TRAFFIC

SENSOR SOLUTIONS FOR THE RAILWAY INDUSTRY

DESIGNING TRANSPORTATION ROUTES TO BE MORE EFFICIENT,
SAFER AND MORE ENVIRONMENTALLY FRIENDLY

SICK
Sensor Intelligence.

TASKS FOR THE RAILWAY INDUSTRY

Rugged, innovative and precise solutions in harsh environments

Modern traffic management on road, rail and sea routes is geared towards safety, efficiency and a good environmental balance. Rugged sensor solutions provide reliable control and monitoring systems for transportation applications. With solutions from SICK, you rely on many years of experience indoors and outdoors. Laser measurement systems classify vehicles as part of the road toll system, automation light grids reliably detect people at train door systems, and dust measuring devices and gas analyzers measure pollutant concentrations in tunnel areas. The wide range of rugged and innovative products combined with a worldwide service and sales structure has made SICK a market and technology leader in many fields of data acquisition in traffic engineering.

Read more about sensor solutions for railway industry
➜ www.sick.com/Rail

Measuring

The 3D measurement of trains and tracks, detection of clearance profiles, position determination of the contact wire or even temperature measurement of cars when moving are tasks for which SICK offers a wide range of sensor systems. Solutions from SICK measure precisely and reliably and are based on different technologies, ranging from ultrasonic to radar, 2D and 3D LiDAR, stereo cameras to 3D high-speed cameras and even entire sensors systems all the way to profile measurement of trains.

Traffic safety

Sensor solutions from SICK are used in many systems which contribute to the safety of rail transport. The 2D and 3D LiDAR sensors from SICK, which are tried-and-tested in outdoor areas, are used for detecting obstacles in hazardous areas or for detecting landslides on rails. SICK also offers a range of sensors for detecting persons in the track area or near platform screen doors (PSDs).

Detecting

The reliable detection of trains, objects, people or even smoke in tunnels is the basis of many systems for improving traffic safety. Sensor solutions from SICK are predestined for this. SICK also offers the perfect solutions for various detection tasks (train or unauthorized person/object in front of a tunnel portal).

Identifying

The reliable identification of goods and vehicles is decisive for smooth maintenance management processes and operation of rail transport. For identification, SICK offers a wide range of mobile as well as fixed 1D and 2D code scanners and RFID systems which can be used in outdoor areas to identify passing trains.

SYSTEMS FOR TRAFFIC ENGINEERING:
RAILWAY PROFILING SYSTEM RPS

Systems from SICK for traffic engineering

Systems from SICK for traffic engineering solve the most complex tasks such as accurate classification of vehicles in 30 classes or detection of overheated wheels in moving traffic. These systems are based on the rugged, proven sensors from SICK.

Tasks such as vehicle classification or projection control occur in a similar way in many roadway projects. SICK provides subsystems that take over the essential core tasks and that are easy to configure and integrate.

No cumbersome software development by the operator for data analysis is required. These system solutions have been developed with the accumulated expertise from numerous roadway projects and are therefore very safe and reliable.

Measurement of the train profile with RPS

The RPS railway profiling system measures and detects profile violations of trains under free-flow traffic conditions. The trains are scanned up to 200 times a second using eye-safe 2D LiDAR sensors. The measurement data recorded are used to generate a 3D model of each train. This 3D model is used as the basis for fully-automated dimension measurement. In case of a violation, an alarm is issued and the critical section of the train can be analyzed in the 3D model and with the help of several pictures.

