

**Jade Jewellery says it achieves a 400 percent return on investment from its RFID system, used to monitor the movement of goods, evaluate staff sales performance and eliminate shrinkage.**

By Rhea Wessel

Nov. 19, 2008—[Jade Jewellery](#), a Saudi Arabian jewelry company, is employing an EPC Gen 2 RFID system in one of its four stores to help reduce shrinkage, lessen the time required to take inventory, and track the movement of jewelry within its stores. In addition, the retailer uses the system to gather data regarding shoppers' habits, which the company plans to analyze in order to better understand which items appeal to its upscale clientele.

Jade Jewellery, based in the city of Jeddah, is utilizing [Motorola's](#) XR480 RFID interrogators, as well as RFID labels containing EPC Gen 2 inlays from [Alien Technology](#). The specially designed adhesive labels are provided by [William Frick & Co.](#), a U.S.-based label maker.



*Edwin Chikhani*

Jade Jewellery hired [Depco Systems](#) as the project's systems integrator. After Depco tested hardware from three RFID hardware manufacturers over a period of six months, Jade chose Motorola's readers because of their ability to integrate with a wide range of applications, such as the company's ERP system. The complete RFID solution is what Depco calls the Asset Trail—Intelligent Store.

Before RFID was used, the store tracked its inventory either visually or by hand-counting and then compiling information on paper lists. Now, some 2,000 pieces of high-end jewelry are tagged before they are placed into display cabinets at the store, located on Arafat Street, Jeddah's exclusive shopping district.

The application's reusable labels are attached to jewelry via string. When an item is sold, the string is cut to remove the tag. As plans are being made to roll out the system at the three other stores, Jade and Depco are testing prototype EPC Gen 2 tags that promise additional security by deterring employees from cutting the RFID tags off jewelry illicitly. The prototypes use the jewelry's metal as part of the antenna—all jewelry tracked by Jade contains some sort of metal—but Depco's chief operating officer, Edwin Chikhani, declines to reveal how that metal is utilized as part of the antenna. If one of the prototype tags is illicitly or inadvertently cut, he says, the tag is irreparably damaged and an alarm is triggered.

"The fact that an employee could cut the [first-generation] flap tag from the jewelry and take it without the system knowing is problematic," Chikhani says. "The tag would still be functional on the display without jewelry attached to it, and the system would not know the difference. With the new generation of tags, this would be impossible."

The RFID tags carry only an Electronic Product Code (EPC) number. All other information—such as the

jewelry's designer, its price, a description and a picture—is associated with that EPC number in a database. In addition, each employee carries an EPC Gen 2 ID badge.

The system is comprised of six Motorola readers, and roughly 45 interrogator antennas installed inside and outside of 40 glass store displays. Two antennas are located near the door, with two more positioned at the store's safe. The readers and antennas capture the jewelry's tag numbers, as well as those of the employees' ID badges. When a staff member moves close to the displays, the antennas in the displays read that person's badge ID number, and the system begins emitting a low audio sound alerting that employee that the badge has been recognized and identified. At that point, the worker can handle jewelry at a particular case without setting off an alarm. If someone attempts to handle jewelry without a recognized badge, an alarm will sound and an e-mail or SMS will be generated and sent to a store manager.

In addition, antennas are built underneath the velvet-covered mobile viewing trays that employees use to show jewelry to customers. The antennas capture the ID numbers of the RFID-tagged jewelry when the pieces are placed on a tray. The employee has a pre-set time limit for moving jewelry to the viewing tray, Chikhani says; otherwise, an alarm is triggered.

Before the store closes each evening, the staff must use a two-step process to return the jewelry to the safe. The jewelry intended for the safe is placed on a dedicated tray with an embedded antenna, and the items are identified automatically by the system. On a nearby computer screen, a green light flashes next to a picture of each piece of jewelry, confirming its identification. The items are then transported from this tray and placed within the safe, where an antenna captures the tag numbers once more. If any of these tags are detected by any other antenna in the store after this timed step is completed, alarms are triggered. The process is conducted in two stages, Chikhani says, to differentiate between items destined for the safe and those to be viewed briefly by a client.

"All tags are continuously accounted for by the system before the safe door is closed...If any jewelry is picked up by any other reader while in this process," Chikhani notes, "the security alarms are triggered accordingly." In the morning, a similar process is performed when jewelry is moved out of the safe.

The company claims that the application—in operation since January—has already provided it with a 400 percent return on its investment, by reducing internal theft from 1 million Saudi riyals (about \$267,000 annually) to zero so far this year. It has also reduced the time necessary to inventory the entire stock, the company reports, from two to three days to about 10 minutes.

"The ROI was calculated based on the average shrinkage witnessed in the years before, and the investment made by Jade for the RFID system," Chikhani says. "Since its installation, there has been no shrinkage."

The system provides a further benefit, Chikhani adds: Jade can also produce online and printed reports showing managers the movement of goods within the store. For instance, a manager can see the length

of time a certain piece of jewelry was viewed, and combine that information with sales data to better understand which jewelry is viewed, as well as whether those views translate into sales. The reports also help determine which jewelry sells best in which store. Jade may even use this information regarding the movement of goods to award performance bonuses to particular salespeople.

"Clients try on jewelry after they select it, and place it on a viewing tray," Chikhani says. "Asset Trail—Intelligent Store calculates the percentage of time the item is tried on by the client, versus the time it lays still on the tray. These two percentages, and the total time period of the client fitting, give an indication of the efforts exerted by a salesperson to sell an item. The figures can be compared with those from the sales of jewelry to existing customers. Management can then reward salespeople for putting in more effort to close a deal with a new customer."

According to Chikhani, the most difficult part of the application was training employees for the new procedures. "We have placed one of our engineers at the store for training," he says, "since everyone has to comply with the procedures."

Looking forward, Jade Jewelry plans to roll out the system at other stores within the next six months. What's more, Chikhani says, it is considering designing a mobile RFID system that it can utilize at trade fairs and other events outside the store.