

# Autonomous Vehicle Faultlessly Detects Pallet Bases

Multipixel Technology Reliably  
Suppresses Background  
Reflections during Travel

## At a Glance

- The target object is reliably detected by measuring the distance
- Background reflections do not interfere with the measurement
- Multipixel Technology (MPT) for precise measurements
- Large sensing range, no calibration required
- Can be preconfigured to distinguish between the pallet base and the goods on the pallet

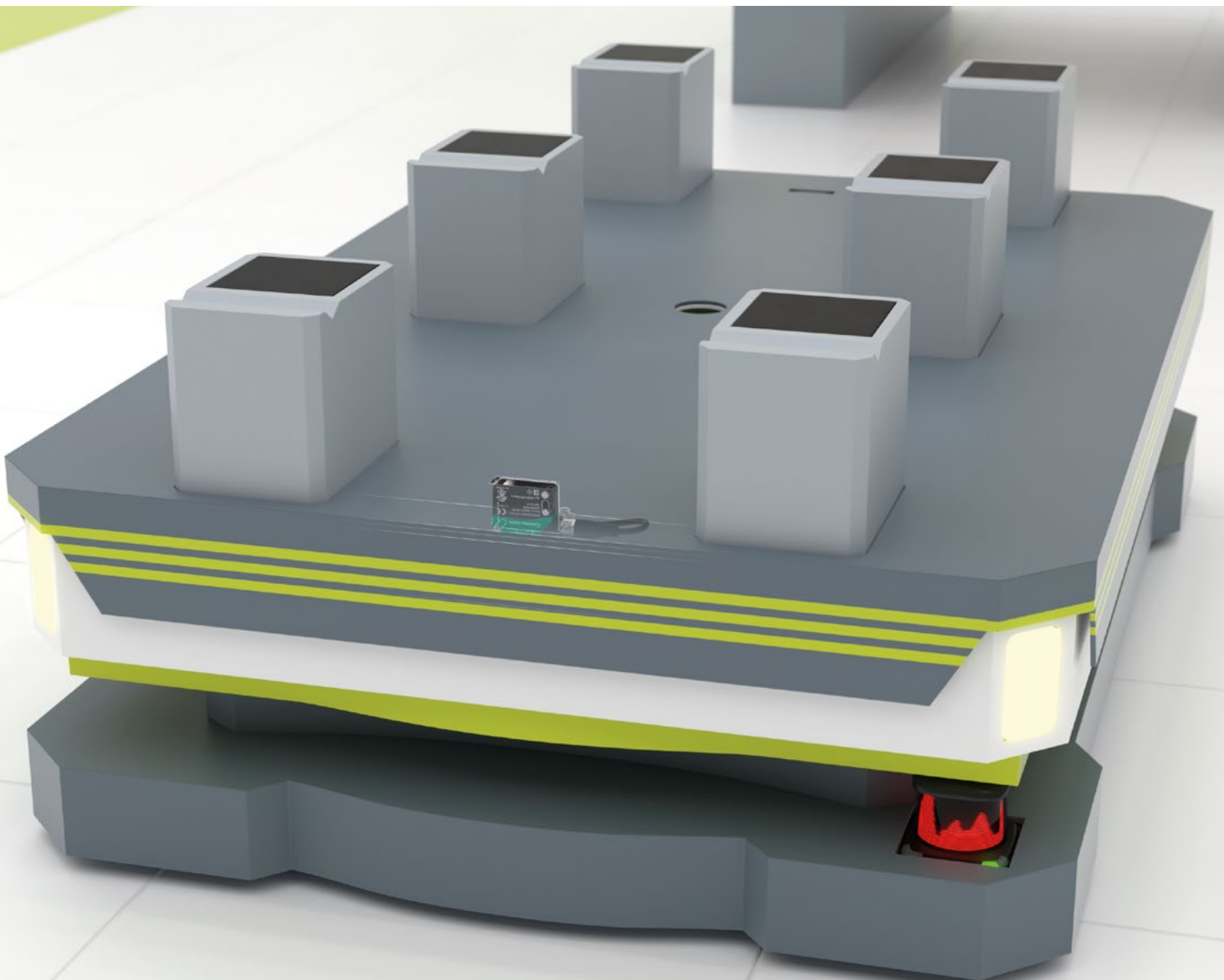


## The Application

Autonomous mobile robots (AMR) are increasingly being used in production facilities and warehouses to transport goods from a collection point to a specified destination. These vehicles can also transport heavy loads. Usually, the conveyed product is placed on conventional Euro pallets. A photoelectric sensor is installed on the top of the AMR. This sensor usually faces upward toward the roof of the building and detects a pallet base during loading and unloading. This sensor is required to precisely detect the start and end of the pallet.

## The Goal

A conventional photoelectric sensor with background suppression can be sufficient to detect the pallet base. However, for empty runs without a pallet, background objects may also be in the field of vision, and these can confuse the sensor due to their reflective surfaces. One example of such objects is insulated ventilation ducts, which are covered with reflective aluminum foil. Because the AMR is moving, undefined background reflections at an awkward angle could spoof an object in the sensor's scanning range and negate the two-receiver-element principle of a sensor with background suppression. Such switching faults must be prevented. The sensor should be preconfigured to the right sensing range, since this cannot be adjusted during use.



## The Solution

The OQT400-R200 sensor uses Multipixel Technology (MPT) to determine the actual distance to the target object. Using the “sensing by ranging” principle, the sensor can reliably determine whether a pallet base is actually in the sensing range and ignores undefined background reflections, even from a distance. The multipixel array used measures the actual distance to the object and can also define scanning ranges using a window mode. In this specific application, the sensor can therefore eliminate the potential weaknesses of a standard sensor with background suppression based on the two-receiver-element principle. In this version, the sensor is preconfigured to a distance of 200 mm from the pallet base that is required in this application.

## The Benefits

The multipixel array and the optimal light spot geometry mean both smooth and textured surfaces can be detected. The MPT is also highly insensitive to interference from ambient light. The sensor can be adjusted via its IO-Link interface to suit the requirements of the specific application—its sensing range can be configured between 40 mm and 400 mm. This flexibility means the sensor can be used in various applications, so fewer devices are required. In addition to standard values, MPT sensors can be adapted to application-specific sensing ranges at the factory.

### Technical Features

- “Sensing by ranging” sensor
- Multipixel Technology (MPT)
- Optimal light spot size
- Sensing range of 40 mm to 400 mm
- Preconfigured to 200 mm
- Control LED for correct pallet base detection

