Lufthansa Technik Automates Supply Management

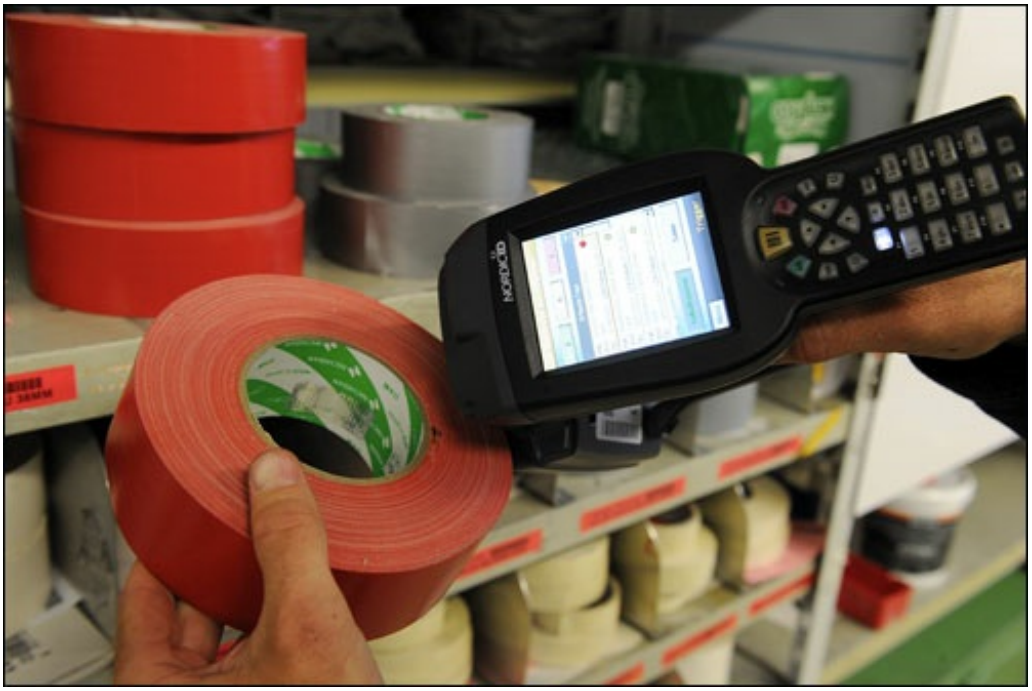
The logistics services division turned to RFID to track time-sensitive materials and build a greener business.

By Samuel Greengard

Tags: Aerospace, Manufacturing, Logistics, Supply Chain, Asset Tracking, Environment

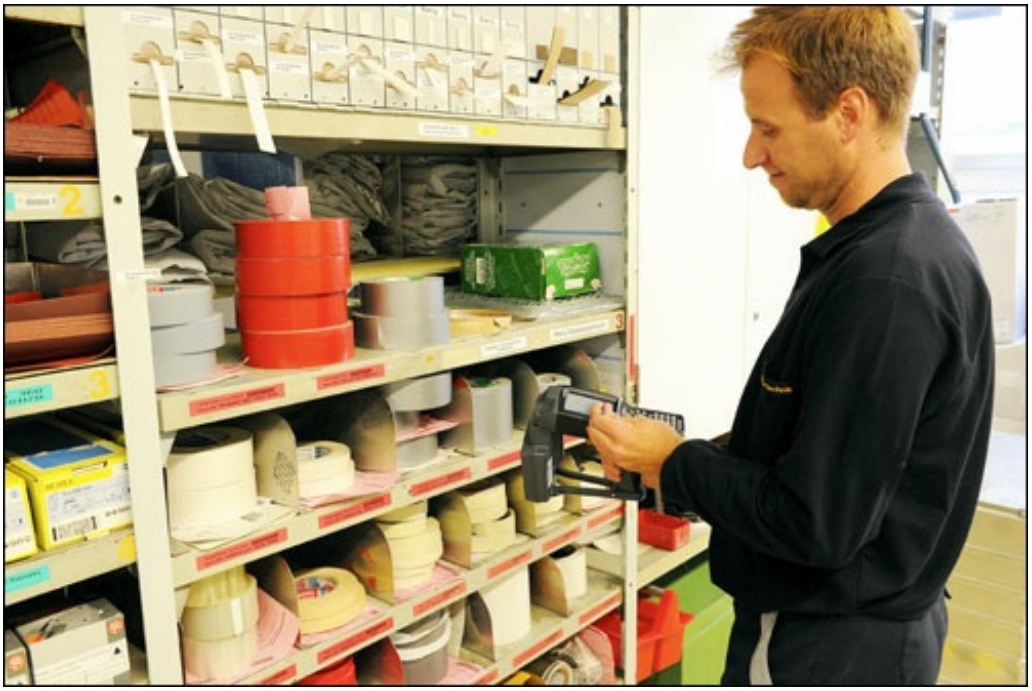
May 06, 2013—Lufthansa Technik Logistik Services GmbH is responsible for logistics services involving warehousing, transportation and material supply for German airline Lufthansa. Some of the materials essential to keeping a fleet airborne are time-sensitive, and must be checked regularly. "There are a lot of consumable items—paint, glue, sealer, grease, adhesives and other materials—that have expiration dates and must be used within a specified period," says Kathrin Stromann, the RFID project manager at Lufthansa Technik Logistik Services, a wholly owned subsidiary of Lufthansa Technik, a provider of maintenance, repair and overhaul (MRO) services to commercial aircraft.

