
Quick and reliable label detection

– Self-adhesive labels are applied to different packaging

– The fork sensor detects the labels quickly and reliably and can be mounted near the dispenser edge

WFS – advantages

– accuracy in the process

– Precise detection thanks to fast response times, even at very high track speeds

– Small housing allows simple installation even where space is limited

⑦ **Quick and reliable label detection**

Secondary packaging

Side loader

Checking of best-before date
– Once cleartext has been printed, a check must be performed to ensure that the best-before date has been printed correctly and legibly

Lector62x – advantages
– Powerful LEDs with red, blue, and infrared light

– microSD card for storing images and backup copies of parameters

– Compact housing with swivel connector

8 Checking of best-before date

Secondary packaging

Side loader

Checking of seal

– The glare sensor detects and differentiates objects on the basis of their gloss

– This is how it checks the presence of the seal

– The sensor distinguishes between the reflection from the surface of the seal and the diffuse remissions from the packaging with very high reliability

Glare – advantages

– Excellent gloss identification regardless of color, labeling or structure increases process reliability

– The sensor is insensitive to different object gloss levels, thus increasing process reliability

– Teach-in via the single teach-in button or SOPAS operating software facilitates quick and easy operation
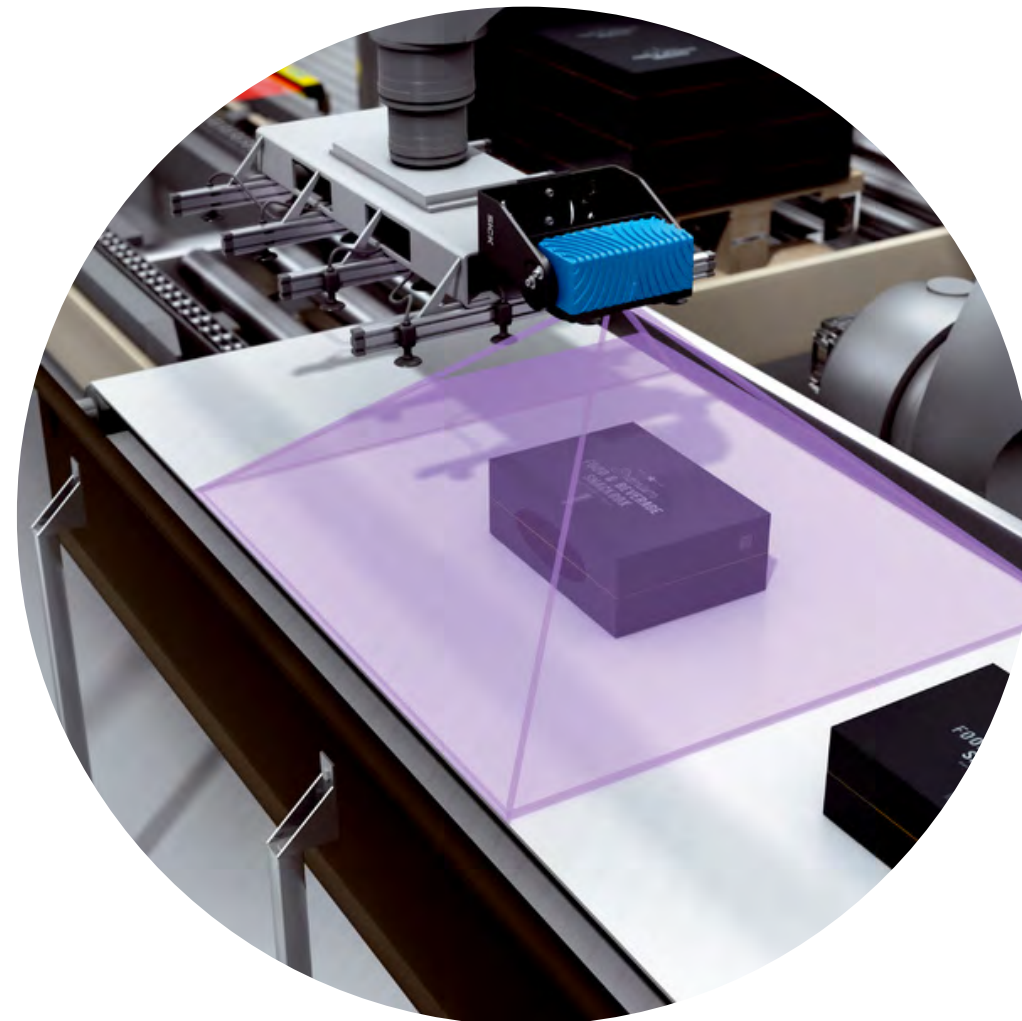
9 **Checking of seal**

Pallet handling machine

End of line packaging

Pallet handling machine

Contour measurement for pallet loading

– The 3D streaming camera determines the position and dimensions of the cartons

– This enables the robot to correct its predefined positioning data if necessary and to grip the objects correctly

Visionary-S and Visionary-T – advantages

– Works both with cartons and cases at a standstill (end-of-line) and in motion (conveyor belt)

– Only one image recording process of the complete object (carton or pallet) is necessary to generate its 3D data, which increases the possible gripping speed of the robot to a maximum

– 2D image data (including color data) matching the depth data enables direct documentation and simple fault analysis

End of line packaging

Pallet handling machine

Positioning of boxes and cases when feeding them to the palletizer robot

– The boxes and cases are specifically sorted and positioned for smooth processes in the palletizer robot

– Absolute encoders with Ethernet interface record the exact position and transmit the corresponding data to the higher-level controller

