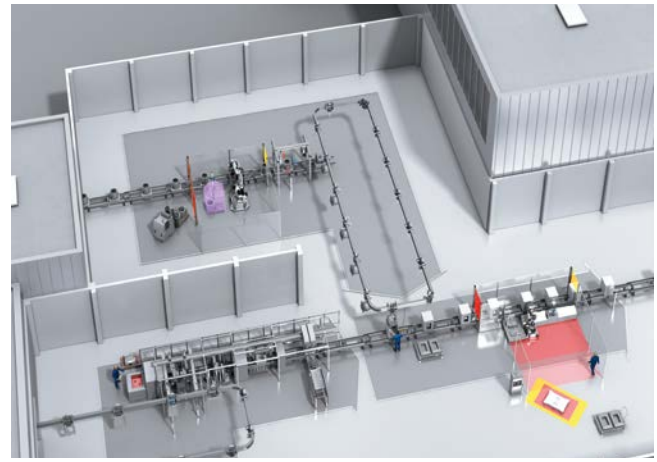
Household appliances

EFFICIENT APPLICATION SOLUTIONS

SICK
Sensor Intelligence.

CHALLENGES IN THE HOUSEHOLD APPLIANCE INDUSTRY

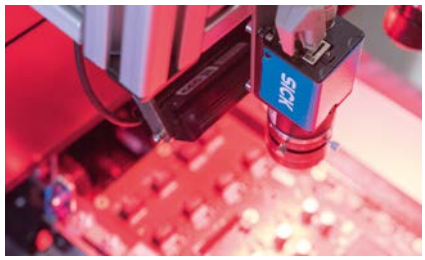
Trends such as smart homes and a growing middle class worldwide are enormous drivers of growth and technology. Together with increased demands on price and performance, this also affects production. Manufacturing processes can be automated with the help of intelligent sensor technology and product quality can be checked inline. Cooperation and collaboration between humans and robots are playing an increasingly important role here. This requires innovative and dynamic safety concepts. The transport and storage of materials and the associated data management have now become core elements of transparent, efficient manufacturing. With sensor, system, and service solutions and the right consulting, SICK provides in-depth support to customers in their transformation to automated manufacturing, quality, safety, and production logistics processes.



➜ www.sick.com/household_appliances

Safety

Increasing automation in household appliance production requires intelligent, dynamic and flexible safety concepts. SICK safety solutions ensure the protection of operating personnel, optimize production, and reduce the machine footprint and downtime.



Quality control

Assembly processes are strongly influenced by the product and require flexibility and openness to develop and implement individual processes. Reliability is an important requirement for each of these different processes, which poses a highly challenging task for quality control. SICK's distance sensors, vision sensors and systems support nearly every type of monitoring.

Track and trace

Reliable identification is a prerequisite for a smooth production flow, and lays the foundations for traceability and continuous quality improvement. SICK offers a wide range of sensor solutions for production logistics. Lots of data is only useful if it can be integrated into the existing logistics and machine architecture. SICK offers solutions for connectivity and middleware for this purpose. They ensure that your collected information can be called up from anywhere at any time and is also used profitably. Comprehensive analytics applications accompany overall data management.

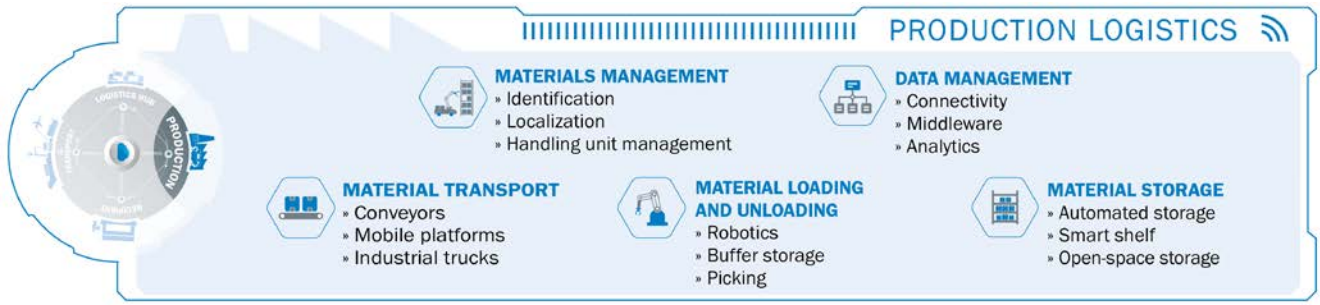
Flexible automation

The automation of handling and assembly processes under the most stringent accuracy requirements requires high resolution positioning systems, flexible production lines, and strong diagnostic abilities. Modern, intelligent sensors from SICK are able to store settings, use automated teach-in and diagnostic capabilities, and independently evaluate and relay the sensor data in the process, thus making a significant contribution towards meeting these challenges in household appliance production.

