

U.N.'s Universal Postal Union Gears Up for Large RFID Pilot

A test involving the postal systems in Qatar, Saudi Arabia and the United Arab Emirates demonstrated RFID's suitability for measuring the performance of mail delivery services.

By Beth Bacheldor

Dec. 10, 2008—Three Middle Eastern countries—Qatar, Saudi Arabia and the United Arab Emirates—joined together in a three-month pilot earlier this year to test the suitability of employing radio frequency identification as a tool for measuring the performance of mail delivery services. The pilot, led by Qatar's General Postal Corp. (Q-Post) and also including Saudi Post and Emirates Post, leveraged both passive EPC Gen 2 tags and active tags placed on approximately 3,120 test letters that circulated among the three nations.

Overseen by the Universal Postal Union (UPU)— a United Nations agency that serves as the primary forum for cooperation between postal organizations around the world—the pilot was designed to determine whether RFID is a viable technology for measuring quality of service as part of the agency's development of an affordable global monitoring system (GMS) covering all UPU members. The GMS will be used to provide precise diagnostic quality-of-service performance results for inbound mail. The UPU's Quality of Service Project Group Steering Committee, of which Q-Post is a member, is spearheading the initiative.

By testing whether RFID technology could perform as needed—that is, if RFID interrogators would be able to read embedded tags most of the time as the letters entered the countries' sorting centers—the postal organizations would know the technology could be deployed to collect performance metrics as mail moves through the postal system. Ultimately, the pilot proved RFID's viability as a technology for measuring the quality of postal services, according to Catina Aghayan, Q-Post's quality and development consultant. Read rates of the RFID tags, she says, averaged 95 percent to 100 percent from March 8, when the test letters began circulating, until June 8, when the pilot concluded.

Postal organizations in several countries have tested—and, in some cases, are currently using—RFID to track their own services. Australia Post began processing RFID-tagged test envelopes in its domestic mail service in 2005, after employing the same technology to track its international mail operations (see Aussies Track Mail Service Via RFID). And in an extensive quality-of-service monitoring project overseen by the International Post Corp. (IPC), RFID-tagged letters are used to track delivery times and identify any bottlenecks or problems that occur in mail service around the world. Launched in 1996, the program has been continuously expanded, and is now one of the largest RFID deployments worldwide, according to the IPC, a cooperative association of 24 postal organizations throughout Europe, North America and Asia-Pacific (see Sealed With a Tag).

With assurances that RFID can serve as a reliable tool, Aghayan says, the postal organizations can leverage the technology to determine how well they perform. "Unless you measure and quantify, you can not improve or fix any problems that occur," she states, adding that RFID technology can be utilized for measuring the mail pipeline in order to discover where the bottlenecks occur.

Locating and alleviating those bottlenecks will become increasingly important, Aghayan says, because the UPU has put forth new guidelines that, by 2010, will tie quality of service to the postal dues that the agency's members pay.

In addition to the three national mail carriers, seven other organizations participated in the pilot. These included Motorola and Lyngsoe Systems, both of which provided RFID interrogators and tags, as well as Trackit Solutions, which handled installation and maintenance, and Quotas, which served as an independent third-party manager for all of the tag and testing data that was compiled.

For the pilot, EPC Gen 2 passive UHF RFID tags from Motorola and active tags from Lyngsoe Systems were inserted into the test letters' envelopes. Lyngsoe's PT23 tags have 32 bytes of programmable memory and a battery life of approximately four and a half years. When a PT23 tag enters a read field, a 125 kHz signal transmitted by an RFID reader activates. When powered up, the tag's processor begins running and uses the 433.92 MHz high-frequency band to transmit the tag's ID to the interrogator. After this occurs, the transponder shuts down and does not reawaken until the transponder enters another read field.

Each passive or active tag was encoded with a unique ID number, Aghayan says. The tags were flexible enough to withstand all mail-handling processes and equipment, including sorting machines, and weighed less than 12 grams. As such, she says, they did not affect postage rates.

Passive readers and antennas from Motorola, along with active interrogators and antennas from Lyngsoe, were installed at the doors or receiving areas of three sorting centers—one each in Doha, Qatar; Dubai, UAE; and Riyadh, Saudi Arabia—through which all inbound international mail must pass. In Doha, a second passive reader from Lyngsoe Systems reads the EPC Gen 2 tags once more. According to Aghayan, the pilot included a combination of reader antennas; some were attached to the sides of doorways using brackets mounted just above ground level, while others were fixed above doorways. In Riyadh, for instance, the Lyngsoe's active-tag reader antennas were mounted on the inside of a doorway, adjacent to an offloading platform and directly above a conveyor system used at the sorting center to transport incoming international mail to X-ray equipment.

Although the pilot illustrated that RFID technology would be a viable tool for the UPU's GMS initiative, there was one period, toward the end of the pilot, in which the performance of the Lyngsoe readers and antennas dropped by about 8 percent. This drop-off, it was determined, was caused because, as outside temperatures rose, nearby doors had been closed to help keep the indoor temperatures cool. Thus, the doors, made of heavy metal, interfered with the equipment.

RELATED_ARTICLES With the RFID project involving Dubai, UAE and Saudi Arabia under its belt, the UPU is now gearing up for a large-scale GMS pilot, set to commence in April 2009, that will involve the deployment of RFID systems in Dubai, UAE and Saudi Arabia, as well as in all other participating countries (a total of 20 initially, with another 30 joining in 2010), and the development of requisite data and analysis programs. The pilot, which will involve integrated testing of the full system, is expected to launch in July 2009, and will provide an opportunity to test the various elements of the GMS system, as well as to introduce necessary adjustments in order to prepare for the 2010 rollout.

Q-Post's Aghayan is scheduled to discuss the three-month trial among Qatar, Saudi Arabia and the UAE at RFID Journal LIVE! Middle East, RFID Journal's first conference in the region. The event will be held on Jan. 5-7, 2009, at the InterContinental Hotel Festival City in Dubai.