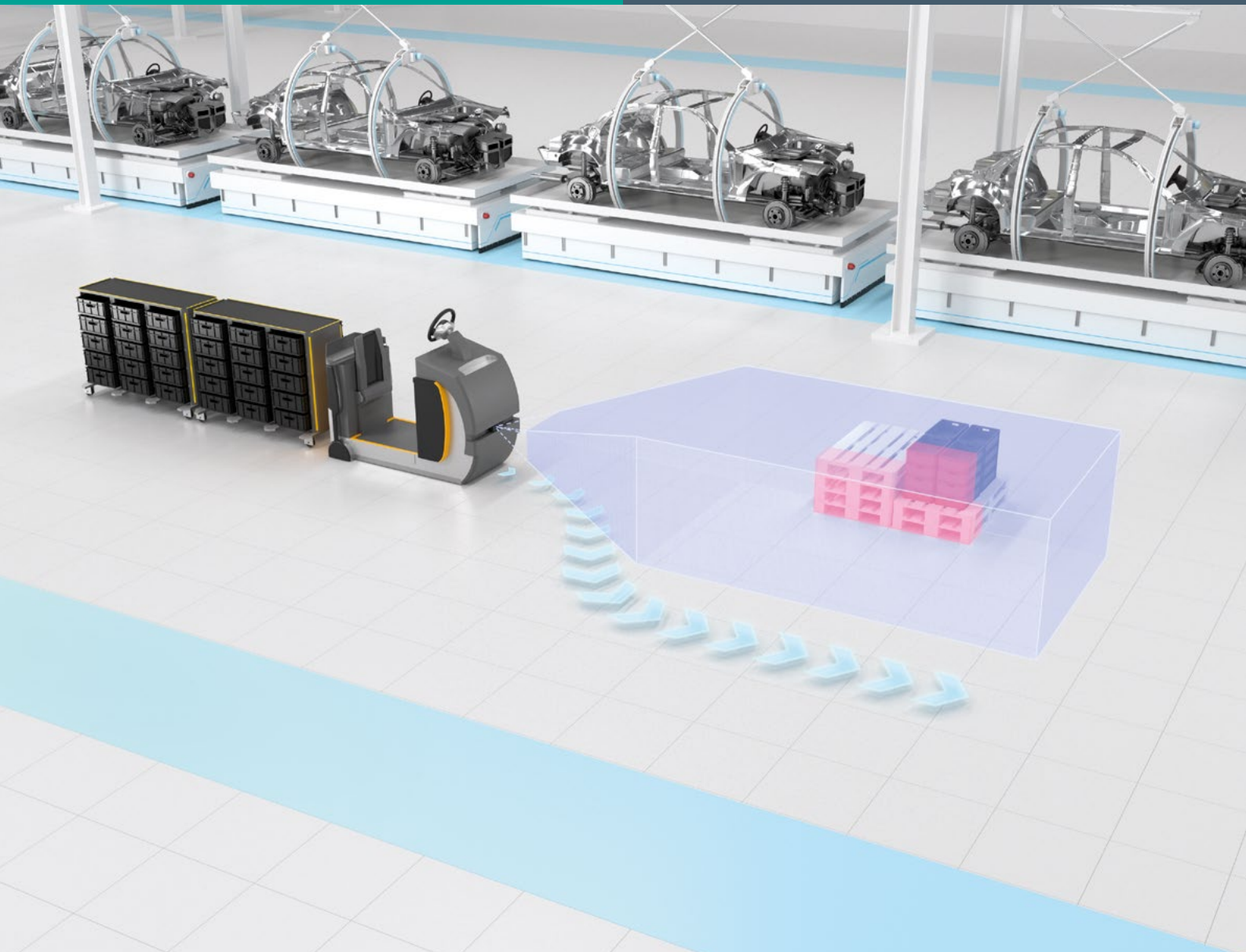


Reliable Collision Protection for Automated Guided Vehicles

Time-of-Flight Technology Immediately Detects Objects in 3-D and at a High Resolution

At a Glance

- Immediate detection of obstacles in the travel path
- High measuring rate for reliable detection even in quick processes
- Reliable solution for collision protection
- Resource-friendly processing of the measurement data



The Application

Automated guided vehicles (AGVs) are increasingly shaping the landscape of production and warehouse logistics. They move autonomously in a wide variety of areas and require specialized sensors to detect their surroundings and align the controller accordingly. The sensors detect both the static background and people and machines moving in the same area. This also includes other automated vehicles: The larger the operation, the greater the number of possible encounters between them.

The Goal

For example, while a LiDAR sensor provides data for navigating the AGV, additional environmental data is required to detect interference contours and prevent collisions. People and objects in the travel path must be reliably detected. This does not involve a highly differentiated image of the object; rather, it reliably detects distance and contours so that the vehicle can avoid objects.

The Solution

The SmartRunner Explorer 3-D vision sensor uses time-of-flight (ToF) technology to detect obstacles in the path immediately. It is mounted with a field of view in the direction of travel and creates a high-resolution 3-D point cloud of 307,200 pixels. It serves as the basis for a three-dimensional map that the vehicle controller uses to determine a collision-free route. The device's field of view provides an optimal representation of shape and distance. The vehicle controller can therefore perform evasive maneuvers and find the travel path that provides the quickest possible transport route.

The Benefits

The SmartRunner Explorer 3-D provides a reliable collision-protection solution for controlling AGVs. The compact device can also be integrated into small vehicles. It detects objects at distances of up to 7.5 meters with high precision and is characterized by especially resource-efficient measurement data processing. Its measuring rate of 30 Hz ensures reliable detection even in quick processes. The sensor uses infrared light with a wavelength of 940 nanometers. This makes it especially resistant to ambient light, and means that it can also be used outdoors.

Technical Features

- Laser class 1 for eye safety
- Gigabit Ethernet TCP/IP interface
- Compact dimensions (165 × 67 × 56 mm)
- Suppression of ambient light > 100 klx
- Raw image size 640 × 480 pixels