PRODUCTION LOGISTICS

CLOSING THE CIRCLE - SENSOR SOLUTIONS IN PRODUCTION LOGISTICS - EVEN FOR THE SMALLEST SPACES IN PRODUCTION

Making the material flow completely transparent, from the materials being delivered to delivering the finished product, is the goal here. SICK offers a wide range of sensor solutions precisely for this: from individual products, to software, to services that are just as individual and varied as our customers' requirements. Every production process is different. Which is exactly why it is so important to see the big picture.



SICK, with their 360° approach, therefore represents optimization of the entire value-creation chain, which sheds a light on even the tiniest corners in production in order to close gaps – be it in identification, localization, or in storage and supply-chain management.
Which keeps everything moving. And production logistics gets smart.

➜ www.sick.com/production-logistics

Automation of booking processes with localization data

The data collected by UWB localization systems and IIoT gateway systems is processed by the Asset Analytics software. Software algorithms and middleware blend and interpret the localization data and time stamps of all connected localization systems. Localization data helps to automate booking processes, like automated stock keeping in an ERP system.

➜ www.sick.com/tag-loc-system

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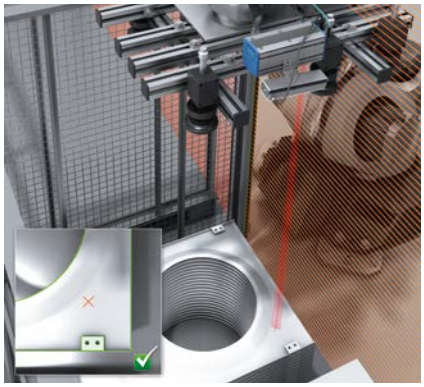
METAL AND PLASTICS PROCESSING



3D robot guidance for sheet metal handling

Using a combination of 2D camera and laser, the PLR 3D robot guidance system precisely locates sheets. The robot then picks up a sheet and places it on a carrier of the electrical overhead conveyor. PLR is equipped with software tools for calibration and communication with the robot, which allows for easy integration into manufacturer systems.

→ www.sick.com/PLR

End position monitoring of plates and cylinders

In the assembly machine for housings, an end position check of the sheets and cylinders must be carried out at several points. SICK offers a broad range of inductive proximity sensors and magnetic cylinder sensors for this purpose. With the IME inductive proximity sensor and the MZT7 or MZC1 magnetic cylinder sensors, end position monitoring can be implemented easily and cost-effectively. An M8 distribution box or a SIG100 or SIG200 Sensor Integration Gateway ensures efficient wiring of the sensors.

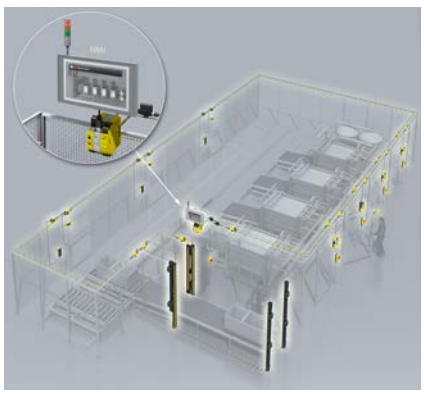
→ www.sick.com/IME

→ www.sick.com/MZC1

Monitoring of the injection mold

Parts that have not fallen can generate damage when the injection mold closes again as well as causing a machine standstill. The 2D vision sensor inspector reliably detects whether all parts were correctly demolded or whether a part is still sticking to the ejection side mold half.

→ www.sick.com/InspectorP63x



Cost-saving and safe series connection with diagnostic function

The modular Flexi Soft safety controller is responsible for complete monitoring of all safety functions in a foaming machine. When combined with Flexi Loop, up to eight safe series connections, each with up to 32 safety sensors, are possible. To achieve this, unshielded standard cables with M12 male connector are used. The Flexi Loop reduces the amount of wiring and the number of safety capable inputs in the control cabinet. In addition, detailed diagnosis information is available, e.g., which sensor has switched and why. This helps to considerably reduce plant downtimes.

