

The airline's various divisions are using Mojix RFID hardware to track aircraft-part maintenance and hazardous cargo, while testing the use of handheld readers and its own tags to track safety devices on planes.

By Claire Swedberg

Apr. 28, 2010—[Lufthansa Technik](#) (LHT), the maintenance repair and overhaul (MRO) arm of [Lufthansa](#), is taking the next step in its implementation of radio frequency identification to track paperwork attached to aircraft parts as they pass through the repair process, by installing [Mojix](#) RFID hardware at the entrance to its repair facility.

At the same time, [Lufthansa Cargo](#), the company's cargo-transporting branch, is employing RFID to track hazardous or volatile materials as they are placed on pallets and sent to an aircraft for loading. Lufthansa Technik is also testing the use of RFID to track items that can expire—such as life safety vests—on Lufthansa aircraft. Furthering the technology's use throughout the company, LHT and its [Lufthansa Technik Logistik](#) (LTL) division developed their own RFID tags to attach to aircraft parts as they move through the repair process, and to be used with safety devices to track expiration dates, thereby saving labor previously spent examining devices on aircraft.



Tom Burian, Lufthansa Technik Logistik's RFID project manager

With regard to tracking parts for maintenance and repair, Lufthansa Technik began attaching RFID labels to part-identification paperwork in December 2007 (see [Lufthansa Technik Uses RFID to Expedite Aircraft Repair](#)). When items need to be repaired or maintained, they are first sent to one of several transition points—LTL warehouses in such German cities as Hamburg, Frankfurt, Berlin and Munich—prior to the MRO-related work. After the item is repaired, paperwork is printed to accompany that part back to the LTL warehouse, and then to the plane. This paperwork includes such details as the type of part, its owner and any repair requirements. Prior to using an RFID system, such documents were read manually, and data was inputted into the system as parts were sent for repair, as well as when they returned—which was a labor-intensive process.

Beginning in 2007, an EPC Gen 2 ultrahigh-frequency (UHF) passive RFID label was attached to the paperwork, either by a mechanic at an LHT repair facility, or by the LHT staff before the part and its paperwork were shipped to an external repair shop. The label was encoded with a unique ID number linked in LTL's back-end system to data regarding the part and its repair schedule. The tags were then read on desktop RFID interrogators prior to the part being repaired, and again after it was returned to the central MRO facility.

That solution was a first step, however, for a process that the company hoped to further automate, says Tom Burian, Lufthansa Technik Logistik's RFID project manager. In February 2009, LHT began installing a Mojix EPC Gen 2 real-time locating system (RTLS)—which is slated to go live in May—to

read those same tags on aircraft parts' paperwork as they are transported to and from maintenance and repair in Hamburg, explains Carsten Sowa, LTL's RFID program manager.

The Mojix STAR system includes eight eNodes deployed in a star pattern, to provide a full coverage of a 20-meter-long (66-foot-long) tunnel traveling between the logistics warehouse and the maintenance facility's handling area, where parts are unpacked, checked and then forwarded to the repair shop. The eNodes transmit a UHF RF signal that activates the passive tags, which respond by transmitting their ID numbers to a single STAR reader, says Roelof Koopmans, Mojix's European managing director. This will provide Lufthansa with an automated record as to when each part enters and leaves the handling area. Once the repair or maintenance task is completed, the item, along with its paperwork, is carried back through the handling area and tunnel, either by hand or by trolley. At this point, the e-Nodes will again excite the paperwork's tag, causing it to transmit its ID number to the STAR reader. That tag read, along with a time stamp, will then be transmitted to the back-end system, in order to identify when the item was returned from maintenance to the company's logistics warehouse.

In another RFID program, which took place in fall 2009, the firm's [Lufthansa Cargo](#) division installed a Mojix cargo-tracking system to ensure hazardous substances are not stacked next to each other on pallets. There are strict regulations regarding what can be stored and shipped with which substances, such as chemicals and fuel; many cannot be shipped together due to their volatile nature.

By identifying hazardous materials before they are loaded onto a plane, the company is able to prevent errors such as pallets being loaded incorrectly, with incompatible substances placed on the same pallet. In this case, 12 Mojix RFID eNodes with a total of 48 antennas have been installed, at a 50,000-square-foot warehouse at Frankfurt Airport, in which cargo is stacked on pallets and stored prior to being loaded onto aircraft.

Lufthansa Cargo is attaching passive EPC Gen 2 tags on all items containing volatile substances. Each tag's ID number, along with data about that substance, as well as its destination and owner, is then stored in Lufthansa Cargo's [SAP](#) software, residing on the back-end system. The software issues an alert if two products come within a specified distance of each other, thus indicating they are on the same pallet.

In the meantime, for tracking other items used on aircraft that have expiration dates (such as life vests or first-aid kits), LTL and LHT developed their own EPC Gen 2 passive tags with the size, weight and performance necessary for the types of items to be tagged. The company plans to attach those tags, which measure approximately 1.5 inches by .25 inch, to such items as life vests and medical equipment.

To date, equipment has been tagged in one aircraft for testing purposes. The ID number of each tag links to the item's lot number, description and expiration date in the [Silverstroke](#) Tagpilot software that Lufthansa Technik uses to manage RFID data. Workers then walk through the airplane, and instead of removing each item and visually reading the expiration date printed on that object, they can now utilize

a [Motorola](#) MC9090-G handheld RFID interrogator to capture each unique ID number in overhead cabinets, beneath seats and in other locations. If the expiration date is approaching, employees receive an alert on the handheld screen. All information from the tag reads is then sent to the back-end software via a Wi-Fi connection.

In the future, the company hopes to have manufacturers attach the tags while the items are being assembled.