Every week, workers had to manually check the labels on the supplies stored within various cabinets, a process that was time-consuming—it could take between three and five hours—and prone to errors, according to Carsten Sowa, Lufthansa Technik Logistik Services' RFID program manager. Typically, a mechanic had to reach into the cabinet and review each item individually. In many cases, expiration dates were difficult to see, and products packed on shelves and stuffed in boxes were difficult to tabulate. Often, items soon to expire had to be discarded. Making matters worse, incorrectly labeled items—or those missing labels entirely—had to be removed, since no one knew exactly how old they were.



"We wound up throwing a way a lot of glue, tape and other products that were still good, because they would expire in a few days and it was impractical to keep them in the cabinet," Sowa explains. "We also had to pay for a company to pick up trash cans filled with chemicals and hazardous waste. There were extra charges associated with some of these items, because they are hazardous substances."

Roughly two years ago, Lufthansa Technik Logistik Services' managers realized they required a more efficient way to manage supplies, including hazardous materials, and to comply with audit requirements. "Checking labels manually for expiration dates was extremely time-consuming and annoying" Stromann states.



To that end, Lufthansa Technik Logistik Services developed a radio frequency identification solution that allows the company to tag and read items in storage cabinets so employees know which items to use first. Currently, at the company's location in Frankfurt, Germany, a worker can instantly determine which products are located inside a particular cabinet. The system, which has approximately a 97 percent accuracy rate, has helped the company trim the amount of time that it spends monitoring supplies by 80 percent. "We know exactly when materials must be replaced," Stromann says. "We have cut costs and taken a much greener approach."

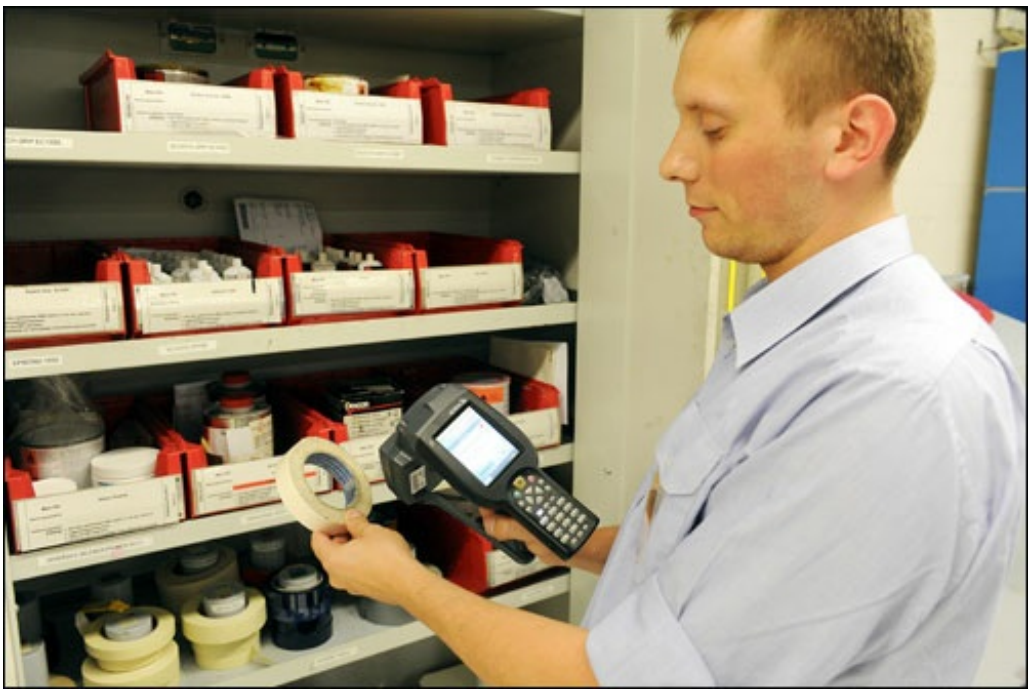
Putting RFID Experience to Work

Lufthansa had already employed RFID to better manage maintenance, repairs and cargo logistics (see Lufthansa Technik Uses RFID to Expedite Aircraft Repair and Lufthansa Expands RFID Use). This project, Stromann explains, was part of an overall business focus on RFID. "We have a good deal of experience and expertise in RFID and auto-ID systems," she says. "In this case, we simply needed some assistance from vendors to choose suitable tags and RFID label printers."