AFS/AFM60 PROFINET – advantages

– Precise positioning ensures smooth palletizing processes, thus increasing productivity

– Numerous additional functions enable optimum adaptation to processes

– Individually retrievable pieces of diagnostic data make it possible to monitor and optimize the process

Pallet handling machine
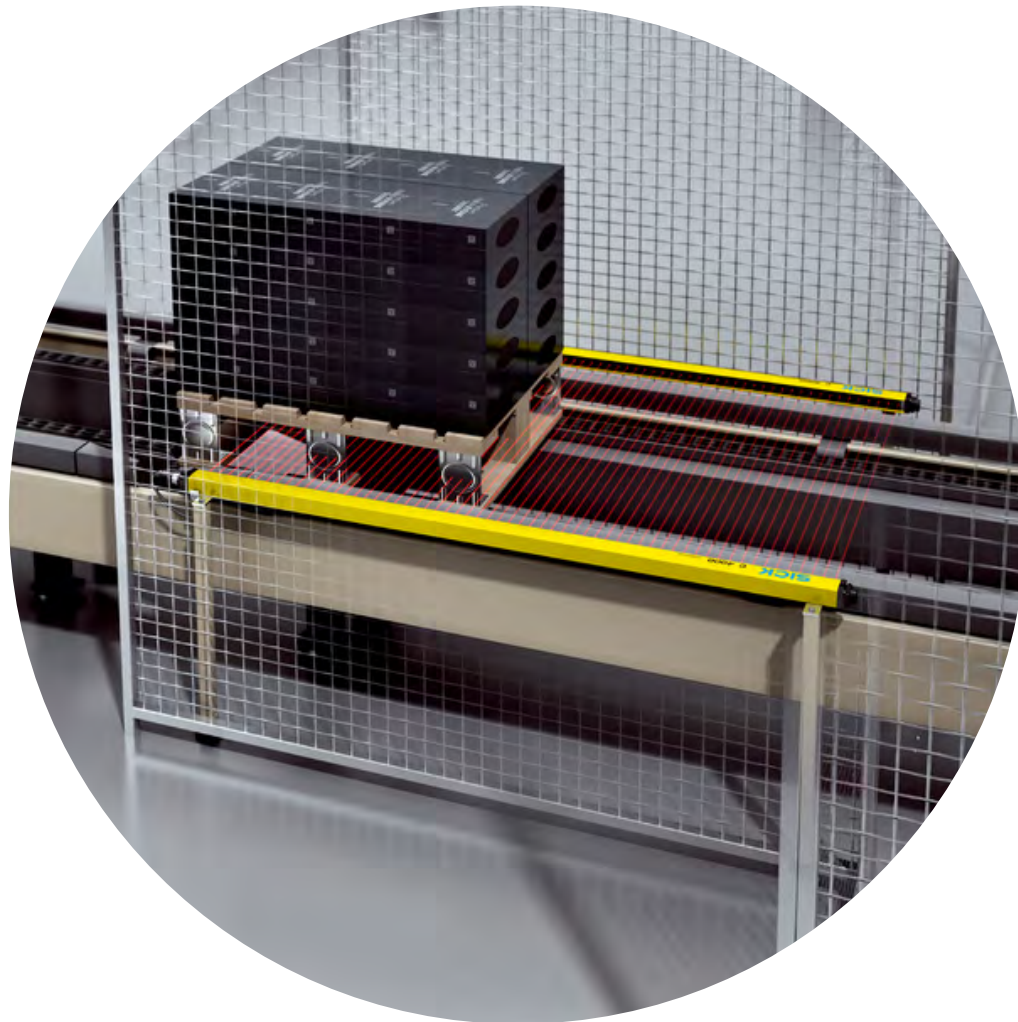
Access protection with automatic pallet detection
– A safety light curtain mounted horizontally at the
outlet of the conveyor belt protects access to this area,
automatically detects pallets and reliably distinguishes
them from people

**C4000 Palletizer and deTem4 LT-Muting A/P –
advantages**
– Cost-effective due to savings made on additional muting
sensors and other protective measures

– With the dynamic and self-teaching blanking function,
the system can reliably differentiate between man and
material – this provides maximum safety

– Saves storage space: Pallets can also be permanently
situated in the protective field

**③ Access protection with
automatic pallet detection**

Pallet handling machine

Automatic pallet handling

– Robots reliably stack packages on pallets

– Servo motors with the compact motor feedback system move the robots dynamically and precisely

EKS/EKM36 – advantages

– Saving all analog components on the controller part due to exclusively digital data transmission

– Great cost savings as no separate encoder cable is required

– Data transmission is synchronized with the controller cycle

– Minimal cabling thanks to integration of the encoder communication into the motor cable

④ **Automatic pallet handling**

Pallet handling machine

Monitoring of the stack height

– For the pallet handling machine to be operated continuously, the number of pallets and thus the stack height in the pallet stacker have to be monitored

– Reliable object detection over long sensing ranges and at large detection angles with the photoelectric proximity sensors

PowerProx – advantages

– Precise, simple adjustment using a potentiometer, teach-in button or display

– Suitable for a wide range of applications: The variants of the photoelectric sensors are designed to cover a variety of detection requirements

5 **Monitoring of the stack height**

Pallet handling machine

Safety locking function of the service door
- The solenoid interlock makes sure that the door cannot be opened during operation

TR10 Lock – advantages
- High coding level of the actuator fulfills the requirements for manipulation protection according to EN ISO 14119 without the need for additional measures

- Fulfills requirements of PL e for door and locking monitoring (EN ISO 13849)

- 1690 N locking force

⑥ **Safety locking function of the service door**