



WASTE AND RECYCLING

SENSOR SOLUTIONS FOR THE RECYCLING INDUSTRY

SICK
Sensor Intelligence.



TASKS IN THE RECYCLING INDUSTRY

The recycling trend in the EU and worldwide is becoming increasingly important due to the rise in the amount of waste. The European waste hierarchy sees recycling as the chance to reduce future volumes of waste. However, here material flow management is required to separate the respective fractions from one another so that they can be easily fed into the recycling circuit. That is why machines for collecting, sorting, shredding and separation are needed for the different material flows. In order to make the processes as automated as possible, sensors which can be used both for the respective collecting and transporting functions as well as for the required safety of these sorter and shredding systems are deployed. This also corresponds with the approach for the European circular economy.



→ www.sick.com/waste_and_recycling



Material handling

Measurement and sensor technology from SICK monitors, controls and optimizes industrial conveyor systems, for example in sorting and recycling systems. Conveyor control and volume flow measurement sensors make it possible to manage and monitor storage and transport efficiently and in order to avoid plant downtimes.



Automation

Automation plays an important role in process optimization in the recycling industry. SICK sensors enable optimized waste collection and processing. Assembled on garbage trucks, SICK sensors make automated waste collection possible. In addition, RFID identification enables smooth delivery of waste. The SICK portfolio also offers sensor solutions for fleet management and automation of sorting systems.



Safety and driver assistance

Whether on shredders or presses, safety solutions from SICK maximize operator safety, optimize production and minimize downtimes. Driver assistance systems support drivers of various industrial vehicles in critical situations with acoustic and optical signals, thereby protecting them while maneuvering.



Solutions for the recycling industry

SICK has a comprehensive, innovative technology portfolio. The portfolio ranges from standard sensors and sensors with integrated application software through to complex sensor system solutions. SICK also has experience in many different industries and understands customer processes and their requirements. Please contact us if you are interested. We would be happy to give you detailed information about solutions for the recycling industry.

MOBILE CONNECTIVITY: INTELLIGENT NETWORKING AND DIGITIZATION



The TDC (Telematic Data Collector) gateway system collects and saves data from sensors using various interfaces. The mobile communication feature – WLAN or Ethernet – included with the system transmits the data to a custom-

er server or the SICK cloud. Analyses can also be performed in the TDC system based on the incoming data to provide real-time outputs (reactions) via I/Os or SMS messages (alarms). The incoming and outgoing data can be used

for downstream process optimization and to improve transparency, thereby increasing productivity. SICK offers optional customer-specific cloud solutions (SaaS) for this purpose.

→ www.sick.com/TDC

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

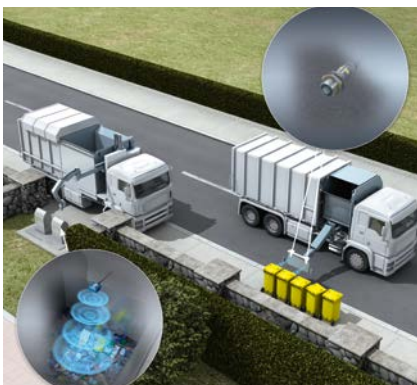


Upgrade and retrofits
Easy, safe, and economical



Training and education
Practical, focused, and professional

WASTE COLLECTION



Position detection of waste containers and level measurement in underfloor containers

Ultrasonic sensors are a convenient solution for detecting waste container position when mounted on the gripping arm of a garbage truck or for determining the level of waste in underfloor containers. UM18 enables reliable position detection and therefore precise positioning of the gripping arm when emptying containers. The contamination-resistant UC30 mounted in the underfloor container detects the critical filling level of the container in order to trigger an emptying request.

