



Reference

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SIMATIC Ident

Maximum Security of Supply

RFID-controlled C-Parts Management

An assortment of more than 1,000,000 articles forms the basis for the optimal C-parts handling at a vendor for assembly technology. The focal point of the delivery concept is a customer-oriented RFID solution that enables a timely Kanban supply and container logistics. As a result, storage space and costs can be saved in the production.

The production halls are often packed with shelves containing assembly parts such as bolts, connectors, clamps and rivets, which prevent an efficient utilization of the storage area. This can lead to disruptions of the process sequences. Leaner processes for the procurement of C-parts – i.e., parts whose procurement value is relatively low compared to the procurement effort expended – lower the costs and reduce the storage space required, since a trouble-free supply of parts allows for fewer containers and shelves. Manufacturing companies therefore employ self-controlling systems, so-called Kanban systems, that offer a consumption-controlled storage filling and replenishment strategy for C-parts.

The Würth Industrie Service (Industrial Services) GmbH & Co. KG, headquartered in Bad Mergentheim (in the state of Baden-Württemberg, Germany), is a full-line supplier and logistics provider in the field of assembly technology. With its broad assortment – ranging from joining and fastening technology to tools to chemical-technical products – the company has successfully positioned itself as a partner for supplying small parts. Würth has made

a name for itself by executing customized, logistical and anticipatory supply and service concepts for industrial customers. For instance, the company offers modularly structured solutions for the C-parts management under the name “C-Parts Solutions” (CPS).



Answers for industry.



The RFID pallet box (iBox) is the centerpiece of the Würth logistics solution. As soon as an employee places the empty small parts container into the iBox and closes it, ...

RFID Kanban accelerates the Order Processing

For about a year now, innovative RFID Kanban systems have been supplementing the previous solutions. CPS RFID stands for the radio-controlled and automatic transmission of article and container data from the production of the customer to the Würth central warehouse in Bad Mergentheim. The RFID pallet box, also called iBox, is the centerpiece of the new logistics solution. The need for goods is signaled by dropping an empty parts container into this box. As soon as an employee places an empty container into the iBox and closes the lid, an RFID reader installed in the box reads the transponder data of the small parts container. The data permits a clear allocation of customer, container size, filling quantity and storage location as well as the tracking & tracing of the batch. The data is regularly transmitted to the Würth logistics center – resulting in a prompt order processing without delay.

In the case of bulky parts that do not fit into the small parts container, a pallet Kanban solution with cards is employed. The processes are identical to those of the container solution, except that in this case, the Kanban card instead of the empty container represents the goods consumed. The goods requirement is signaled by dropping the Kanban cards, which contain RFID tags, into an “intelligent” mailbox. A lamp indicates a successful reading and the automatic ordering of the necessary C-parts. The RFID-antenna-equipped mailbox forms a unit with the pallet box.

In the pallet box, an RFID reader/writer SIMATIC RF670R by Siemens is installed. Thanks to its compact construction, the stationary reader is suitable for applications in production logistics and distribution. Connected to the reader are two detached UHF antennas SIMATIC RF640A. In implementing the iTagbox for the pallet Kanban, Würth utilizes the option of connecting up to four external UHF antennas to the SIMATIC reader. The antenna of the mailbox is connected directly to the RFID reader of the iBox. A Nanobox PC SIMATIC IPC227D, designed for maintenance-free, continuous operation, assumes the control and communication tasks and at the same time serves as collector of the RFID information. The connection of the reader to the IPC takes place via XML protocol, TCP/IP and Ethernet.



... a reader SIMATIC RF670R with two detached UHF antennas SIMATIC RF640A captures the tag data and transmits it from the customer to the Würth logistics center.



The iTagbox is designed for pallet Kanban with bulky parts. Comparable to a mailbox, dropping in Kanban cards with RFID tags signal the goods requirement. The antenna of the iTagbox is connected directly to the RFID reader of the pallet box.