Your benefits:

- Increased safety in railway tunnels and increased availability of the rail service
- Minimal operating and maintenance costs thanks to proven outdoor laser measurement technology
- Time savings for train inspections as any defects in the 3D model of the train are easily recognized in the user interface
- Low operational costs thanks to fully automated warnings
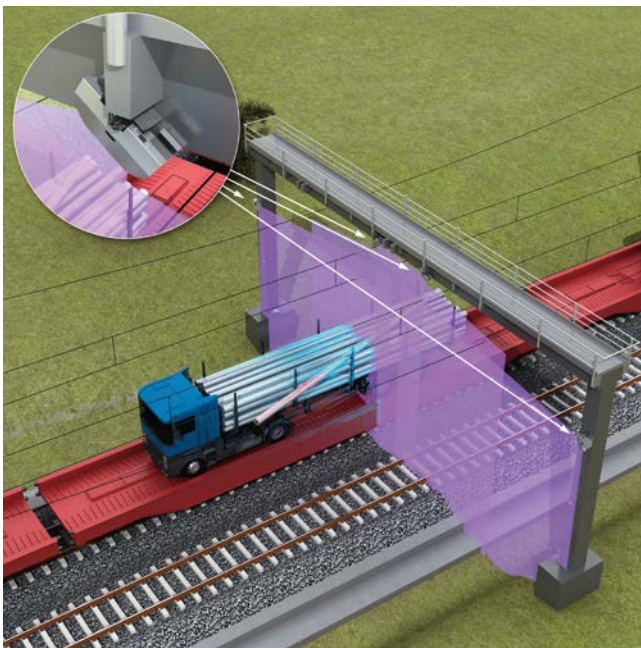
SOLUTIONS FOR TRAFFIC SAFETY AT RAILWAY STATIONS
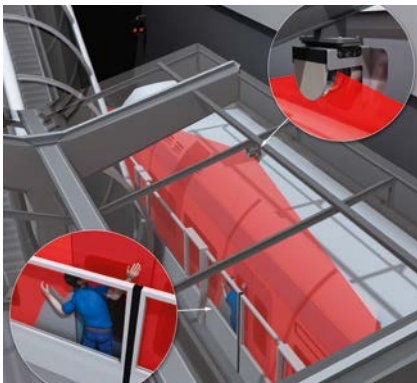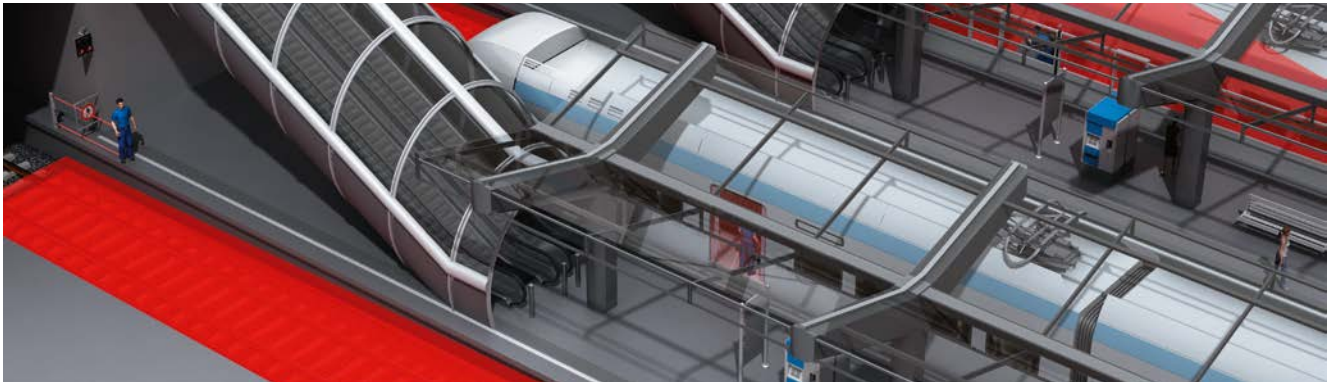
Monitoring platform screen doors

Platform screen doors increase passenger safety. Falling onto the track or moving into the track area is reliably prevented. In the worst case scenario, persons can be caught between the train door and the platform screen door. Before the train departs, this must be reliably signaled to the driver to prevent the train from starting. 2D or 3D LiDAR sensors are installed over the platform edge and monitor one or more platform screen doors.

