# Real-Time Positioning Enables Quick Auto-Guided Transport Systems

## Reliable Navigation with the PGV Read Head and Data Matrix Tags

### At a Glance

- Large reading window and its own illumination unit for reliable detection of Data Matrix tags
- Real-time positioning using a synchronization pulse and a timestamp on 2-D image captures
- Compact housing for use in tight spaces
- Easy installation and commissioning with plug-and-play configuration
- Open protocol for flexible integration into any control system

## The Application

Sorting goods and picking packages is one of the core processes of logistics. Packed shipping containers—cartons, bags, trays, etc.—are transported to the next station by small auto-guided transport systems, also known as bots. In large warehouses and distribution centers, there are often hundreds of these bots running at the same time.

## The Goal

For such processes, throughput is a crucial variable, which depends on speed and tight timing. This means that the routes traveled by the bots must be perfectly coordinated and monitored in real time. If these conditions are met, the vehicles will be able to travel within centimeters of each other at full speed without collisions occurring. The position of each vehicle must be clearly determined at all times. Given the small size of the bots and their minimal ground clearance, the technology required to determine their position needs to be compact and, above all, very flat.

## The Solution

The Position Guided Vision (PGV) positioning system is guided by Data Matrix tags, which are applied to the ground in a grid formation. The bot is controlled using odometry data from the drive. The control system detects and, if necessary, corrects the position of the bot based on the tags. The PGV read head consists of a camera system with a built-in illumination unit and large reading window. The read head is attached to the underside of the bot, where it reliably detects the tags and transmits the position data obtained from them to the control system. The very short cycle times and synchronization pulse (sync pulse) of the read head enable real-time monitoring of the position of the bot.

## The Benefits

The Position Guided Vision (PGV) positioning system ensures reliable detection of position data. Its open protocol allows it to be flexibly integrated into any control system. The flat housing fits into the auto-guided transport system, even when there is very little space available, and offers simple commissioning via plug-and-play. The sync pulse and image captures with timestamps enable the PGV to ensure highly accurate synchronization between the bot control system and the higher-level control system. The precise, continuous position monitoring also makes high-speed transport possible.

### Technical Features PGV100RS-F213*

- Cycle time: 10 ms
- Height: 35 mm
- X and Y accuracy: 0.4 mm
- Angle accuracy: 1°
- Operating distance: 100 mm
- Sync pulse for synchronization between the bot and control system
- Large reading range of 120 × 80 mm

For more information, visit: **pepperl-fuchs.com/pf-PGV**