Although Lufthansa Technik Logistik Services did not need outside consultants to design the RFID solution, it did form an internal six-person project team, including mechanics, a software engineer and business information specialists. The group worked with participating departments to ensure the project was able to address all necessary requirements.

Team members analyzed products, made the final decision regarding which equipment to use, performed tests to measure read ranges and bulk readability, and conducted additional tests to ensure the processes contributed to a safe workplace. "The problem wasn't so much the label," Stromann says, "it was finding the best handheld for this environment and proving that RFID could work."

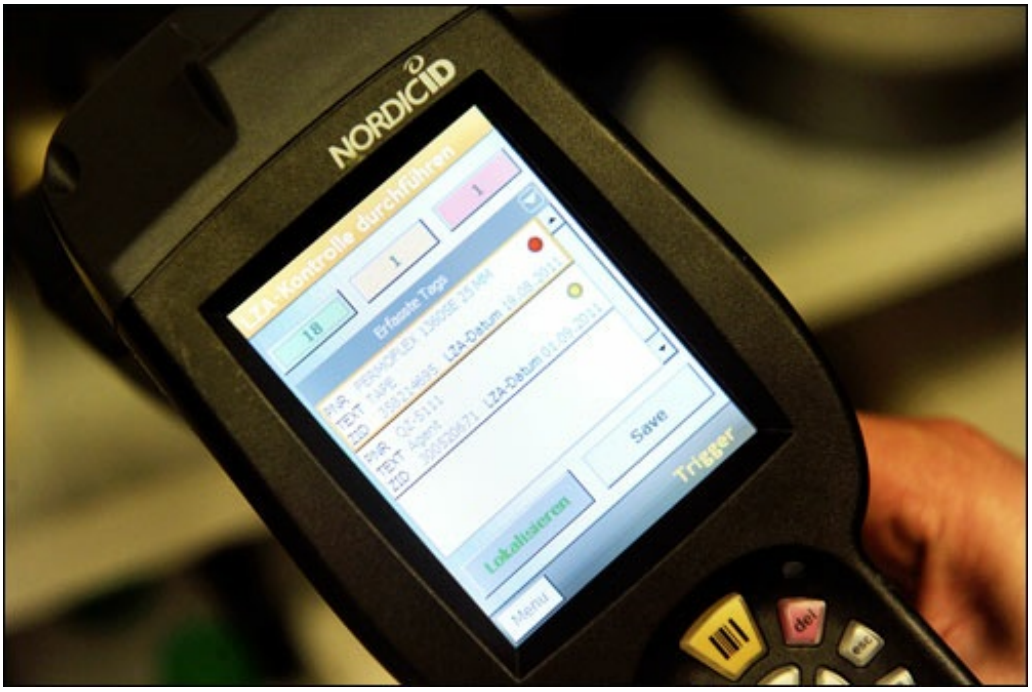
The team chose Nordic ID's Merlin UHF RFID Cross Dipole handheld devices to read data transmitted from UPM Raflatac MiniWeb inlays, which were selected because they would adhere to aluminum and glass containers and provide a high level of readability. The inlays, printed on a Zebra Technologies RZ400 printer, include each product's part number, serial number and expiration date. A worker applies the labels when the products are received at the warehouse, and the items are later distributed and placed into cabinets, bins and refrigerators within the various storage areas.



Lufthansa Technik Logistik Services developed proprietary RFID and bar-code software to manage the inventory system. The handheld readers transmit data via a Wi-Fi connection to a server that stores the records for analysis. There is also an application on the handheld reader that displays information about each item, including an expiration date and color-coded alerts. Green indicates the item has a shelf life of more than 21 days, while yellow means it has 7 to 21 days remaining, and red shows the item must be used within seven days. "We do not have expired items sitting on the shelves," Sowa reports.

To boost read rates and overall performance, Sowa says, the team had to replace metal cabinets, trays and pins with plastic components, including shelves and grates, since the presence of metal makes the tags difficult to read. To identify small tape rolls and metal items, they tailored the RFID label with an adapter to create a "flag tag"; the adhesive label sticks to the product, and the tab containing the tag hangs in the air, away from the object. (The company is now considering wristbands that are typically used at concerts and festivals.) What's more, Stromann says, the team decided no metal items should be stored over each other, to make sure the flag tags are stable and not squeezed between cans. All nonmetal items can be stored on top of each other and mixed together in drawers.