• TiM3xx 2D LiDAR sensor

➜ www.sick.com/TIM3xx

Monitoring the track area

The AOS LiDAR object detection system is increasing the safety and availability of the rail service at train stations. The system monitors the track area using 2D LiDAR sensors that are connected to one another via a Flexi Soft safety controller. As soon as a large object, e.g., a person is detected in the track area, the system issues a notification which then allows further measures to be initiated in a timely manner.

• AOS LiDAR object detection system

➜ www.sick.com/AOS_LiDAR
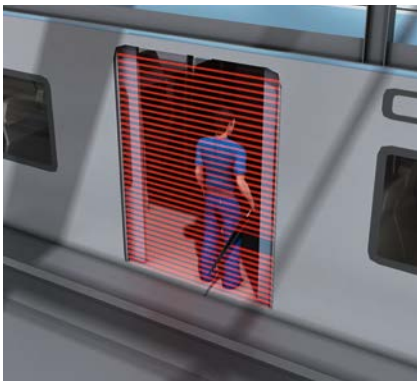
Monitoring train doors

The SLG switching automation light grids prevent train doors from closing when an object or person is between the door panels. The slim design of the SLG and the two options for optical light emission (slim or flat) mean that inconspicuous, barrier-free mounting on the train door is possible. The flexible plastic housing of the SLG allows use even with curved train doors.

• SLG switching automation light grids

➜ www.sick.com/SLG

SOLUTIONS FOR TRAFFIC SAFETY AT RAILWAYS
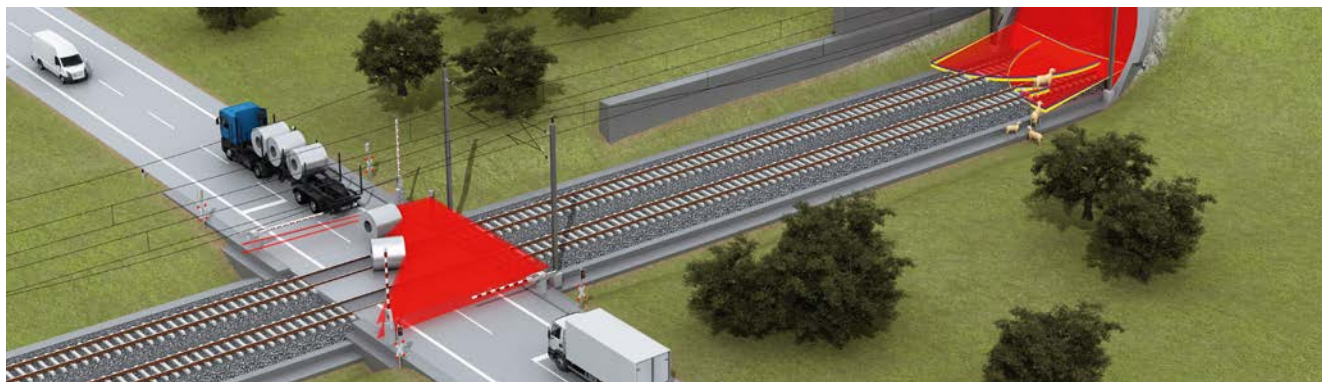
All-clear signal at railroad crossings

With fully-gated railroad crossings, the train only receives a free signal if it is ensured that no large object is located in the danger area between the closed barriers. The AOS LiDAR object detection system is a reliable and cost-effective solution. The monitoring field can be easily and precisely adapted to the geometry of the danger area. The two-channel structure and the automatic system tests of the AOS simplify the certification of the complete system.

