

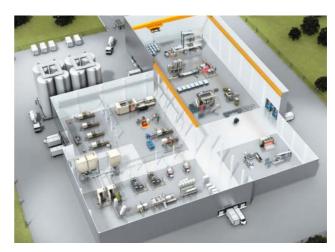
RUBBER AND PLASTICS MACHINES

EFFICIENT APPLICATIONS SOLUTIONS



CHALLENGES IN THE RUBBER AND PLASTICS INDUSTRY

The rubber and plastics industry provides products to a multitude of other industrial sectors. In particular, the automotive, electronics, and white goods industries, as well as the packaging industry have a significant influence on the development of this industrial sector. Various types of production processes and machines such as injection molding machines, extruders, film and foam systems, and thermoforming machines are used to serve this variety of industry requirements. Various materials such as granulates, liquids, and semi-finished products are processed in different, to some extent automated processes. Since production is done on a very large scale, the highest degree of efficiency and economy as well as quality and safety are required. With its industry and sensor expertise, SICK makes a significant contribution toward fulfilling these requirements.



Learn more about sensor solutions for the rubber and plastics industry
→ www.sick.com/rubber_plastics



Detection and Measurement

Mass products that are produced in type-related large series require a high degree of automation in production. In addition, the wide variety of models keeps increasing, and thus the requirement for short changeover times, easy operation and minimal downtimes. Modern, intelligent sensors from SICK save the settings with automatic teach-in, have a diagnostic capability and thereby contribute significantly to providing a solution to these tasks.



Access Guarding and Area Guarding

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



Inspection and Verification

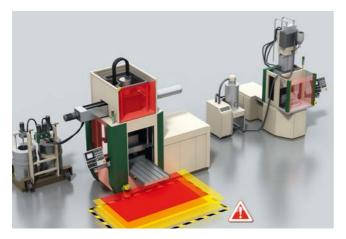
SICK offers the appropriate solution for all quality control applications: fiber-optic sensors to check that components are present in injection molding machines, displacement sensors for precise measurement of extruded profiles, vision sensors for in-line quality control and smart camera systems for high-end testing. This ensures that the high quality level demanded is achieved.



Data Management and Identification

Marking with bar codes and 2D matrix codes is standard, but the properties of the products as well as the material-handling environment mean that identification puts high demands on code reading. SICK offers ideal industrial reading systems for the rubber and plastics industry, with easy integration, high durability and superior read rates, as well as the ability to get operations back up quickly in the event of a failure.

INJECTION MOLDING AND BLOW MOLDING MACHINES







Minimum fill level monitoring

To prevent the material feed hopper from being emptied and machine downtime occurring as a result, the CM30 capacitive proximity sensor detects the minimum fill level in the feed hopper. If the minimum fill level is insufficient, the sensor switches. This signals to the operator that the material must be slackened.



→ www.mysick.com/en/CM30
→ www.sick.com/cq4-video

Capacitive proximity sensor



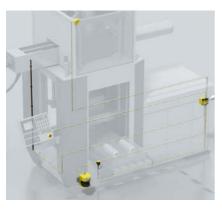
Hazardous point protection at the rotating table

The rotational movement of the table can present a danger for the machine operator. To eliminate this risk, the deTec4 Core safety light curtain is mounted at the access opening to the hazardous point of the rotating table.

· Safety light curtain



→ www.mysick.com/en/detec4
→ www.sick.com/detec4core-video



Evaluation units for safety sensors

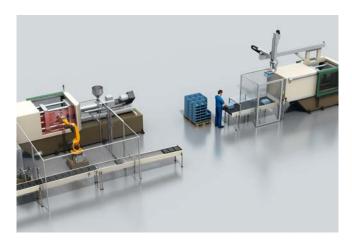
SICK's wide range of safety solutions – from single-channel emergency stop pushbuttons over safety light curtains to safety laser scanners with PNP outputs – can be evaluated using SICK sens:Control – safe control solutions. The product portfolio includes safety relays, safety controllers and network solutions and is characterized by easy commissioning, modularity and an optimal integration into the automation process.

Safety relays / safety controllers



→ www.mysick.com/en/Flexi_Soft
→ www.sick.com/FlexiSoft-Video

INJECTION MOLDING AND BLOW MOLDING MACHINES







Pressure and filling level measurement in the hydraulic system

The PBS pressure switch monitors the present system pressure of the machine. The PBT pressure transmitter also measures the pressure that builds up in the closing cylinder of the machine. This ensures that the locking force of the tool can be adjusted. The LFP Cubic filling level sensor monitors the filling level in the oil tank.



• Pressure switch, transmitter and filling level sensor

→ www.mysick.com/en/PBS → www.mysick.com/en/LFP_Cubic → www.sick.com/fluidsensors-video



Monitoring the position of inserts

When producing hybrid components, metallic inserts are positioned in the injection molding tool and then insert-molded with plastic. The Inspector vision sensor identifies any incorrectly positioned inserts. This prevents machine downtime and damage to the tool.

· Vision sensor



→ www.mysick.com/en/Inspector
→ www.sick.com/inspector-video



Collision protection between the robot and the injection molding tool

Closing the injection molding tool while a robot is accessing it damages both the tool and the robot. The access opening to the tool area can be monitored reliably with the SGS smart light grid.

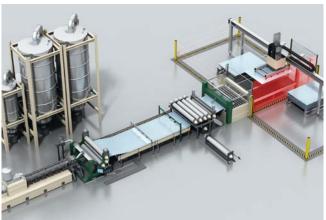
• Smart light grid / Automation-Laserscanner



- → www.mysick.com/en/SGS www.mysick.com/en/TiM3xx
- → www.sick.com/TiM300-video

EXTRUSION LINES







Determining the film tubing diameter

The diameter of the film tubing is determined by the signal evaluation function of three UM30 ultrasonic sensors. The air feed is controlled based on this diameter, which ensures a consistent, high-quality production result.