→ www.sick.com/FlexiLoop

→ www.sick.com/FlexiSoft

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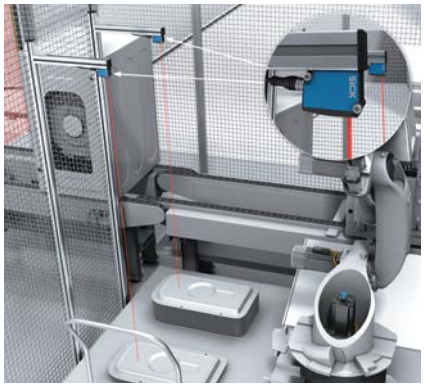
FINAL ASSEMBLY



Height measurement of the back plate stack for exact gripping of the robot

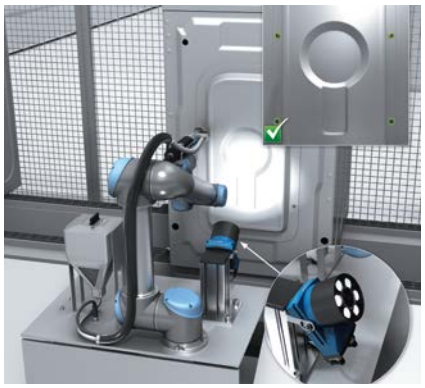
The Dx35 mid range distance sensor measures the height of the sheet stack to provide the robot with the appropriate information. This allows the robot to grip the sheets precisely. Even at great distances, the distance sensor measures and switches very precisely, regardless of object color and surface. The IO-Link interface offers the option of making the distance values of the Dx35 available digitally in a simple and cost-effective manner.

→ www.sick.com/Dx35

Detection of plates from long distances

A robot grips rear panels from a stack and attaches them to the washing machine. Despite its small size, the PowerProx Mini Distance MultiTask photoelectric sensor detects the shiny sheets to be gripped, even from a great distance. The photoelectric sensor also has an excellent capability for coping with large angles and small parts.

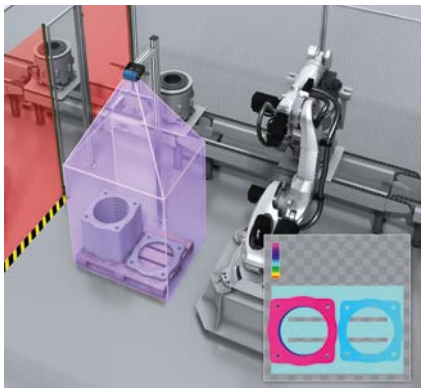
→ www.sick.com/PowerProx



Automated fastening of back plates with subsequent quality control

For fast and precise execution of the fastening process, the PLOC2D 2D vision system first locates the screw holes. An Inspector series camera then monitors the screw connections. PLOC2D is also available with URCap and enables particularly simple and intuitive communication with the robot. With system solutions such as PLOC2D and Label Checker or the Quality Inspection SensorApp for 2D cameras from the Inspector series, these and other applications can be implemented even more easily – without the need for vision expertise.

→ www.sick.com/PLOC2D

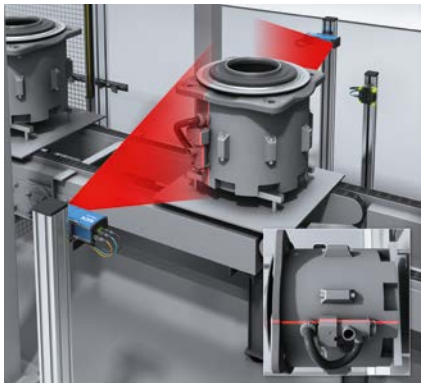


Depalletizing concrete slabs

The concrete slabs for the washing machines are delivered to the assembly cell on a pallet. The Visionary-S 3D camera outputs high-quality depth values to ensure that the robot grips the concrete slabs precisely during depalletizing.

→ www.sick.com/Visionary-S

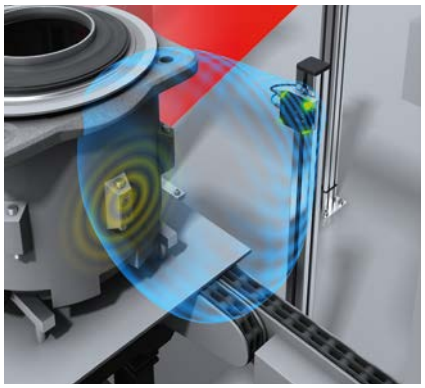
FINAL ASSEMBLY



3D quality control of washing machine drums before inserting into housing

Before inserting the drum assembly into the housing, the TriSpector1000 or TriSpectorP1000 3D camera performs a 3D quality check. The camera checks that all components are present and in the correct position. An RFU61x RFID read/write device then writes the quality control result on the RFID tag of the assembly, providing traceability.