• AOS LiDAR object detection system

➜ www.sick.com/AOS_LiDAR
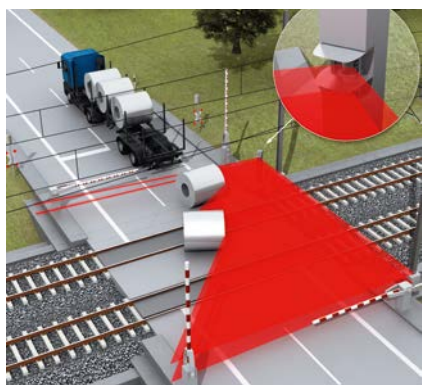
Smoke detection for early fire detection in railroad tunnels

Fire in a railway tunnel can have catastrophic consequences – that's why every minute counts. The VISIC50SF tunnel sensor detects fire very quickly and reliably based on the particle concentration in the tunnel air. Compared to temperature measurements, the advantage of this method is a fast response time and almost complete prevention of false alarms.

• VISIC50SF tunnel sensor

➜ www.sick.com/VISIC50SF

Monitoring tunnel portals

Many trains travel through tunnels on a daily basis during normal operation. The AOS LiDAR object detection system monitors the area in front of the tunnel portal using 2D LiDAR sensors. When an object such as a person or an animal approaches the tunnel, this is detected and an alarm is issued. Trains are recognized as such and can travel through the tunnel without triggering an alarm. This avoids collisions and prevents vandalism or terror attacks.

• AOS LiDAR object detection system

➜ www.sick.com/AOS_LiDAR
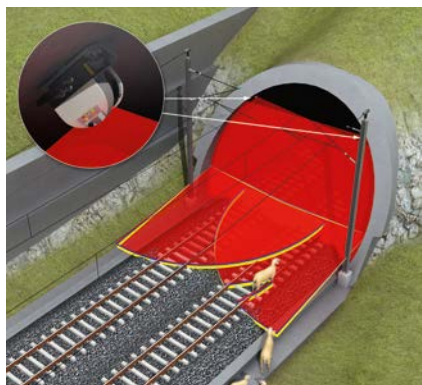
TRAFFIC MANAGEMENT

Identification of moving trains

The identification of rail vehicles via RFID creates transparency in logistics and maintenance processes. The rugged RFU63x RFID read/write device reliably reads transponders on moving trains. The additional axle sensors make it possible to detect train speed and the distance between axles. Measurement results from Wayside Train Monitoring Systems can also be assigned to the individual wheel. Tendencies can be identified and preventative measures can be taken.

• RFU63x RFID read/write device

➔ www.sick.com/RFU63x
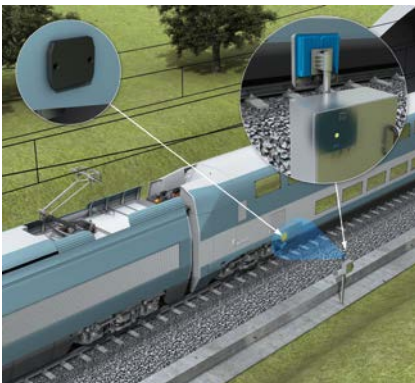
Position detection of trains at stops

At stops featuring platform screen doors, the train must stop at the exact position specified. The DT1000 continuously measures the position of the front of the train. This allows the braking process to be controlled and the correct stop position to be verified. This reliable solution is ideal for controlling the arrival of automated, guided trains.

• Dx1000 long range distance sensor

➔ www.sick.com/Dx1000
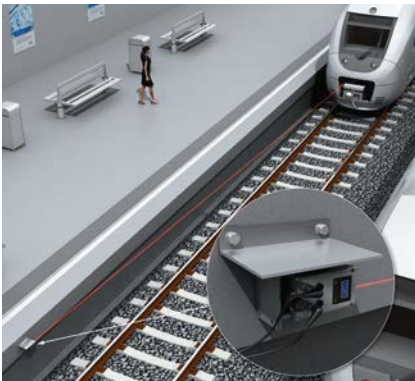
Person singulation in access gates

