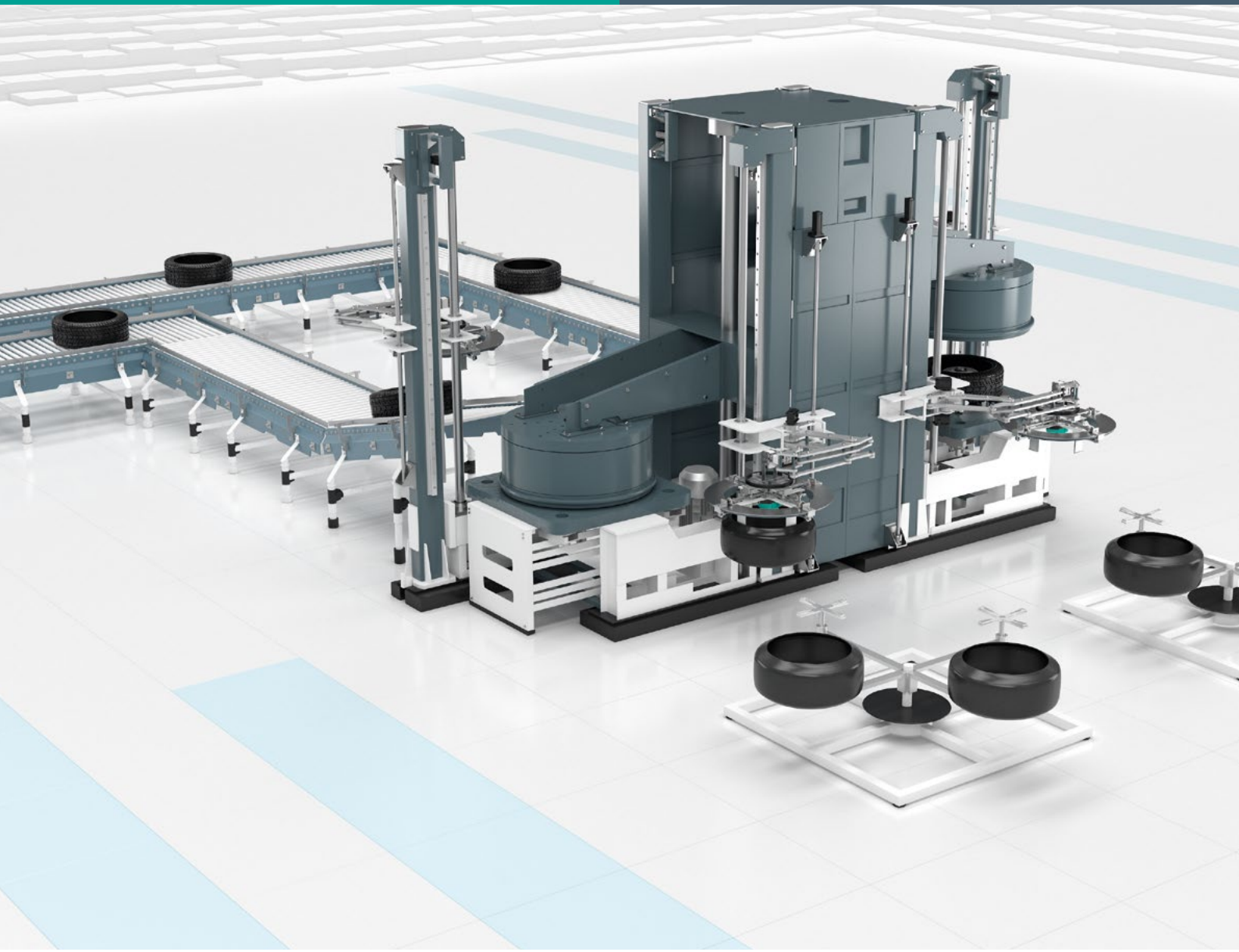
Clear Identification of Green Tires During Vulcanization

Reliable detection using RFID technology

At a Glance

- Clear identification of green tires via RFID
- Prevention of errors; safe control of the production process
- Simple integration into PLC via integrated industrial Ethernet interface and provided function blocks
- Extremely compact design for installation where space is confined
- Rugged IP67 cast housing for harsh ambient conditions