· Ultrasonic sensor



→ www.mysick.com/en/UM30



Speed and length measuring

The DBS36 incremental encoder monitors the speed of the film sheet on a roller. This enables the film sheet to be wound up onto the coil at a constant rate.

The incremental encoder DFV60 measures over a friction wheel the speed of the extruded plastic plate or profile. The given value is used to control the attached cutting saw and herewith the length of the extruded plates.

• Incremental encoder / Measuring wheel encoder



→ www.mysick.com/en/DBS36 → www.mysick.com/en/DFV60_Messrad_Encoder



Hazardous point protection at the winding device

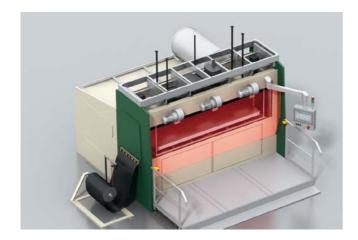
The continuous action of winding up a film sheet represents a dangerous movement. The deTec4 Core safety light curtain reliably monitors access to the winding unit.

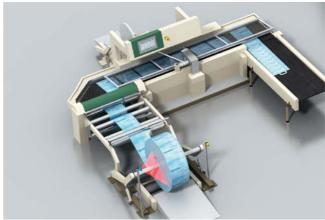
· Safety light curtain



→ www.sick.com/detec4core-video

THERMOFORMING AND BAG MAKING MACHINES







Loop control

The Dx35 distance sensor controls the feed of plastic film into the thermoforming machine. It is positioned via the loop and either measures the slack of the film continually or signals two distance points previously taught in.

• Mid-Range-Distance sensor



→ www.mysick.com/en/Dx35→ www.sick.com/dx35-video



Detecting print marks

The KT5 contrast sensor precisely and quickly detects printing marks in a wide range of different colors. Machine functions such as foil cutting can be controlled reliably using these printing marks.

In applications where space is limited, the KTM contrast sensor is the right choice.

· Contrast sensor



→ www.mysick.com/en/KT5
→ www.mysick.com/en/KTM



Edge control

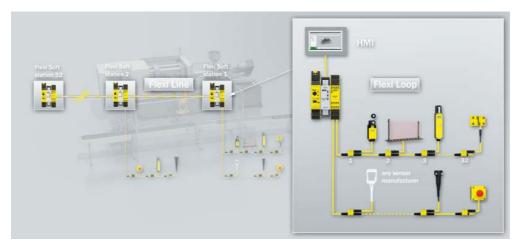
With a system made out of three optical light switches VTB18 a simple edge control system is realized. The correct de-winding of the film at a bag making machine is herewith ensured.

· Photoelectric light switch

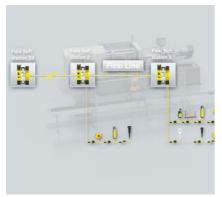


→ www.mysick.com/en/VTB18
→ www.sick.com/lasercompetence-video

SAFETY CONTROL SOLUTIONS







Flexi Line - Modular machine design

The Flexi Line enables the networking of up to 32 Flexi Soft stations with a 2-wire standard cable - no additional hardware is required. Thanks to the unique global definition of the process map (96-bit data transfer rate), specific addressing of the individual stations is no longer necessary. This allows easy modification or expansion of the whole system at any time.



→ www.mysick.com/en/Flexi_Soft
→ www.sick.com/FlexiLine-Video



Flexi Loop - Easy connectivity

The Flexi Loop can cascade up to 32 safety sensors. Safety switches and safety sensors with OSSD outputs can be used regardless of the manufacturer. For each sensor, detailed diagnostics is also available, including information on which sensor was switched and why. Integrated output signals allow the use of interlocks, switches and lamps. All sensors are supplied with voltage directly from the Flexi Loop. Using a unscreened single cable with an M12 plug, the Flexi Soft can support up to eight Flexi Loops, reducing wiring effort and the number of safety inputs in the control cabinet as well as saving costs.



→ www.mysick.com/en/Flexi_Soft
→ www.sick.com/FlexiLoop-video



Motion Control - Safe drive monitor

When working on or in a stationary machine, such as an injection molding machine, blow molding machine or a gantry robot, the Flexi Soft Drive Monitor safely monitors speed, standstill, direction of movement, and stop functions. The machine cycle doesn't necessarily need to stop during setup and maintenance - at a reduced speed, it is possible to access the machine manually with minimal risk of injury. This allows the Drive Monitor to improve the machine's productivity. When malfunctions are detected, however, the machine drives are shut down.



→ www.mysick.com/en/
flexi_soft_drive_monitor
→ www.sick.com/DriveMonitor
→ www.sick.com/drivemonitor-video

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for factory, logistics, and process automation. With more than 6,000 employees and over 40 subsidiaries worldwide, we are always close to our customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in various industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services round out our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is "Sensor Intelligence."

Worldwide presence:

Australia, Belgium/Luxembourg, Brasil, Česká republika, Canada, China, Danmark, Deutschland, España, France, Great Britain, India, Israel, Italia, Japan, México, Nederland, Norge, Österreich, Polska, România, Russia, Schweiz, Singapore, Slovenija, South Africa, South Korea, Suomi, Sverige, Taiwan, Türkiye, United Arab Emirates, USA.

Please find detailed addresses and additional representatives and agencies in all major industrial nations at: www.sick.com