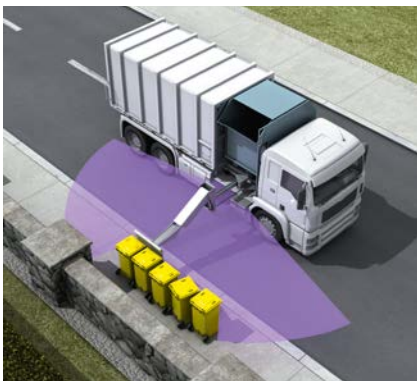
- UM18 and UC30 ultrasonic sensors



→ www.sick.com/UM18



→ www.sick.com/UC30



Positioning of the gripper arm on a garbage truck with 2D LiDAR sensors

The process of collecting and emptying industrial and household waste containers is already partially automated. The LMS111 2D LiDAR sensor offers the necessary resolution and scanning precision to support 3D gripper positioning and loading onto the truck. With enclosure rating IP 67 and double-echo technology, the LMS111 can also be used under poor weather conditions. It monitors the working areas of the gripper before, during, and after container emptying.

- LMS1xx 2D LiDAR sensor



→ www.sick.com/LMS1xx



Identification of garbage trucks at bunker gates

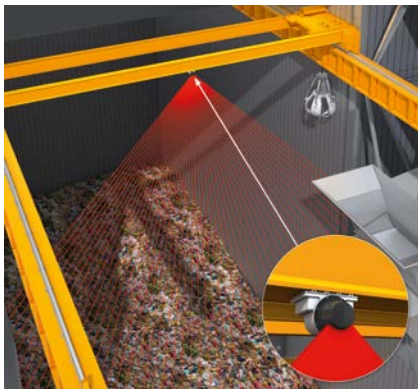
The RFU63x RFID read/write device identifies arriving garbage trucks without making contact. The fees for disposal can be billed automatically and the respective gates at the waste bunker automatically open when identification is complete. The RFID technology of the device is suited for use in recycling systems since the radio-based identification system is not impaired even in dirty environments and works without mechanical and optical components. This ensures the RFU63x has a long service life.

- RFU63x RFID read/write device



→ www.sick.com/RFU63x

MATERIAL HANDLING



Measuring the material pile

The LD-LRS 2D LiDAR sensor simplifies work with piles of materials using reliable material detection and distance measurement functions. The sensor collects data about the contours and volume of raw materials and provides this data for decentralized processing. The scanner can simultaneously perform a collision protection function to avoid accidents and the amount of wear as well as the repairs needed to the machines.

- LD-LRS 2D LiDAR sensor



→ www.sick.com/LD-LRS



Overfill protection at the hopper

During unloading, it is essential that the hopper is monitored and the flow of raw materials is continuously measured to ensure that the shredding machine is correctly filled. The LMS5xx 2D LiDAR sensor monitors the system and measures whether the crusher is being loaded efficiently. The sensor is based on the principle of time-of-flight measurement and uses a non-contact process to monitor the operation of the system. If the hopper is overfilled, it immediately issues a warning so that the material transportation process can be stopped.

- LMS5xx 2D LiDAR sensor



→ www.sick.com/LMS5xx



Monitoring conveyor belt operation

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

- Bulkscan® laser volume flowmeter
- DFS60 incremental encoder



→ www.sick.com/Bulkscan



→ www.sick.com/DFS60

AUTOMATION IN THE RECYCLING INDUSTRY



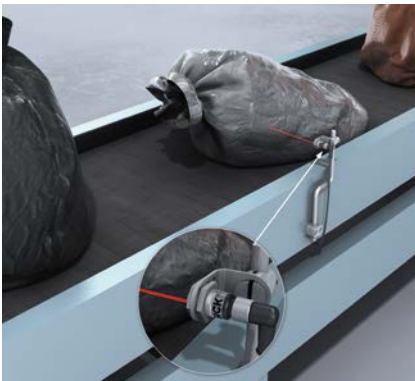
Positioning of balers

Waste that has been sorted for recycling is pressed into bales. The W26 compact photoelectric sensor can be used during the pressing process to identify the position of the baler and, with an additional sensor, the position of the bale. The W26 sensor can be set up quickly and easily and its rugged housing makes it ideal for use in harsh conditions. The option of predictive maintenance keeps unplanned machine downtimes to a minimum and increases the reliability and availability of the baler.

