Reliable Reference Points for Determining the Position of AGVs

A rugged and compact RFID system enables reliable solutions

At a Glance

- Permanently defined reference points are reliably detected by the AGV while driving
- The control system receives precise position data for safety-relevant switching operations
- Compact tags can be inserted into simple drill holes, even in metal
- The compact HF read/write device can be accommodated even in small AGVs

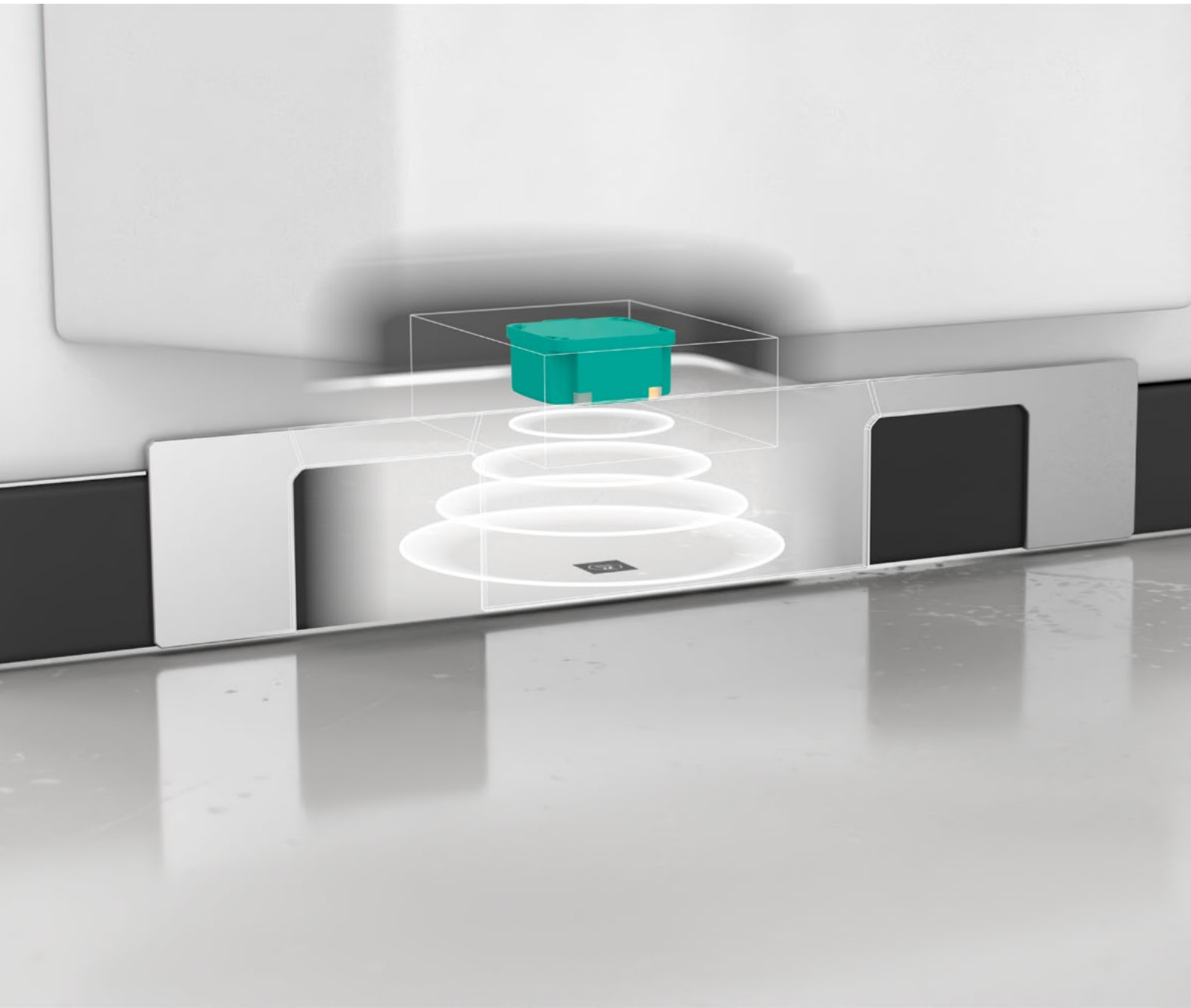


The Application

When using automated guided vehicles (AGV), the safety of people in the driving area must be ensured at all times. The vehicles are usually equipped with LiDAR sensors that monitor a defined safety field in the direction of travel. During load pickup, at transfer points, or at gateways, this field is customized for the individual situation, often by using a safe shutdown or switchover. In addition, the speed of the AGV is reduced in hazardous areas. Vehicles are often subject to harsh conditions in storage and production environments. This places high demands on the thermal and mechanical load capacity of the components used.

The Goal

The position of the vehicle must be reliably determined, especially in defined areas, in order to prevent danger and ensure that the switchover or shutdown process is executed correctly. The RFID read/write device required for this must take up little space in the AGV and must be easy to install. The device must be able to withstand both thermal and mechanical stress, and must not be affected by EMC interference.



The Solution

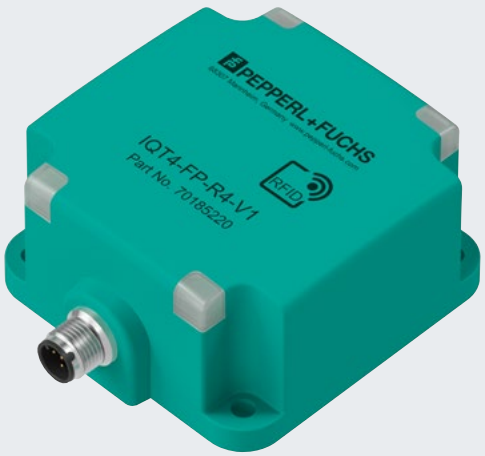
RFID tags attached at defined points provide precise absolute position data that serve as reliable reference points. They are detected by an IQT4-FP-R4-V1 compact RFID reader on board the AGV. The control system compares the signal with the data from the sensors used for navigation or field monitoring, and triggers the subsequent steps. Using this comparison or a redundant RFID solution, the required safety level can be achieved. The sensing mode is not affected by mechanical or thermal stress, or by EMC interference.

The Benefits

The IQT4-FP-R4-V1 read/write device detects the tag within its sensing range with the highest level of reliability, even while driving. It can be used on its own or with an additional control interface, and can be directly connected via its RS-485 interface. Very small tags, with a diameter of 20 mm or 30 mm, are available and can be inserted in a simple drill hole in the ground. They can be integrated on and even in metal, allowing them to be installed on many types of surfaces, such as in heavy-duty flooring, without affecting their function.

Technical Features

- Sensing range: 0 ... 200 mm
- Working frequency: 13.56 MHz
- Complies with ISO 15693
- Compact housing (80 × 80 × 40 mm)
- Rugged design
- Temperature range: –25 °C ... +70 °C
- Degree of protection: IP67, IP69
- Integrated RS-485 interface



For more information, visit: **pepperl-fuchs.com/px-RFID-FP**