

DaimlerChrysler Putting RFID Tags in Kanban Cards

The automaker plans to begin pilot RFID projects that will increase the visibility of parts at two of its German production sites.

By Jonathan Collins

June 7, 2006—An RFID proof-of-concept project that added passive UHF inlays to existing kanban parts-management cards at a DaimlerChrysler production plant near Stuttgart, Germany, has paved the way for two pilot RFID deployments.

"[We determined] there is a lot of potential for RFID," Markus Beutel, program manager at DaimlerChrysler, told attendees last week during a presentation at German software company SAP's user conference in Paris.

DaimlerChrysler has looked into using RFID to improve the flow of parts from its own onsite storage "supermarket" to workstations on its production line. At its production sites in Unterturkheim, near Stuttgart, the company uses a kanban (just-in-time) manufacturing management system involving kanban cards—physical cards printed with text identifying a part and the production workstation where it was used—being taken from the workstations' parts storage bins when inventory is low.

The cards are then collected and transferred to the parts supermarket, where they constitute a parts order. Workers fill the order in the parts supermarket and deliver it to the required workstations on the production line. By adding RFID to the kanban cards used in the production management of the Autotronic transmissions (continuously variable automatic transmissions) for the Mercedes Benz A and B class cars at its Zuffenhausen plant, the automaker says it has determined that RFID is ready to be piloted at five of the seven plants in the Unterturkheim area.

DaimlerChrysler says the proof-of-concept trial at the Zuffenhausen plant showed that by providing a way for its SAP inventory management system to be automatically informed when parts are taken from storage and sent to production, the automaker can use RFID to track whether parts are in storage in the parts supermarket or being used on the production line. "It meant that we could know the location of parts in the supermarket or in assembly, which had not been possible to distinguish before," said Beutel.

The advantage of this real-time transparency of supermarket stock reportedly eliminates the need for manually intensive and time-consuming stock counts. In addition, with an accurate and automated inventory in the supermarket, the automaker could automate part orders, requests and inquiries from the supermarket to suppliers.

During the proof-of-concept test, passive EPC Gen 2 UHF RFID inlays were added to the kanban cards, and a reader with an RFID interrogator antenna was deployed on each side of the gateway between the parts supermarket and the factory shop floor.

Reusable containers in the form of trolleys and trailers are used to bring parts from the supermarket onto the production floor. The exterior of these containers were fitted with slots to hold the kanban cards. While the existing text-only cards could be placed in a parts trailer, DaimlerChrysler found that the RFID-enabled cards had to be placed on the outside of the container to ensure they could be read. Containers could be manually pushed, driven by forklift or pulled by an electric train. Operators would check a screen display of the interrogator reads to ensure every card had been read as the containers passed through the RFID-enabled gateway. The parts staff also had to ensure that only a single load of containers was permitted to go through the gateway in a single direction at a time. In addition, the RFID-enabled cards had to be more than 50 centimeters from the antennas as containers passed through the gateway's 4-meter-wide opening.

Once these criteria were met, DaimlerChrysler says, the company achieved 100 percent read rates with its RFID-enabled kanban cards. During initial tests, which involved EPC Gen 1 tags, only 70 percent to 80 percent of the kanban cards' tags were read—a level so unacceptably low that DaimlerChrysler considered a move to active tags.

DaimlerChrysler turned to Intel to provide the hardware for the RFID proof of concept, and SAP to develop software to manage the readers and the data collected. The next step, according to the automaker, is to run a pilot at two of its Unterturkheim plants, involving a total of five gateways at four supermarkets.

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