- W26 compact photoelectric sensors



→ www.sick.com/W26



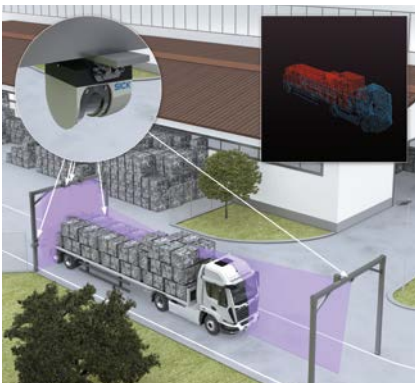
Detecting waste bags

Conveyor belts are used to make the process of sorting waste and waste bags increasingly automated and continuous. The cost-effective cylindrical V180-2 photoelectric sensor can detect and identify waste bags, for example, so that they can be transported on to the next stage in the process. The sensor is easy to operate and simple to install and maintain. The flat, smooth front screen reduces the amount of dust and dirt that accumulates and makes the sensor the ideal solution for use in the harsh conditions of recycling plants.

- GR18S cylindrical photoelectric sensor



→ www.sick.com/GR18S



Measuring paper bales on trucks

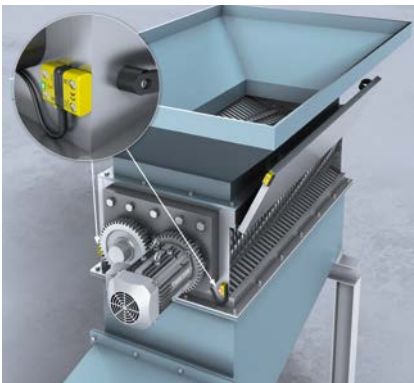
The Free Flow Profiler automatically measures paper bales on the load bed of trucks as they pass slowly through the profiling system. The measurements are used to create a 3D model of the load with the contours of the truck blanked out. The model allows the dry weight of the paper to be calculated on the basis of the volume that is detected together with information about the moisture content and weight. This ensures that buyers do not pay for the weight of wet goods.

- Free Flow Profiler profiling system



→ www.sick.com/Free_Flow_Profiler

SAFETY AND DRIVER ASSISTANCE



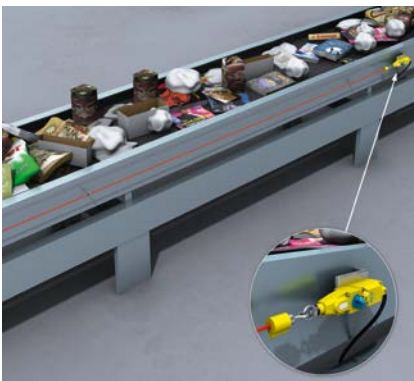
Protection of the shredding machine

In sorting and recycling plants, waste is processed in shredding machines and balers which present a potential risk to machine operators. The STR1 non-contact transponder safety switch has a protective function for monitoring doors. As it is highly tamper-proof, the STR1 guarantees that a machine in operation will stop when the door is opened and cannot be restarted until the door is closed. The high door offset tolerance and shock and vibration resistance of the safety switch increase machine availability.

- STR1 non-contact safety switch



→ www.sick.de/STR1



Protecting conveyors

If a dangerous situation arises, the operating personnel can put a conveyor system into a safe status using rope pull switches. The i110RP rope pull switch allows users to implement solutions that comply with all statutory specifications. It is the ideal safety solution for longer conveyor systems, since the switching function can be triggered from any point along the conveyor system. Additional signal contacts (N/O contacts) are used for visualizing the output state and, therefore, allow the operators to locate the source of an error quickly.

- i110RP safety command device



→ www.sick.com/i110RP



Collision warning on vehicles

The Visionary-B streaming camera is used as an intelligent driver assistance system to reduce the risk of collisions during turning and reversing maneuvers. The camera can be fitted to a variety of vehicles, including forklifts and garbage trucks. The system detects stationary objects and other vehicles in and around the driver's blind zone and provides a real-time image with visual and audible warning signals. This provides the driver with valuable assistance.

- Visionary-B 3D vision sensor



→ www.sick.com/Visionary-B

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.”

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