Glass manufacturing and processing

EFFICIENT APPLICATION SOLUTIONS

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Sensor Intelligence.

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SERVICES FOR MACHINES AND PLANTS: SICK LifeTime Services

Our comprehensive and versatile LifeTime Services are the perfect addition to the comprehensive range of products from SICK. The services range from product-independent consulting to traditional product services.

Consulting and design
Safe and professional

Product and system support
Reliable, fast, and on-site

Verification and optimization
Safe and regularly inspected

Upgrade and retrofits
Easy, safe, and economical

Training and education
Practical, focused, and professional

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GLASS MANUFACTURING AND PROCESSING

Glass is one of the most versatile materials and is used in many areas of everyday life, as well as in science and research, modern architecture, and cutting-edge industries. Glass production can be divided into roughly six stages. The process begins with preparing the raw material feed and then smelting it. During the subsequent refinement stage, the mixture is heated to a temperature of 1,650 °C. Sodium sulfate or sodium chloride are used as fining agents and cause all of the air bubbles to ascend, making them easier to remove from the hot mixture. Afterwards, the molten glass is cooled down and transported to the forming machine. Before and after any finishing takes place, the glass products undergo an intensive quality control process and are then packaged and placed in pallets.

➜ www.sick.com/Building_materials
➜ www.sick.com/Stone_ceramic_glass

Emission measurement

Glass manufacturing is an energy-intensive process involving high temperatures. It emits nitrogen oxides (NOX), sulfur dioxides (SO2), and carbon dioxide (CO2), which must be continuously monitored. The analytical measuring techniques used by SICK deliver all the necessary information, which is sent to a data acquisition system for further processing if required.

Safety

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

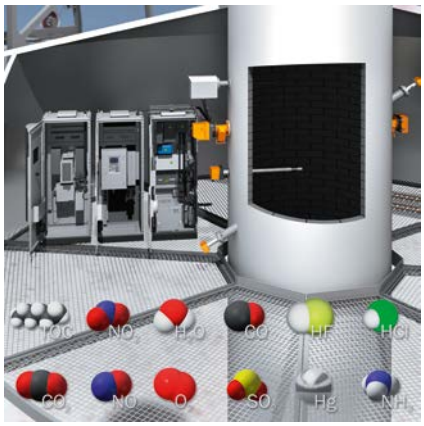
Quality control

SICK offers the right solution for all quality control applications: displacement sensors for precisely measuring the thickness of glass panel, laser volume flow sensors for ensuring materials are transported correctly, vision sensors for in-line quality control, and smart camera systems for high-end testing. This ensures that the required quality is achieved.

Service

SICK is a one-stop shop for a complete range of services – expert advice, skilled planning services, detailed project planning and engineering, installation, and commissioning. We also provide reliable post-sales maintenance and repair support.

EMISSION MEASUREMENT



Measurement of flue gas emissions

In addition to nitrogen oxides (NOX), sulfur dioxides (SO2), and carbon dioxide (CO2), the oven emissions from glass production also contain dust and traces of chlorides, fluorides, and metals, usually caused by impurities in the raw materials.
Due to legislation (within EU this is the Industrial Emissions Directive 2010/75 / EU), in glass production certain pollutants must be avoided or continuously monitored. In many countries, the technology for measuring emissions must be approved according to the DIN EN 15267-3 standard. SICK's wide product portfolio provides flexible complete solutions all from one source. Extractive gas analysis systems such as MCS200HW or MCS100FT and in-situ gas analyzers such as GM32 or GM700 are used, as well as DUSTHUNTER dust measuring devices. Gas analyzers for special components, such as the MERCEM300Z for mercury (Hg), complete the solution portfolio. For measuring volume flow, the FLOWSIC100 product family is available. The use of extractive and in-situ technology provides an ideal way to meet local measurement requirements.

- FLOWSIC100 gas flow measuring instrument
- MCS100FT CEMS solution
- DUSTHUNTER SP100 scattered light dust measuring device