C-Parts Management provides increased Security of Supply

“The RFID-supported C-parts management lets customers achieve a well-organized storage and an optimal space utilization and also gives them the option to track and analyze all container movements and thus the parts consumption,” describes Heiko Ehrmann, who is responsible for software and development at Würth Industrial Services. The solution creates transparency and offers maximum Kanban process reliability. Furthermore, the customer can access statistical analyses down to the container level at any time. The quick, transparent flow of information and the permanent data communication with the logistics center result in a very high security of supply. The RFID specialist goes on: “Fluctuations in demand can be precisely analyzed so that the article availability in the right quantity and at the right time for the customer’s production is ensured.”

“With the new RFID solution, we are receiving updated information several times a day on how many containers of a certain C-part are empty at the customer. We find out whether the customer requirement is time-critical and know exactly whether the parts are only missing at one storage location or throughout the factory,” emphasizes Ehrmann. Up to now, this information arrived time-delayed at Würth, which led to delayed deliveries. The new RFID solution eliminates this problem. As soon as the ordering data comes in, the Kanban management system checks whether the number of the small parts container matches the customer and whether the products requested are in stock. The supply for the corresponding parts container is reserved, the product compiled customer-specifically from among the many high-bay storage facilities, buffered in the outgoing goods area and finally transported to the customer.

Special Requirements regarding the RFID Labels

In selecting the RFID labels, Würth attached great importance to their properties. The labels have to be accurately printable, survive the washing processes of the boxes unscathed and firmly adhere to the containers for a duration of three years. An RFID-controlled ordering process could not be performed with an unlabelled box. Siemens developed a method that guarantees specified transponder characteristics. During manufacturing, the tags are qualified so that they possess a constant quality. Labels that do not meet these specifications are automatically rejected. Moreover, newly developed RFID tags also must have the same coverage range as their previous versions so that the preset readers of the customers can operate without adjustment with the chips of the new performance class.

Electronic Delivery Note by means of RFID Gate

The Würth project team also installed an RFID gate at the loading ramp and integrated it into the intralogistics. It is equipped with an RFID reader SIMATIC RF670R to which four antennas – distributed around the periphery of the gate – are connected that completely illuminate the height and width of the reading field. Triggered by passing through a light barrier, the RFID data of the pallet is captured and transmitted to the enterprise resource planning system (ERP), which reconciles it with the order-related information. Within a fraction of a second, the software makes sure that the right goods are going to the customer and that the products loaded agree with the cargo list.

A container that cannot be assigned to a customer sets off an alarm. The RFID integration of the gate is a prerequisite for the future listing of the items shipped in the form of an electronic delivery note. Furthermore, it ensures a secure and traceable goods transition.



The RFID gate at the loading ramp is equipped with a reader SIMATIC RF670R and four detached antennas. Triggered by passing through a light barrier, the RFID data of the pallet is captured and transmitted to the enterprise resource planning system (ERP).

High Customer Acceptance through RFID-controlled C-Parts Management

By now, about 1000 industrial customers are successfully employing the Kanban solutions from Würth. Decisive for the high acceptance are the central stocking of all articles and the inventory-oriented scheduling, which gives customers maximum security of supply. "The RFID-controlled C-parts management also ensures that customers receive their goods on time," underscores Ehrmann. "For the new solution, we selected an internationally positioned partner, whose range of services provides a high level of flexibility during the implementation of the CPS strategy. By choosing Siemens with its extensive RFID portfolio and dense network of locations, it is possible for us to guarantee an internationally uniform, high quality standard for the projects as well as for the service in the individual countries," concludes Heiko Ehrmann.

Benefits of the C-Parts Management via RFID Kanban

- Pinpoint control of the flows of goods
- Quick information exchange
- Permanent monitoring of the inventory and ordering data
- Automatic data transmission to the logistics center
- Improved warehouse and inventory management
- Immediate detection of fluctuations in demand
- Less storage area and fewer parts containers required
- Quick conversion without changing existing processes

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