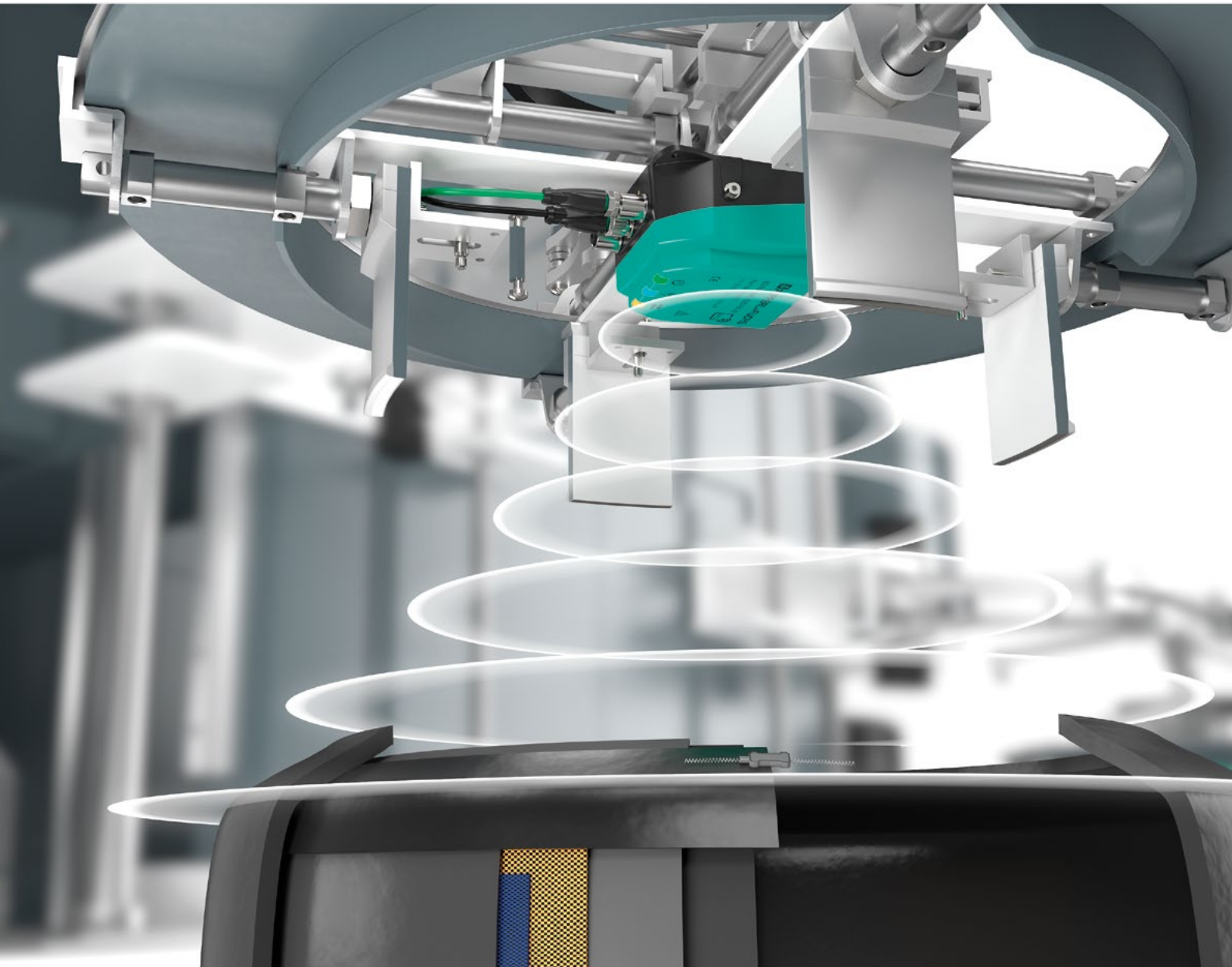


The Application

The last process step in tire production is vulcanization, also known as curing. In this step, the individual layers of a tire are "baked" together using intense heat and strong pressure. The profile and lettering on the side walls are embossed into the product according to customer specifications. Curing completes the tire production process and a final quality control is carried out.

The Goal

A completely traceable production process that will reduce downtime, error-proof the production process and increase brand reliability and quality. Even under difficult ambient conditions, the identification of green tires must be completely reliable to the individual production processes and long-term traceability of every tire. Traceability measures ensure there are no mistakes during the production process, which could lead to increased costs due to production loss, or even result in damage to production equipment caused by an incorrect green tire in the press. Preventable errors cause disruptions to the production, resulting in costly plant downtime and unplanned maintenance measures. These must be avoided to increase the reliability and quality of the tires along with meeting the customer and delivery/schedules. Last, quality defects must not compromise customer satisfaction or the reputation of the tire brand.



The Solution

The F190-B40 read/write head is used for reliable identification of green tires. The UHF reader is attached to the gripper, which places the blank tires in the vulcanization press. The compact device enables an especially space-saving installation under these confined space conditions. The integrated industrial Ethernet interface allows for easy PLC integration with no additional control interface required.

The tag in the blank tire is automatically detected via RFID with absolute reliable identification. This validates the green tire, and verifies the tire shape, production order, and production parameters (pressure, temperature, process time) match. A high antenna performance enables reliable detection even under difficult ambient conditions, such as during tire production. The automated documentation of the manufacturing process guarantees traceability in the future.

The Advantages

The reliable identification using RFID technology ensures a smooth process sequence with high efficiency and maximum plant availability. The rugged IP67 cast housing is ideal for the harsh industrial conditions. The REST API allows simple connection to existing IT backend systems, such as MES and ERP. The additional IOs available make the reader especially flexible to use. For example, read operations can be started or stopped as required via two inputs, with no additional hardware required. The output can signal the status of the device.

Technical Features

- Transmission power: Adjustable from 3 – 1000 MW ERP
- Operating distance: typ. 2 m
- Storage temperature: –40 °C ... 85 °C
- Safety class: IP67
- Housing dimensions: 114 mm × 112 mm × 63 mm
- Interface: 2 × EtherNet (http, EtherNet/IP, PROFINET)

For more information, visit **pepperl-fuchs.com/pf-f190portfolio**