➜ www.sick.com/FLOWSIC100

➜ www.sick.com/MCS100FT

➜ www.sick.com/DUSTHUNTER_SP100

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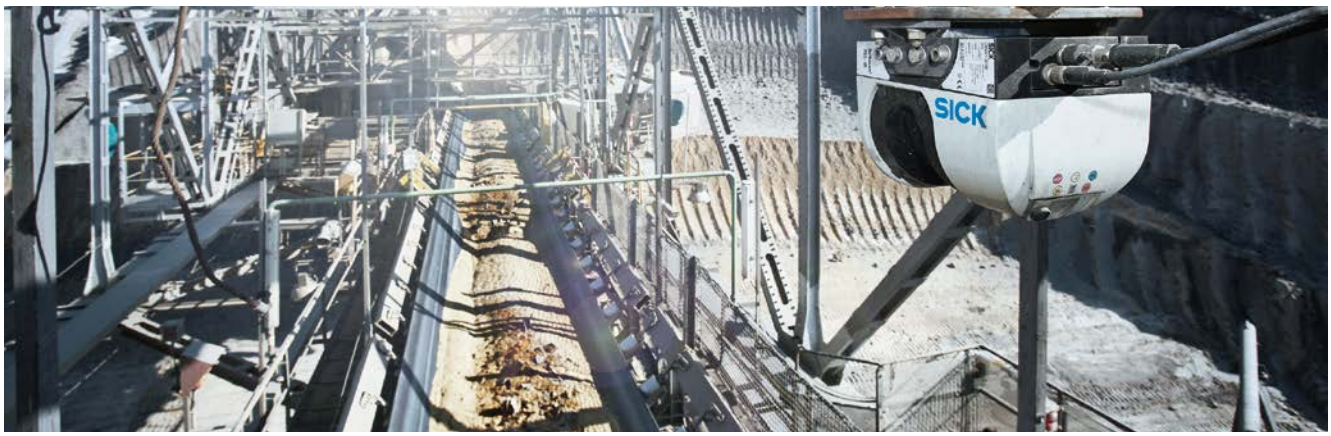
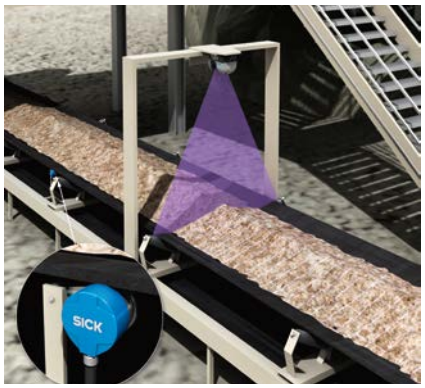
MATERIAL TRANSPORT





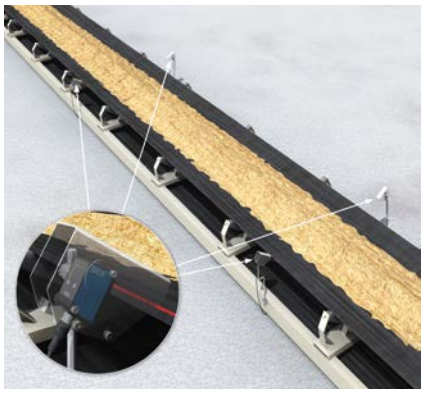
Monitoring conveyor belt operation

Conveyor belts transport materials in many industries. A belt malfunction can cause significant delays in production and involve major costs. Therefore it is necessary to monitor the operation of all belts, as well as the proper loading, unloading, and positioning of products. The Bulkscan® LMS511 laser volume flowmeter performs these tasks in combination with a DFS60 incremental encoder. The encoder provides the information on conveyor speed, while the laser volume flowmeter determines the volume flow, center of gravity of the load and load height with no contact and no wear.

- Bulkscan® flow sensor

➜ www.sick.com/Bulkscan

➜ www.sick.com/DFS60



Belt drift detection on the conveyor belt

When bulk materials are unevenly loaded, the conveyor belt tensioners and runners can deviate from the optimal alignment and cause conveyor belt drift. When this occurs, the edge of the conveyor belt overshoots the support rollers. Material can be lost or, in extreme cases, the belt is derailed. Compact Dx35 distance sensors on both sides of the conveyor belt monitor the lateral movements of the belt and send a warning before belt drift occurs. The Dx35 uses HDDM™ time-of-flight technology and is immune to ambient light and dust. The Dx35 is an economical measurement solution.

- Dx35 mid range distance sensor

➜www.sick.com/Dx35

Rear collision awareness

Mounted on a forklift truck, the Visionary-T FL 3D vision sensor actively protects the forklift from the risk of collision when backing up. Usually the operators need to handle many different tasks. Forklift trucks often travel backwards for many hours. Most accidents happen while operating backwards, and primarily when starting. The Visionary-T actively sends out a warning as soon as a person or object is located in the configurable 3D zone around the forklift truck.

- Visionary-B 3D vision sensor

➜www.sick.com/Visionary-B

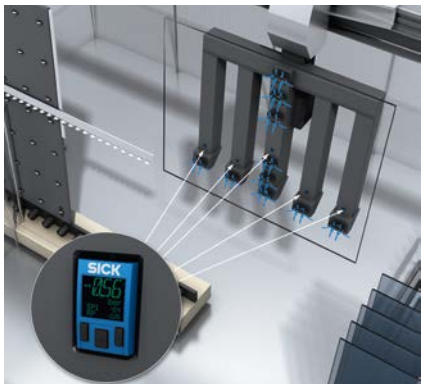
PRODUCTION OF INSULATING GLASS

Glass plate detection

The position of the glass plate is detected at several points in the production system during production. The economic GRTE18 cylindrical photoelectric sensor reliably ensures position detection and therefore a smooth production process.

