



The RFID tags are well protected in the plastic housing on the two longer sides of the stainless steel basins and are therefore always readable

Process Observer

Turck's BL ident RFID system secures the traceability along the manufacturing and distribution chain of a Chinese food producer

A food manufacturer in China, who sells brine cured products was faced with the challenge of ensuring the traceability of its products at every stage of processing. The company was previously not able to track the

production process. When problems occurred with the quality of the food products, whether at the manufacturer of the materials, the operator or in the process, the cause could not be traced and determined with certainty.

The curing time during the production process and the quantity of supplied components varied from coworker to coworker, making standardized, controllable processes impossible. The output of subprocesses was also not quantifiable, so that targeted process control could not be implemented. Uncontrolled manual interventions could cause material bottlenecks, which not infrequently led to quality problems due to production jams. Neither a flexible production process nor an intelligent control could therefore be achieved.

The customer therefore looked for an automated solution for the consistent traceability of its food

QUICK READ

To optimize its production and delivery processes, ensure product quality and increase operating efficiency, a Chinese food producer made its plant fit for seamless track & trace with RFID support. Today all the relevant data for raw materials, process steps and the storage of cured meat products are continuously recorded and processed. The company decided to use Turck's BL ident RFID system – also because the modular system supports hot swapping, which reduces downtimes and therefore simplifies device maintenance.

products along the manufacturing and distribution chain in order to ensure food safety. All the links in the supply chain had to be interconnected, from production to storage and transportation, right through to retail sales.

Stable food safety and increased operational efficiency

Turck designed a complete RFID system for the customer according to their requirements and the situation on site. It was thus possible to implement a seamlessly transparent production and full traceability of food products over their entire life cycle.

RFID tags on stainless steel and plastic basins are now used to identify the materials on site. In order to read and write the RFID tags, read/write devices were installed on electronic weighing scales in the defrosting system, on tables in the curing system, on roller conveyors in the rapid cooling system and on cutting machines. The warehouse management system links the information from the production control system (MES) and thus monitors the entire production process in real time.

Cheaper than barcodes

An HF RFID solution is recommended in order to ensure accurate identification in spite of the small distance between the basins in production and in order to avoid frequency interference from other field devices. Read/write devices with IP67 protection and RFID tags with IP68 protection are resistant to humidity and water and therefore ideal for wet environments. The tags are reusable, thus keeping the long-term operating costs of the RFID system considerably lower than the costs of a barcode system. In order to prevent any problems with magnetic or mechanical interference from the metal basins, the plastic coated tags were fitted directly on the two longer sides of the basins in a special metal holder.

The data was transferred via the compact and robust TBEN-S RFID interface modules, which control the field devices and communicate with the higher-level controllers in real time. "The TBEN module has a data buffer range of 16 Kbytes for a large number of operations. This means that the pallet does not have to wait in front of the read/write head until all read and write operations are completed," explains project manager Tao Zhang. "This module also verifies automatically the write operation so that a subsequent



RFID read/write devices were installed at all strategic points of the production process

read option for control purposes is unnecessary. These features of the TBEN modules can considerably expedite production."

LED indicators provide clear information at any time about the operating status of read/write devices and the RFID module. Pre-assembled cables can be installed quickly and guarantee the reliable transfer of data. Read/write devices with a larger range ensure the precise reading of data. "However, the most important feature is the fact that Turck's RFID products can be replaced quickly during operation, thus considerably reducing downtimes and simplifying device repairs," explains Zhang.

Conclusion

The use of RFID technology to create a safe food product supply chain system with the traceability of all processes, from production to the consumer can provide effective solutions for the challenges of conventional food production. The RFID system not only enables the real-time monitoring of production in all phases but also provides process transparency and ensures the improved safety of food products. The analysis of the recorded data also makes it possible to optimize operating efficiency. With the rapid development of Industry 4.0 and IIoT, RFID technology will also play an increasingly more important role in food safety.

Author | Lin Qiang, Marketing & Product Management Department, Turck (Tianjin) Sensors Co.

Webcode | more12255e

RFID PORTFOLIO ALSO FOR EXTREME APPLICATIONS

With fully encapsulated, robust HF read/write devices in cuboid and cylinder designs in IP67, Turck's RFID system BL ident offers industrial design for all fields of application. The portfolio also includes special cables and read/write devices with IP69K protection for special challenges, such as in hazardous areas or washdown applications in food production. Turck's fieldbus solutions also support users with smart functions such as decentralized pre-processing in IP67 modules or the HF bus mode, which allows 128 read/write devices to be connected to one interface module and thus considerably reduces the wiring effort, costs and commissioning times in applications with many read or write positions.