RFID JOURNAL
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Lisbon Airport Ups Throughput With RFID Baggage System

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By Rhea Wessel

Oct. 14, 2009—Portugal's Lisbon Airport reports that its new RFID-based baggage-handling system (BHS) reduces the average time to process a transfer bag by at least 66 percent. The system is not backed up by bar-coding technology, making the airport among the world's first to rely entirely on radio frequency identification for tracking transfer bags, according to Sérgio Miranda, the airport's operational manager of baggage terminals.

The RFID application and the BHS with which it is integrated were provided by Lyngsoe Systems of Denmark. Lyngsoe's RFID on Baggage solutions are also implemented at airports in Hong Kong and Milan, Italy (see Airport Says Payback Is in the Bag and Milan's Malpensa Airport Prepares for RFID Baggage Handling).

Lisbon Airport built a new baggage transfer terminal in 2004, Miranda says, but passenger traffic rose significantly by 2007, and some airlines were beginning to complain about delays in the handling of luggage. ("We had manual sorting, one line and one X-ray machine," Miranda explains.) Therefore, the airport performed an extensive process-design review, together with an analysis of the needs of its largest airline customer, TAP Portugal, which operates a hub at the airport.

As a result of the analyses, Lisbon Airport—supported by Lyngsoe Systems—decided to monitor the quality of baggage transfers via RFID, using Lyngsoe's Automatic Baggage Quality Measurement System. Later, at the end of 2008, the airport installed the new RFID-based BHS, which was designed to help the facility deal with increased baggage-handling demand and security requirements, as well as help improve the accuracy of baggage handling.

According to Miranda, many of the bags that Lisbon Airport handles as transfer luggage originate in Africa or South America. Printed tags from these countries, he says, can be of poor quality and difficult to scan with bar-code readers.

The new RFID system involves tagging luggage as it is taken off airplanes and moved to the transfer terminal. If a bag arrives that already carries an RFID tag, Miranda says, the bag is forwarded into the handling system directly. "It happens very often that bags already carry an RFID tag from another airport," he states. "If it's IATA-compliant, we can use it and write on it."

If a bag needs to be tagged, it is sent to a so-called manual encoding station (MES), where a worker reads the flight information and serial number from the bag's bar-coded luggage tag, then writes it onto an RFID tag using a handheld RFID interrogator.

If a worker cannot read the existing bar-code label and write the information to an RFID tag, he or she

manually enters the data into the RFID system, which then moves the bag toward the proper chute for the correct flight.

As the luggage travels along belts that move it through the terminal, the bags' tags are read at six baggage junctions within that terminal. According to Miranda, the system enables Lisbon Airport to divert bags as needed, based on the requirements of security officials. Lisbon airport relies on interrogator antennas provided by Times-7 RFID, a company based in New Zealand. Antony Dixon, Times-7's CEO, says the challenge for RFID technology in a baggage-handling environment is to optimize the field size, or read zone, without using expensive RF shielding and large enclosures. Dixon says Times-7 patented antenna technology provides high performance in a very low profile design and brings important innovations to the challenges of baggage handling.

The airport and its partners fine-tuned the RFID system in 2009, Miranda notes, so the average time to process a transfer bag is now approximately 10 minutes with RFID, with the quantity of baggage-handling errors reduced by as much as 50 percent. Previously, the process could take 30 minutes or more.

Lisbon Airport relies on Bartsch International baggage tags containing UPM Raflatac's ShortDipole EPC Gen 2 inlays made with Impinj's Monza 3 RFID chips.

Ida Wetche, the marketing manager of Lyngsoe's airport division, says minimal training was required for airport workers, since the system does not include any new user interfaces for employees to learn.