- GRTE18 cylindrical photoelectric sensors

➜ www.sick.com/GR18

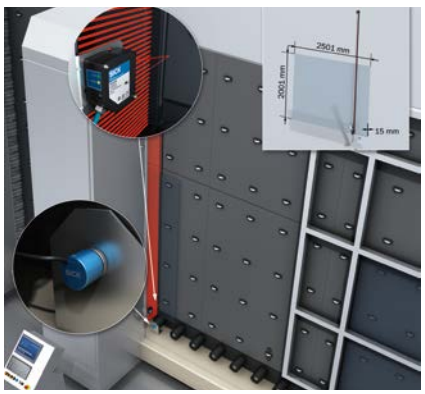


Pressure monitoring in the handling device

The completed insulating glass is automatically transported to the finished parts storage. The glass plate is fixed in the handling device by means of a vacuum. The PAC50 electronic pressure switch reliably monitors whether the required negative pressure is in the target range. The PAC50 reliably detects the pulling of additional air. Reliable handling of the glass plate is guaranteed.

- PAC50 pressure sensor

➜ www.sick.com/PAC50



Glass plate measurement

A system composed of the MLG-2 Pro automation light grid, the DBS36 Core incremental encoder and the OD5000 displacement measurement sensor measures the glass plates as they are moving. The outer contour is calculated using the height information recorded by the MLG-2 Pro and the speed signal from the DBS36 Core. The thickness of the glass is detected without making contact and with maximum precision with the OD5000.

- OD5000 displacement measurement sensor
- MLG-2 Pro measuring automation light grid
- DBS36 Core incremental encoder

➜ www.sick.com/OD5000
➜ www.sick.com/MLG-2_Pro
➜ www.sick.com/DBS36_Core

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Quality control of the seal

The applied sealing compound is checked while moving by the Profiler displacement measurement sensor. The contour of the seal is measured with maximum precision using a laser line. Faulty application or gaps in the sealing compound are reliably detected. This ensures a high level of production quality.

- Profiler displacement measurement sensor

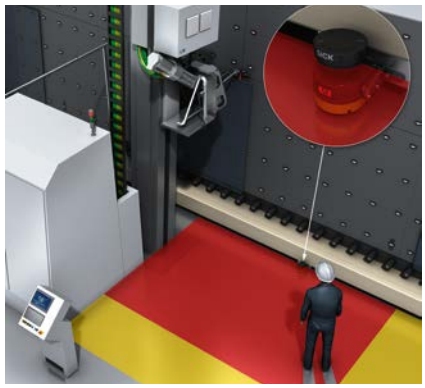
➜ www.sick.com/Profiler

Access protection of the glass plate storage

The moving glass plate storage creates dangerous movements for the system operator. Safety light curtains from the deTec4 Core product family monitor the corresponding hazardous area and automatically trigger a machine stop if it is accessed. This protects the operator.

- deTec4 Core safety light curtain

➜ www.sick.com/deTec

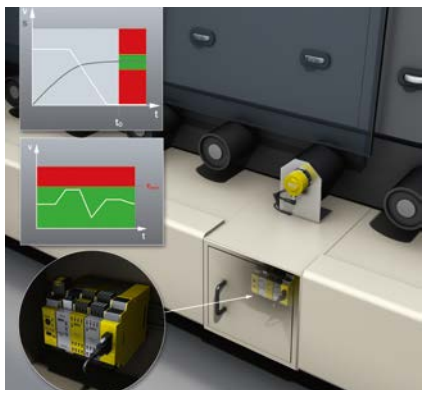


Hazardous area protection without protective fence

microScan3 Core safety laser scanners secure those hazardous areas of the system which are freely accessible for the operator. Any approaching person is reliably detected. Entering the respective area automatically triggers the safe state of the system, while optimal accessibility remains in place for the system operator.

- microScan3 Core safety laser scanner

➜ www.sick.com/microScan3_Core



Safe speed monitoring

The modular Flexi Soft safety controller is responsible for monitoring all safety functions in the production system. When combined with the Flexi Soft Drive Monitor and the DFS60S Pro safety encoder, safe monitoring of the conveyor speed is possible. A system stop is automatically triggered if the speed of the glass plate is too high. This protects the operator.

- Flexi Soft safety controller
- DFS60S Pro safety encoder

➜ www.sick.com/Flexi_Soft
➜ www.sick.com/DFS60S_Pro

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SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 9,700 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, SICK is always close to its customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents, and preventing damage to the environment.

SICK has extensive experience in various industries and understands their processes and requirements. With intelligent sensors, SICK delivers exactly what the customers need. In application centers in Europe, Asia, and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes SICK a reliable supplier and development partner.

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

That is "Sensor Intelligence."

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