The inventory is checked weekly, and each cabinet requires roughly 30 seconds to read from a distance of approximately 50 centimeters to 1 meter. A few products—approximately 3 percent of the items—are not read during any given scan. But "100 percent of the items are read over a few weeks," Sowa says. "Over the course of multiple scans, we are able to catch everything. There was no way to achieve anywhere near this level of accuracy when we conducted manual checks."



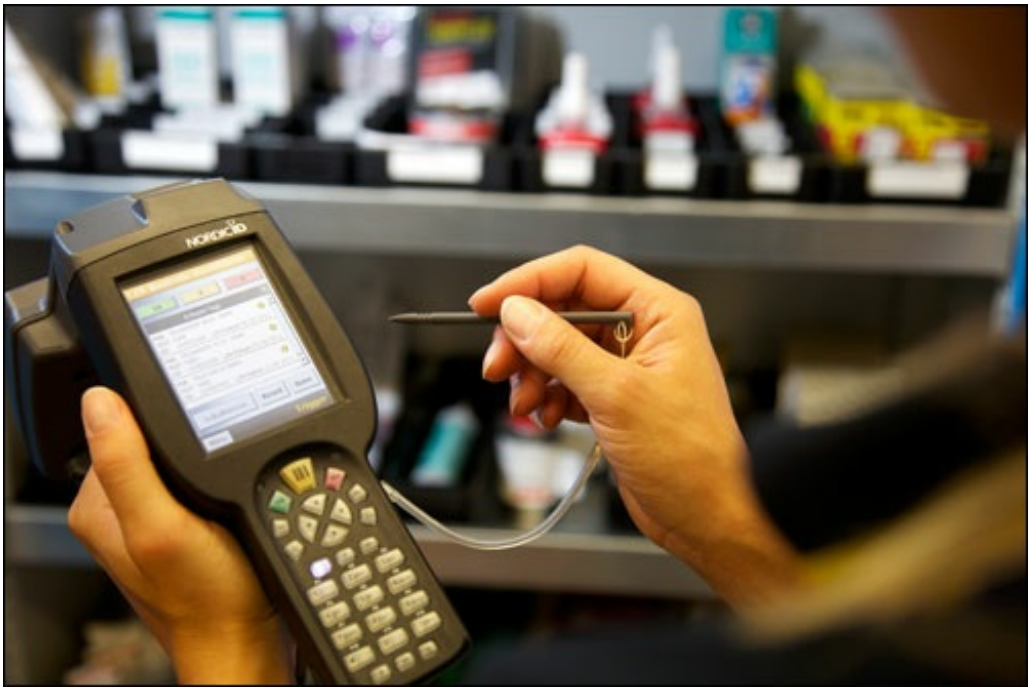
Stakeholders Like the Benefits

It took roughly three months to put all the components in place and get the system up and running, Sowa says. Initially, some executives resisted the idea of using RFID to tag items, as they considered the project a low priority, not worth a significant investment during recessionary times. But after the team demonstrated how well the system worked and how much time it saved during a six-month field test, that sentiment changed. "We were able to get all the stakeholders on board," he states, "and gain full support for the project."

The final task was to get workers up to speed on using the handheld readers. "Only a short training session was required," Stromann notes. "The application was designed to look like a smartphone app. We created large, clearly visible buttons, to make the app easily navigable and highly intuitive." Team leaders also established clear criteria regarding where tags could be placed on items. "We limited them to several locations in order to ensure that the tags could be easily read."

The RFID system, currently used within an entire department in Frankfurt, will be implemented at locations across Germany throughout the next year or so. The technology has revolutionized the way in which employees work, Stromann says, as well as their attitude toward managing inventory items. "In the past, nobody wanted to the do the job," she says. "Touching dirty, smelly and sticky containers was annoying." Now, workers are reporting that they enjoy the task. "It has created a high-tech approach and a far more pleasant and desirable way to handle these items."

According to the company, the program has resulted in significant gains. In addition to an 80 percent reduction in time personnel spend managing the review process, Lufthansa Technik Logistik Services has reduced its supply inventory levels and optimized the ordering process to avoid overbuying. Moreover, it has also reduced losses due to expired inventory and expensive aircraft on ground (AOG) costs that occur when an aircraft is grounded, and the data collected has facilitated various internal and external audits. The company is now considering using the RFID system to build a completely automated ordering system, Sowa says.



The program has also contributed to a greener business. At present, the company knows exactly which materials it has on hand at any given time, and when hazardous substances need to be replaced. This translates into fewer chemicals ending up in the waste stream, as well as reduced costs associated with having hazardous safety items hauled away.

"We believe that it is extremely important to reduce waste—particularly hazardous waste—in any way possible," Stromann says. "Sustainability is an important part of the business, and a way to distance ourselves from competitors. RFID is a mainstream part of our business. It is changing a wide range of processes and helping eliminate waste and inefficiency. We are open-minded about how we can use it to further improve on the business."