→ www.sick.com/TriSpector1000



Transparent processes and traceability through identification of washing machine drums during mounting

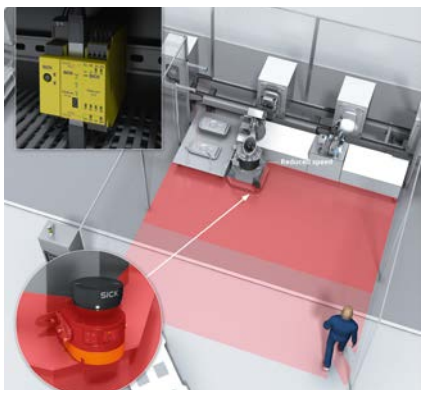
Data relevant to the assembly process is stored on the RFID transponder of the washing machine drum assembly. It triggers the individual manufacturing commands for this process step at the assembly station. The RFU61x RFID read/write device enables full transparency and traceability in the mounting steps of a washing machine drum. In addition, the transponder can also be used in subsequent process steps (e.g. in logistics).

→ www.sick.com/RFU61x

Detection and inspection of energy labels

By law, an energy label must be attached to every household appliance. This label is intended to be an indicator of whether an appliance uses a lot of electricity and/or water. The Label Checker quality control system checks whether the label matches the washing machine type. In addition, Label Checker inspects the quality of the label for defects and errors. With system solutions such as PLOC2D and Label Checker or the Quality Inspection SensorApp for 2D cameras from the Inspector series, these and other applications can be implemented even more easily – without the need for vision expertise.

→ www.sick.com/LabelChecker



Protection of a robot assembly cell with manual material supply

A worker loads the robot cell for mounting of the rear panel. Safe Robotics Area Protection safety systems can be used to optimize such cooperative robot applications, keeping downtime as short and productivity as high as possible. Thanks to manufacturer-specific variants, the safety systems can be easily integrated into robot controllers and, in some cases, even configured directly via the respective robot hardware.

→ www.sick.com/safe-robotics-area-protection

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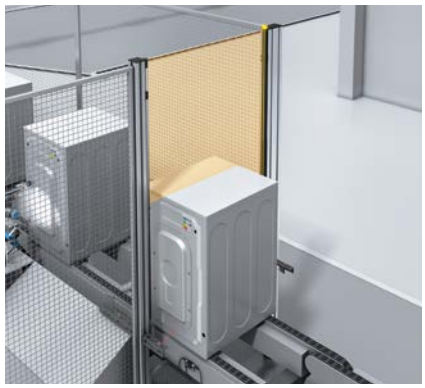
PRODUCTION LOGISTICS

Protection and effective navigation for AGV systems

The nanoScan3 safety laser scanner protects AGV systems which supply the final assembly area with material. The switchable protective fields of the nanoScan3 allow the speed and direction of travel of the AGV systems to optimally adapt to the environment. The precise measurement data from the laser scanner also form the optimal basis for localization solutions: The modular LiDAR-LOC localization solution enables effective vehicle navigation and efficient fleet management.

➜ www.sick.com/nanoScan3

➜ www.sick.com/LiDAR-LOC



Muting solutions for material supply and delivery in automated processes in assembly lines

With the help of muting sensors from SICK – combined with an electro-sensitive protective device (e.g. deTec) that fits the respective sensor – the product to be assembled can be delivered and picked up in these areas without machines having to stop. In addition to classic muting solutions with two or four photoelectric sensors, SICK offers the Safe Entry Exit safety system. It differentiates between human and material using a software module integrated either in the Flexi Soft safety controller from SICK or in the SIMATIC S7 from Siemens.

➜ http://www.sick.com/deTec

➜ http://www.sick.com/SafeEntryExit

Automated material reordering at e-Kanban racks

Rack systems must be equipped with intelligent sensor technology for material delivery with an electronic Kanban system. FlexChain automation light grids detect assignment of the rack positions. Cascading the individual sensors saves on cabling and makes it easier to integrate them into the existing system. During material removal, the new material stock is recorded in the rack position and forwarded to the higher-level material management system using the TDC-E gateway system. This automatically generates a new picking order.

➜ www.sick.com/FlexChain

➜ www.sick.com/TelematicDataCollector

Cost-effective system for dimensioning, weighing and scanning that grows with the throughput

The DWS The DWS Dynamic Eco track and trace system adapts to the requirements of the shipment throughput, the codes and sides to be read and the objects to be dimensioned. The modular system for dimensioning, weighing and scanning (DWS) features a manual in- and outfeed in the basic version. Labels are read in using a mobile hand-held scanner, and a scale and volume measuring head reliably determine the weight and object dimensions.

➜ www.sick.com/dws-dynamic

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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 10,400 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."

Worldwide presence:

Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, Hong Kong, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

Detailed addresses and further locations → www.sick.com

SICK
Sensor Intelligence.