The direct perspective

RFID systems ensure transparency and traceability in the manufacture of consumable products

A renowned manufacturer of consumable materials for process engineering is currently building a new factory in the USA to support a manufacturing location operating at full capacity. In just a few months around ten million products should leave the production lines every year. The RFID system BL ident from Turck will be ensuring transparency on the new assembly lines and providing FDA-compliant traceability of each product.

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At its German plant, a renowned manufacturer of consumable materials manufactures about 20 million units for process engineering every year. A large portion of the produced goods are currently exported to the USA. With its own plant in the USA, the manufacturer wants to reduce the capacity problems at the German manufacturing facility, and in future intends to manufacture on location in one of its largest markets.

The US facility is being planned at the companies own system construction department in Germany. Around 40 employees are involved in the mechanical construction, process engineering, special tasks and automation. The team has already gathered experience with RFID technology with the last production line. Using the radio based identification technology the high demands in terms of traceability will be fulfilled and the manufacturing operations will be optimised.

Cost-effective alternative

They were not happy however with the RFID system from a large automation manufacturer used up to now. “We were forced to look for an alternative because of the high data carrier costs” was the comment of the construction engineer responsible for the selection process of the RFID supplier for the US plant. “We quickly turned to Turck who had previously supplied us with data carriers when the original manufacturer was unable to supply them.” The attractive data carrier cost was only one of the reasons why the final decision for Turck was made.

“The BL ident system itself is also a very conclusive argument. It was not an unimportant factor that all the read-write heads were available as standardised sensor housings. This significantly simplifies installation and eliminates the need for inconvenient mounting brackets.” A further argument for the Turck system BL ident was the feature which allowed the mounting of the read-write heads at very small distances from each other. There are areas in the system where several read-write heads are installed in confined spaces. The minimum clearances required by the Turck heads are ideal here.

Intelligent workpiece carriers

The RFID system consisting of about 70 gateways, 250 read-write heads and around 1,000 data carriers is used for monitoring the workpiece carriers. For this purpose each workpiece carrier is provided with an RFID data carrier on its base, the so-called tag. Information about the workpieces are stored on these data carriers which are incorporated on the workpiece carriers.

It is thus possible at any time to trace the production line from where the workpiece has come, the injection moulding machine and cutting machine it has used, the shift where it was manufactured and many more details. All this information is stored on the data carrier until it is read out at a transfer point and transferred to the databases. Some data is even retained from the start to the finish of the production line as it is required by some processing centres. If a line is changed or the workpiece carrier is exchanged this data can be written back onto the tag.

An important criteria for the Turck solution according to the customer was the high read-write speed: “We compared the speed exactly with the device from the competitor. With the RFID system used up to this point we sometimes had problems with data transfer to another workpiece carrier. Sometimes it appeared that only half the information had been written to the tag even though the write process had been indicated as complete and the workpiece carrier had already moved on. We no longer have these problems with the speed offered by BL ident.”

“Very good support”

It is worthy of praise if a not so trivial project such as the introduction of an RFID system is implemented without any major problems. The Turck concept of user-friendly technology combined with support which is just as user-friendly, was a complete success as confirmed by the customer: “The system was trouble-free to implement into our system. In projects up to now more effort and expense were required. Close contact to the manufacturer is particularly helpful, particularly in the test and learning phase. We were always able to rely on the very good support provided by Turck product management”.

Turck, in contrast to other manufacturers, puts a lot of effort into the documentation of its solution. The result was very impressive said the construction engineer: “We quickly found all the information in the documentation. This may sound very mundane but is not a standard with documentation. In my opinion the Turck documentation was complete and excellent, just like the cooperation and support we received.”

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The RFID package BL ident

With the high temperature RFID solution BL ident, Turck the sensor, fieldbus, connection technology and interface specialist offers a complete package for non-contact identification in an industrial environment. The BL ident product series is based on the modular I/O system BL67 (field mountable) and BL20 (control cabinet mounting), and consists of data carriers, read-write heads, connection technology and gateways. The RFID system can be easily integrated into existing BL67 and BL20 I/O systems.

Gateways which are programmable with CoDeSys compliant to IEC 61131, assume the communication with the read-write heads and are available for simple implementation and for reducing the burden on higher-level controls. In addition to the standard data carriers which are rated for temperatures up to 120 °C, BL ident also operates with high temperature tags up to 210 °C. Accordingly, the data carriers can be used for example when curing paint layers in car manufacturing as they can pass through the oven on the vehicle skids.

The tags are available with EEPROM and FRAM memory where the latter allows almost an unlimited number or read and write operations. BL ident can be matched modularly to suit the respective application with two, four. six or eight channels. Fieldbus interfaces are available for Profibus DP, DeviceNet, Ethernet/IP, Profinet IO and Modbus-TCP.