SICK

APPLIED CONTROLS
a SunSource Company

APPLICATION NOTE

SAFETY SOLUTIONS FOR AUTOMOTIVE INDUSTRY

Safety laser scanners protect workers in automotive manufacturing operations

SOLUTIONS FOR AUTOMOTIVE OEMS AND SUPPLIERS

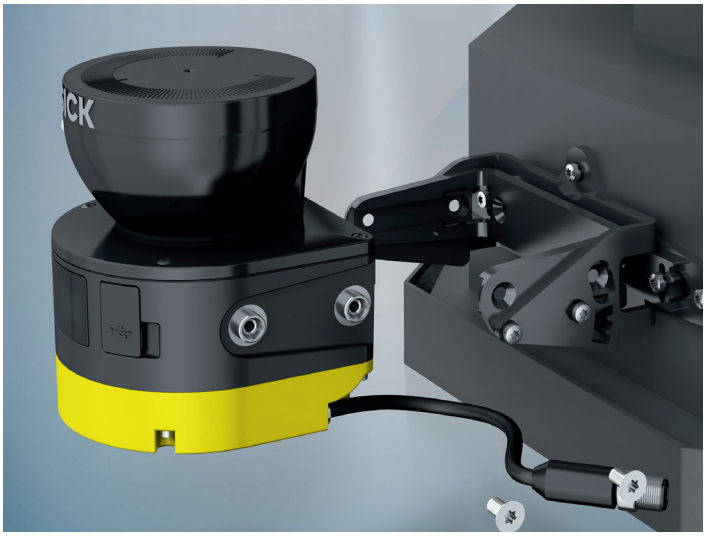
Manufacturing and assembly facilities owned by automotive original equipment manufacturers (OEMs) and their Tiered suppliers are some of the most automated operations worldwide. Yet workers perform a variety of tasks directly related, or in close proximity, to hazards such as machinery, robotic work cells and automated guided vehicles (AGVs)—including automated guided carts (AGCs) and autonomous mobile robots (AMRs).

To protect personnel against potential injury due to a collision with automated machinery or an autonomous vehicle, manufacturers deploy safety laser scanners. Such devices—used in conjunction with a safety programmable logic controller (PLC) that controls both industrial equipment and associated safety systems—emit a laser pulse that reflects back to an internal receiver when the pulse hits an object within scanning range. By utilizing time-of-flight measurement, the scanner's on-board algorithms calculate the time difference between sending and receiving to determine the position of the detected object.

SICK Sensor Intelligence

APPLICATION NOTE

STATIONARY AND MOBILE SAFETY



Available in Core (stationary guarding) and Pro (autonomous vehicles) versions, the rugged microScan3 safety laser scanners use safeHDDM and advanced algorithms for reliable, no-false-trip detection. Core models support eight configurable fields and four protective fields, while Pro models offer up to 128 configurable fields and eight protective fields for scalable safety deployments. All models integrate easily with EtherNet/IP or PROFINET and support centralized setup, diagnostics, and monitoring via SICK's Safety Designer software, with configurable detection ranges, resolutions, and response times.

APPLICATIONS FOR PROTECTION OF PERSONNEL

- → Detecting an interruption of a stationary protective field to slow or stop a machine
- → Collaborative robotic (co-bot) deployments to ensure personnel safety and maximize efficiency
- → Determining vehicle proximity to obstacles to avoid collisions

ASSOCIATED DETECTION CHALLENGES

FALSE TRIPS

Welding sparks, steam, oil mist, floating dust or dirt particles, or accumulation of debris on the laser scanner's protective screen can lead to unnecessary shutdown of automated equipment and loss of productivity.

LACK OF MULTI-FIELD COVERAGE

Especially from a single device to support triggering of different actions, such as slowing down the equipment incrementally so as to not stop operation.

INCONSISTENT LIGHTING

Intense sunbeams shining through a window, or dark shadows cast by a structure within the facility, can confuse laser scanners, causing unnecessary stoppage of the automated machinery or vehicle and slowing production.

LIMITED DETECTION

Limited scan angle breadth of coverage from a single device, requiring multiple units to ensure full detection capability.

COMPLEX WIRING REQUIREMENTS

In addition, a lack of centralized access for programming, diagnostics, monitoring and incident analysis causes issues.

HOW SICK PROTECTS WORKERS IN AUTOMOTIVE MANUFACTURING

→ SAFEHDDM® TECHNOLOGY

Unlike standard laser scanners that emit about 500 pulses per revolution, proprietary safeHDDM technology generates up to 88,000 pulses per revolution. Advanced onboard algorithms process this high-density data to reliably detect substantial obstacles—such as people or objects—while preventing false trips caused by dust, mist, sparks, or changing light conditions.

→ MULTI-FIELD MONITORING

Sim-4-Safety allows a single laser scanner to protect up to four hazardous areas, while Sim-8-Safety monitors as many as eight zones simultaneously, including horizontal, vertical, and multi-sided safeguarding. As a person or object moves closer within each field, the system triggers preprogrammed responses—such as graduated speed reductions or partial or complete machine or vehicle stops.

→ 275-DEGREE SCAN ANGLE

Because many laser scanners cover only 200 degrees, achieving full AGV or workcell coverage can require up to four devices. A single scanner with a 275-degree scan angle provides broader coverage with fewer units, reducing installation time, commissioning effort, and overall cost.

→ PLUG-AND-PLAY NETWORK INTEGRATION

Different device versions are available for quick and easy safe network integration via CIP Safety™ over EtherNet/IP™ or PROFIsafe over PROFINET. No additional cabling required

Contact us to learn more:
appliedc.com/contact →