

At its German facilities, the aircraft-maintenance service provider is attaching EPC UHF tags to documents that accompany airplane parts, reducing the need for manual data entry.

By Rhea Wessel

Dec. 18, 2007—[Lufthansa Technik](#), a global provider of maintenance, repair and overhaul (MRO) services for commercial aircraft, and its [Lufthansa Technik Logistik](#) subsidiary have begun using an RFID application to track aircraft components. Lufthansa Technik is attaching passive EPC UHF tags to the paper documents that accompany airplane parts, and expects to begin tagging components directly once an industry-approved tag that meets its specifications becomes available.

The tags that will be placed on aircraft parts must fulfill a variety of safety requirements and meet high technical standards, such as withstanding harsh weather, drastic temperatures and various chemicals and fluids used in the aviation sector. They must pass flammability tests and display electromagnetic tolerance. All RFID equipment must be certified for use in explosive environments, and tags must be relatively small so they can fit on a wide range of equipment.



Lufthansa Technik is using handheld interrogators to read the tagged documents that accompany aircraft parts.

Lufthansa Technik, a subsidiary of the German airline Lufthansa, has asked suppliers to provide a passive ultrahigh-frequency (UHF) tag that meets these requirements and complies with the ISO 180006C standard. The company is working with the [Air Transport Association](#) (ATA) to develop standards. Parallel with the chip industry's development of RFID-based ICs with the desired memory size, the group is working on a flexible data standard for the tags.

The ATA group includes a variety of companies in the aviation industry, such as airframe manufacturers (Airbus, Boeing and Embraer), OEMs (Rockwell Collins and Thales), airlines and MRO service providers (American Airlines, Continental Airlines and Lufthansa Technik), and RFID systems integrators and development companies ([SITA](#), [Fujitsu](#), [Intellex](#) and [Tego](#)).

Michael Scheferhoff, chairman of the ATA's RFID/AutoID on Parts workgroup, coordinates all of Lufthansa Technik's RFID activities, including those of Lufthansa Technik Logistik. He says various tag suppliers are presently working to meet Lufthansa Technik's technical specifications but have not yet succeeded.

For now, the Lufthansa Technik affiliated group is attaching an RFID label to the document that

accompanies each aircraft component as it is removed, repaired and reinstalled in a plane. In June, Lufthansa Technik and Lufthansa Technik Logistik completed a four-month pilot with the paper-based application at its headquarters in Hamburg, Germany, as well as at two external maintenance facilities, to gain experience with RFID. In November, the company began rolling out the application at all its German facilities, since it has enabled the firm to significantly speed up the repair-cycle process for components by reducing or eliminating the need for manual data entry.

Once the aircraft components are fitted with permanent RFID tags, the mechanic will use a portable RFID interrogator and computer to read each part's tag directly at the aircraft, then enter information about the steps performed and those that still need to be done. Lufthansa Technik plans to store more than just a unique ID number on the tag—it will also contain the part's so-called birth record, which includes the component's serial number, as well as the name of its manufacturer.

By tagging the documents that accompany components, Lufthansa Technik's staff no longer need collect information about each part manually. Previously, mechanics wrote down, by hand, what was done and what was needed, and workers at the sorting station had to type the information into the computer. Because of this labor-intensive process, it could take several days for a part to be sent to the proper repair shop.

"Thanks to the RFID-tagged documents, we will no longer depend on visual contact to receive the mechanics' disassembly information," Scheferhoff says. "Our future goal is to create same-day logistics with the parts. Precisely, this means that they are removed from the aircraft and arrive at the repair shop within 24 hours."

Lufthansa Technik services more than just Lufthansa planes. It also services the aircraft of other airlines and holds a large stock of spare parts. To implement the RFID application fully, the company will have to tag this extensive pool of components. "We expect for this to take a long time," he says, "since we are talking about a considerably large pool of components which are in permanent circulation."

For the pilot and the rollout of the paper-based application, Lufthansa Technik is using passive EPC UHF smart labels from [UPM Raflatac](#). The tags comply with the EPC Gen 2 air-interface standard. Handhelds, readers and antennas are provided by [Motorola](#).

In conjunction with the above-mentioned project, Lufthansa Technik has set up an RFID program management team to coordinate RFID activities for the Lufthansa Technik group companies. The program manager supports various RFID projects and advises on technology, suppliers and processes to avoid a heterogeneous RFID landscape across the group, and to bundle purchasing activities. The manager also follows technological developments and transfers that knowledge into the group while serving as Lufthansa Technik's representative in the ATA.

For the future, the Lufthansa Technik group plans to integrate RFID in a number of areas, such as cabin maintenance. For instance, RFID could help flight attendants check the expiration dates of life vests,

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seat belts and oxygen generators—tasks that consume a lot of time.

In addition, Lufthansa Technik also expects to use RFID on other internal processes in which bar codes cause problems due to dirt and other environmental conditions. Further upcoming fields of usage include the tagging of tools and special cases containing high-value aircraft components.