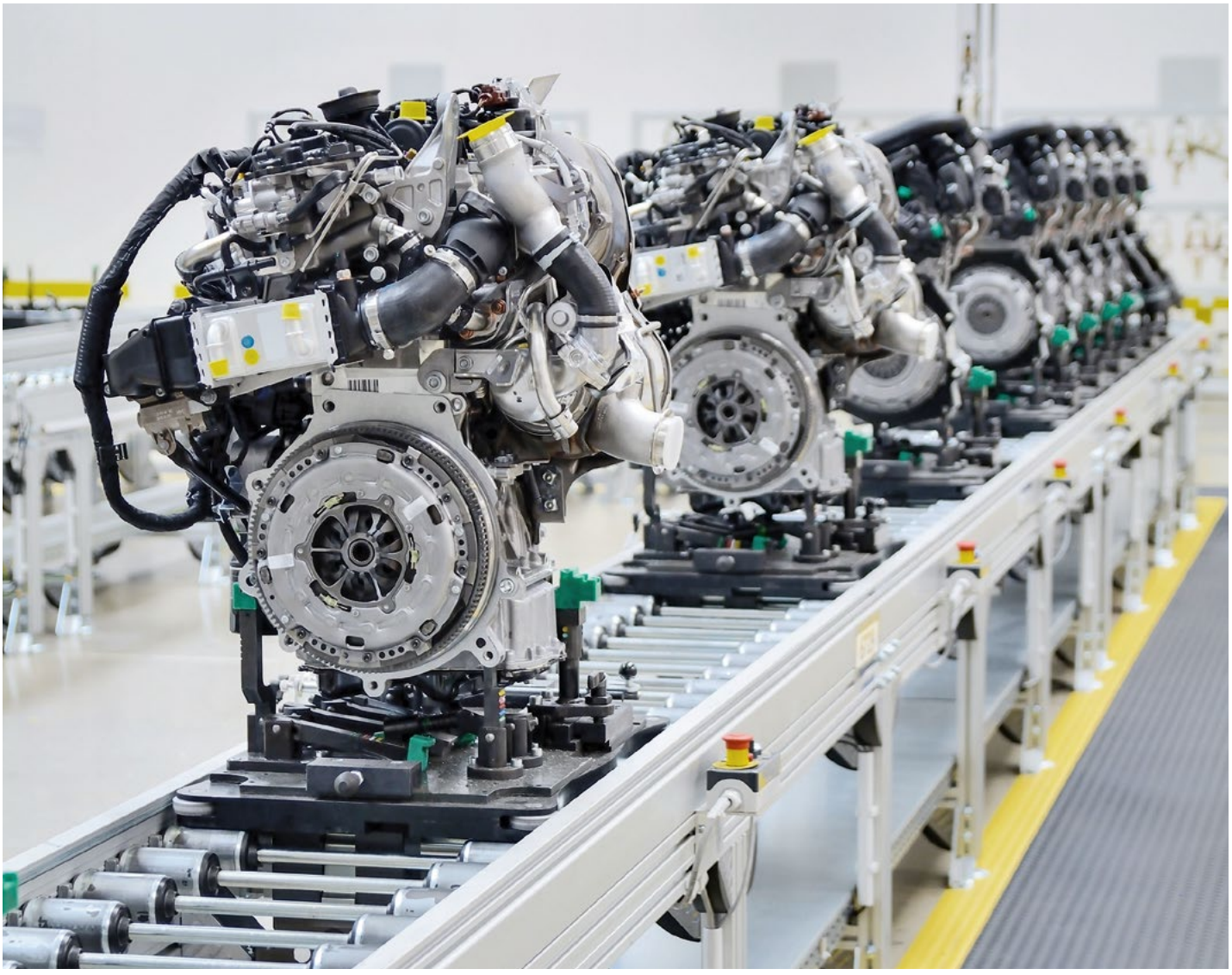
Identification and Control for Workpiece Carriers

Dynamic Data Usage and Traceability with RFID

At a Glance:

- Reliable noncontact identification of workpiece carriers
- Writable tags allow decentralized control functions
- Full traceability possible
- Compact, rugged system
- Wear-free and maintenance-free



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The Application

Workpiece carriers are used in many different production processes. The carriers hold the workpieces in position during conveying, production, and inspection. They are usually assigned to specific workpieces. It is therefore possible to use the carriers to identify them and to track the process steps. The majority of workpiece carriers are made of metal.

The Goal

The workpieces should be identified automatically and without errors using the workpiece carriers. This identification needs to be possible at various points in the plant for decentralized control of the process sequence. Individual production steps need to be individually coordinated with each other. At the same time, the aim is to create the conditions for full traceability of the individual steps. The sensor technology must be rugged, compact, and suitable for a metal environment.

The Solution

The workpiece carrier features an RFID tag in a suitable location, for example, on the underside of the workpiece carrier. RFID read/write heads are mounted at the relevant process stations, such as between the conveyor rollers. Compact components allow installation even in confined spaces. The RFID system ensures safe detection and assignment of the workpiece carrier. Since the RFID tag can be written, its data set can be supplemented at each station with information regarding the performed process steps. This information can be used to control track switches or to trigger specific manufacturing processes. The tags can also store quality data. Multiple read heads mounted at short intervals can be connected to an IDENTControl control interface, which establishes the connection to the fieldbus or the higher-level control panel.

The Benefits

Barcodes and data matrix codes are often used for identification tasks, but are susceptible to contamination and damage. In contrast, RFID systems are completely maintenance-free and wear-free. The tags, unlike the codes, can record information from the process as well. A constant connection to a central database is not needed, since decentralized data can be accessed during operation. At the same time, incorrect data content is excluded. The stored data history creates the basis for 100 % traceability of workpieces and products. When serial defects occur, the necessary measures can be selectively and specifically initiated. The tags are extremely rugged and can be flush-mounted. The read/write heads are equally rugged and make the entire system very mechanically stable.

Technical Features IQH1-FP-V1 Read/Write Head

- Operating frequency 13.56 MHz
- Conforms to ISO 15693
- Suitable for FRAM tags
- Dual LED for function indicator
- Connection via V1 connector (M12 x 1)
- IP67 rating
- Connection to the IDENTControl control interface

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