In access gates, it must be ensured that only authorized persons can pass the security door and that no unauthorized persons follow them. Thanks to the compact design of the G6 miniature photoelectric sensor, persons singulation can also be implemented with low space requirements using several sensors.
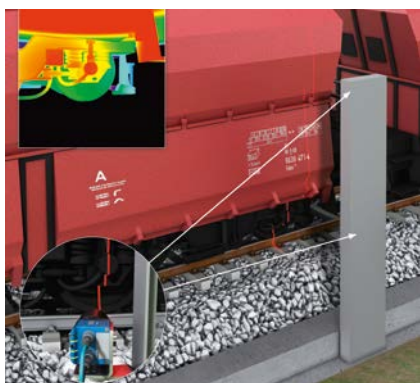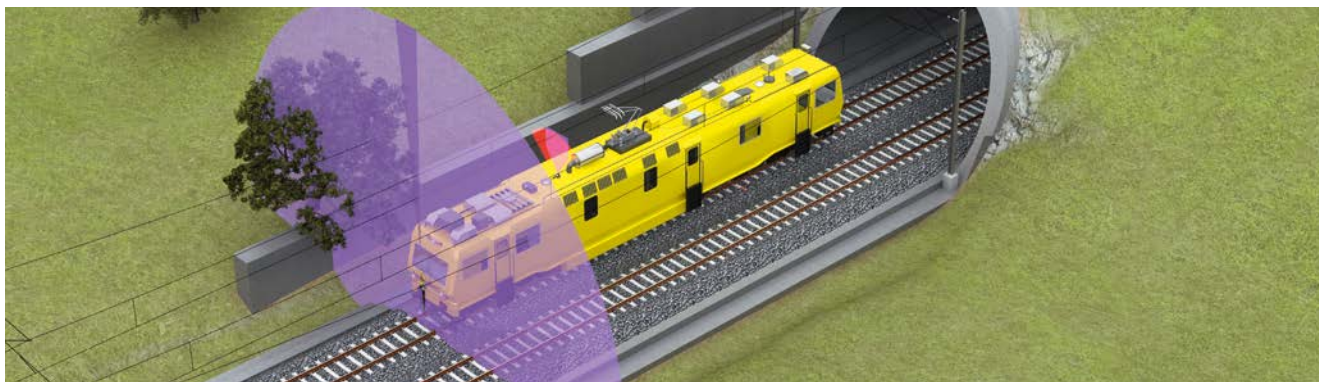
• G6 miniature photoelectric sensor

➔ www.sick.com/G6

MAINTENANCE AND INSPECTION

Inspection of train components

The Ranger3 or Ruler 3D streaming cameras are installed in Wayside Train Monitoring systems. These cameras take cross-section profiles of the components of the passing train at very high speed, which are compiled into a 3D image. Visual inspection can be done when the train is in operation. This increases the availability of the train while lowering maintenance costs at the same time.

- Ranger3 streaming camera

➜ www.sick.com/Ranger3

Inspection of the railway tracks

Several 3D streaming cameras of the Ruler or Ranger type are installed on an inspection vehicle for periodic inspection of rails, railroad ties, the ballast bed and mounting systems. These deliver precise cross-section profiles from which the geometry of the upper structure is calculated. The high speed of the cameras enables the use of an inspection vehicle at full working speed.

- Ruler streaming camera

➜ www.sick.com/Ruler

Inspection of the contact wire

A LMS5xx 2D LiDAR sensor on the roof of the inspection vehicle is used to determine the position of the contact wire. The sensor detects whether the position of the contact wire deviates from the target position. The Ranger 3D streaming camera is installed on the roof of the inspection vehicle to detect the cross-section profile of the contact wire itself. Wear and damages are also detected securely and reliably at high speed.

- LMS5xx 2D LiDAR sensor
- Ranger streaming camera

➜ wwww.sick.com/LMS5xx

➜ www.sick.com/Ranger

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**

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