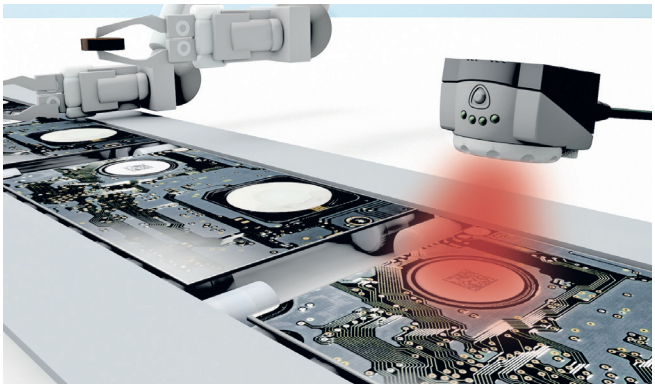
Identification – An introduction

IDENTIFYING IN INDUSTRIAL ENVIRONMENTS USING RFID AND BARCODE READERS

By using industrial identification systems you ensure that in an automated production process the right parts arrive at the right place at the right time and in the right quantity – for example in asset tracking, production control or intralogistics. These systems ensure quality and help you to reduce costs.

Reading and writing data carrier information on small load carriers using RFID for uninterrupted tracking



Identification of electronic circuit boards using direct marking 2D codes with stationary code reader

If you need to uniquely identify a production object for material flow control, a data carrier will be required.
This could be an RFID label or barcode.
As the object with the data carrier moves through production, a reader located wherever the object needs to be identified can read out the data (such as a serial number) from the data carrier. This data is sent to a processor unit which in turn passes it to a PLC, a PC or higher IT level for making decisions about production or quality.
There are essentially two identification technologies: RFID (Radio Frequency Identification using radio waves) and barcode readers (image recording and processing).

Antenna and processor unit of a UHF-RFID system for reading and writing over long ranges

Frequency-dependent processor unit of an RFID system for operating multiple read/write heads or antennas

Read/write heads and data carriers in various form factors to match user requirements

Portable handheld reader for reading 1D and 2D barcodes

RFID

RFID systems are either ultra-high frequency (UHF), high frequency (HF) or low frequency (LF). They typically consist of three components: data carrier (for data storage), read/write head or antenna (for data transmission) and processor unit (for data communication).

- UHF provides communication with data carriers over up to 6 m of range with simultaneous reading of multiple data carriers (Multi-Tagging).
- HF with its high speed enables parts tracking at close range up to 400 mm. Data carriers are available with various properties (e.g. for high temperature, with large memory capacity and for attaching to metal).
- LF data carriers are ideal for challenging conditions, such as in metallic surroundings. They are therefore often used in tool identification.

Barcode Readers

Barcode readers read 1D and 2D barcodes. Their range is from a few millimeters up to several meters.