

Indian Jeweler Seeks 100 Percent Security From RFID

Hoping to eliminate all shrinkage, Jewelex India is testing a system that uses active tags to track high-value items in real time, while utilizing less expensive passive tags for lower-cost jewelry.

By Claire Swedberg

Dec. 30, 2008—Jewelex India Pvt. Ltd., a jewelry retailer based in Mumbai, India, is completing a four-month pilot of a radio frequency identification system designed to improve inventory tracking and security for products in its stores. The system—which employs passive RFID tags for its less expensive inventory, and active tags for high-value items—is in place at its Opulence store in the Hotel Shangri-La, located in New Delhi.

Developed by Orizin Technologies, the system provides real-time inventory tracking with RFID interrogators installed in the store's ceiling, to take a constant inventory of items bearing active tags, as well as a countertop RFID interrogator to read the passive tags attached to lower-value items.

Jewelex India installed the system to test the technology at one of its stores. If the pilot succeeds in improving inventory tracking and security, the company plans to deploy the solution across all three of its retail locations—two in India, and a third in Dubai.

All jewelry is first tagged as it is placed in cabinets on the sales floor—some with less expensive reusable passive tags, and the high-value items with battery-powered tags. Both tag types employ a proprietary air-interface protocol operating at 865-868 MHz. The passive tags measure approximately 1 inch by a quarter inch, while the active tags are about 1 inch square and a quarter-inch thick. Tags are typically attached to the jewelry using a plastic loop. Each tag is encoded with a unique ID that store personnel can input into a back-end server and link to data regarding that item, according to Prashant Agrawal, Orizin's founder and CEO.

The active tags, with a battery life of about eight months, have a longer read range and do not require inventory to be conducted by employees using such traditional methods as sweeping a handheld reader along the store cabinets, or by installing RFID readers in the cabinets themselves.

With the Orizin system, if anyone attempts to inactivate an active tag, separate the tag from the piece of jewelry to which it is attached, or remove the tagged item from the premises, the system triggers an audible alarm. The software can also detect when an item is moved—such as a piece of jewelry being taken from a cabinet and placed somewhere it does not belong—and send a alert to store personnel.

The reader is typically installed behind a false ceiling, and thus hidden from view. The quantity of interrogators required in a particular store depends on the dimensions of the space it inhabits. "On average, a reader has a scanning zone of around 400 square feet," Agrawal says. "It can scan [the active tags of] all items located within this area if the reader is placed 10 to 15 feet aboveground."

In addition, for security purposes, an interrogator is installed below the floor at the store's exit. If a piece of jewelry bearing an active tag leaves the premises, the reader will capture its ID number, and the system will send an alert to the authorized store manager via e-mail or text message, as well as change the status of the specific item to "missing" in the store's software. In addition, interrogators in the ceiling can be set to scan all active tags at a specific interval. If a tag is not found during a scan, an alert is sent and the system defines its corresponding item as missing.

For less expensive items, the passive tags can be read intermittently with a passive RFID interrogator, by placing a tray of tagged jewelry on the desktop reader. This data is captured and loaded onto the same system via an Ethernet cable to the local area network. The information is then integrated into the store's jewelry inventory management system, Ornate, provided by D'Soft Infotech, located in Ahmedabad.

According to Agrawal, passive tags are more cost-effective than active tags. "Thus," he states, "generally, a store may decide to go for active tags only for highly expensive items, and passive tags for the remaining items. Orizin advises only active technology for foolproof security and inventory for all kinds of items."

When an item is sold, the store's personnel detach and deactivate its tag through the software. The tag can then be reused on another item.

Although the ceiling-mounted interrogators have a long read range, they have been designed so that they can not detect a tag's signal the moment a tagged item passes the exit, thereby triggering an alarm. This function provides an additional layer of security with redundancy to the exit door reader, which also sets off an alarm if an active tag passes through that door.

To enable the ceiling readers to do this, Agrawal notes, Orizin has designed special reader antennas and a patent-pending software algorithm. "We achieved this after rigorous testing," he says.

RELATED_ARTICLES The benefits Jewelex India is seeking are 100 percent security—through tamper-proof and foolproof detection of tagged items passing through the exit—as well as real-time inventory that reduces mistakes and the amount of time the store's staff spends manually checking each item. The company would not comment for this article.

According to Agrawal, the system is commercially available worldwide and can transmit at 915 MHz in the United States.

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