

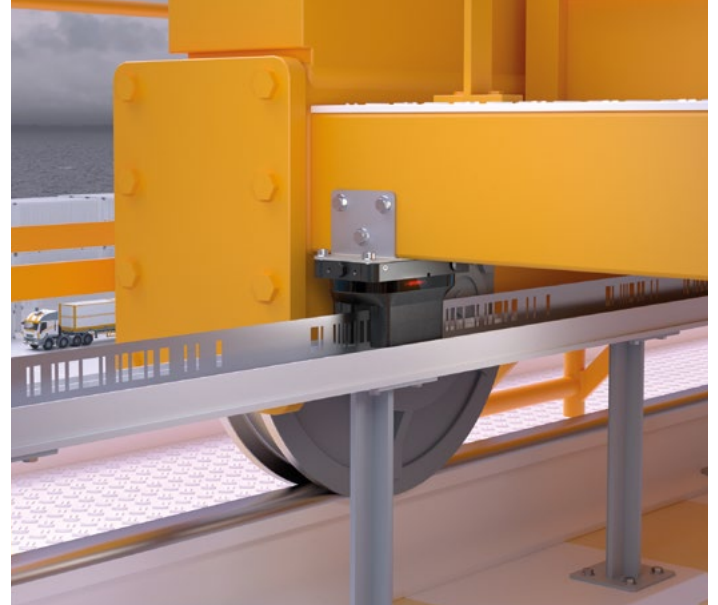
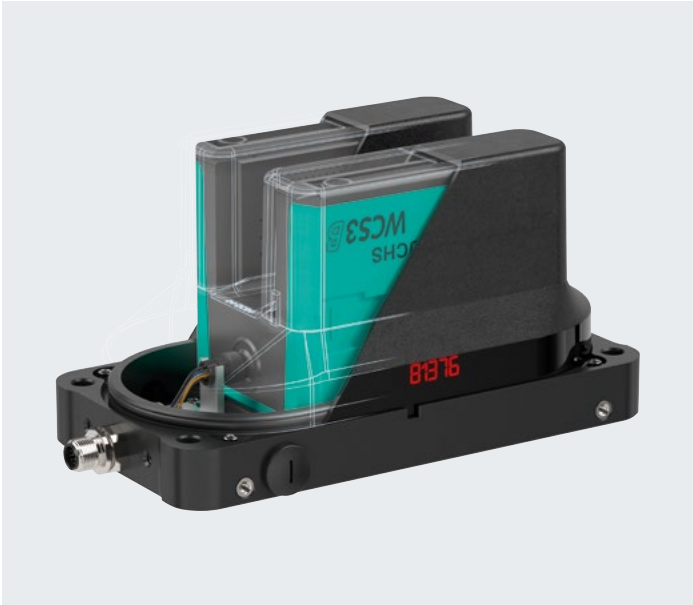
Position Encoding System (WCS) Tackles Positioning Tasks in Container Terminals

WCS Outdoor and Extended for Absolute Positioning in Demanding Environments

At a Glance:

- Noncontact absolute positioning concept comprising a read head, code rail, and mounting system
- Protective housing with high impact resistance plus resistance to dust and moisture with IP69 protection
- Corrosion-resistant, stainless steel code rail
- Accurate position data despite interruptions and across a distance of 629 m
- Millimeter-precise position detection for rail-bound gantry cranes and trolleys





The Application

Container ships must be unloaded as quickly as possible, so multiple crane types are used for loading tasks at container terminals in ports. For example, ship unloaders transport containers from the ship to the dock via trolleys. Electrified Rubber-Tired Gantry (eRTG) cranes and Automated Rail-Mounted Gantry (ARMG) cranes then transport the containers to trucks, sometimes over very long distances. Modern port facilities are located all over the world and are therefore exposed to various weather conditions. Extremely high temperatures with strong sunlight are just as common as very cold environments with ice and snow. In addition, installing the equipment by the sea exposes the materials to highly corrosive salt water.

The Goal

To enable a smooth workflow, partial or full automation of each crane type must be guaranteed at all times and in all weather conditions. These requirements also apply when positioning the trolley that receives and transports each container. Crane automation and crane digitalization optimize turnaround times at container terminals to keep costs and CO₂ emissions low. The current absolute position of the crane can be displayed at any time, in real time, and with millimeter-level precision. Loading processes and throughput times can be regularly monitored and improved.

The Solution

The modular position encoding system (WCS) with Outdoor protective housing is the ideal solution for all crane types in this harsh environment. Featuring a U-shaped design to block out extraneous light and equipped with photoelectric infrared light barriers, the rugged read head scans the cutouts on the stainless steel code rail and detects the absolute position value every 0.8 mm without contact. Both elements are resistant to salt water and salty air, and offer the highest level of impermeability to all types of moisture based on the IP69 protection. The aluminum profile system combined with guide trolley compensates for lateral running tolerances between the

crane and the WCS to guarantee the optimal position of the read head in relation to the code rail. This allows trolleys and gantry cranes to be positioned with millimeter-level precision.

The Benefits

The especially rugged Outdoor housing with IP69 protection was developed for extreme environments to guarantee reliable position detection despite temperature fluctuations, hail, and salt water. The same applies to the corrosion-resistant stainless steel code rail, which is suitable for straight sections as well as curved paths, ascents, and descents. Combined with the WCS Extended option, particularly long distances of up to 629 m can be covered. The WCS also offers high interference immunity, excellent durability, and good cost efficiency, making it the optimal position sensor technology for modern port operations.

Technical Features

- Salt water-resistant protective housing with IP69 protection for outdoor use
- Display shows position values and diagnostics
- Covers lengths of up to 629 m
- Resolution of ± 0.40 mm (1250 pos./m)
- Corrosion resistant stainless steel code rail
- Integrated heating elements for temperatures down to -40 °C

For more information, visit www.pepperl-fuchs.com/wcslp