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RFID Equipment Manufacturer Uses RFID in Its Own HQ

ITEC, an electronics manufacturing services provider for the RFID and wireless communications industry, is putting its own RFID solution to use at its Nagano manufacturing plant. There, the company is employing it to identify components as they arrive at the manufacturing site for assembly, as well as to

track the locations of staff members, visitors, tools and company cars.

The system, known as I'm Here Model Factory 1.0, features active RFID tags and interrogators engineered by RF Code and manufactured by ITEC, which developed some of the application's software. Although RF Code tags and readers operate at 433 MHz in the United States and Europe, those ITEC is utilizing at its factory operate in the 303 MHz band, in order to comply with Japanese RF regulations, which have set aside 433 MHz for other uses, such as amateur radio.



Roberta
Ohno

ITEC's internal deployment is intended to provide the company with first-hand confirmation that its I'm Here products can produce useful component- and staff-tracking data. Other goals include the ability to know the locations of assets and personnel in real time, and to obtain business analytics in order to gauge trends on the plant floor. The installation began in September 2008 and was completed in approximately three weeks, according to ITEC's business development manager, Roberta Ohno.

The RFID tags, which measure about 2 inches by 1 inch, can either be attached to an asset or plastic file cover to track paperwork, or pinned to a user's clothing. Each tag, encoded with a unique ID number, employs a proprietary air-interface protocol to communicate with the readers.

Prior to implementing the I'm Here system at its corporate headquarters, ITEC utilized a paper-based system to identify

incoming components as shipments were received from third-party suppliers, as well as to verify that its workers had inspected those components. Plant employees then assembled the parts into a variety of electronic products, such as RFID, wireless tour guide, access control and restaurant paging devices.

To deploy the I'm Here system, ITEC installed 12 fixed interrogators at its administrative offices, and eight additional readers on racks, walls and ceilings throughout its two factory sites. In the factory, which includes two buildings totaling 141,000 square feet, the company installed cables to most of the fixed readers. But in several cases in which it was inconvenient to run a cable to an interrogator, the firm installed readers with a Wi-Fi connection. Because ITEC had installed the devices on two separate stories of both buildings, it was necessary to place metal plates behind them on the lower story's ceiling, to ensure radio waves did not penetrate the floor above.

Component vendors attach RF Code tags to cartons containing the components before shipping them. With an RF Code interrogator at ITEC's dock doors, the company has visibility into when the parts arrive. Each item's tag is read as it passes through the door, and inspectors key in their own data indicating the components have been inspected. The information is then transmitted to ITEC's back-end system via a cabled connection. The tagged cartons in which the components arrived are then returned to the vendors, refilled with new parts and shipped back to ITEC.

But the company chose to use the system for more than just verifying the receipt and inspection of components. ITEC also wanted to utilize RFID to locate employees, visitors and customers within its factory, thereby reducing the time and costs related to staff members walking around the facility searching for people. With the I'm Here system, personnel can clip one of 110 badges onto their clothing. Each badge

contains an RFID tag, the unique ID number of which is linked, in ITEC's back-end system, to the name of the person to which it is assigned. With the 20 readers deployed throughout the administrative offices and plant floor, ITEC's management can track the locations of individual personnel and schedule meetings according to real-time data showing which workers are already in a conference room.

By attaching RFID tags on tools and test equipment, ITEC can also better locate these items throughout the plant floor. What's more, by viewing how often a particular tool is brought to that location, the firm can determine whether it needs to purchase more like it.

With regard to company cars, ITEC wanted greater visibility into which vehicles were available at any given time, as well as when they were removed from or returned to the lot. High usage of company cars makes it difficult to know when a specific vehicle is available. Previously, this required a physical check to confirm whether that car was in the parking lot. ITEC installed a fixed RFID reader—with a yagi directional antenna to extend read range—on the outside wall of the building, in order to monitor the parking lot.

Interrogators located within the factory can read tags up to 20 feet away, while the parking lot reader can receive tag signals from a distance of up to 150 feet. With the system, Ohno says, ITEC is able to receive room-level tracking data, with location updates every 5 seconds. The company can analyze the read data with I'm Here software on the Web-based central server. That software, designed by ITEC engineers, offers employees desktop access to the system, to locate critical equipment, measuring devices, or a particular staff member or visitor, or to look up the availability of a specific company car.

"The engineering team designed the software program for usability," Ohno says. "The I'm Here monitor updates location information every 5 seconds, reloading only the changes, not

the whole screen.” In addition, the system enables authorized users, such as an account executive or supervisor, to receive an e-mail notification whenever a staff member or customer arrives at the site. The software also shows usage data for company vehicles or other tools. “This is useful for determining the number of hours it has been in use,” Ohno states, thereby allowing the company to plan maintenance schedules or further purchases accordingly.

Alerts can be triggered when test equipment is not returned to its storage location, or when staff members leave the building or enter a restricted area. The system also sends out alerts via e-mail to the staff when a car is not in the parking lot, so as to keep them updated regarding the number of vehicles still available on the premises for other employees to utilize.

“From a user’s perspective, ITEC has accomplished better management of its resources and assets,” Ohno says. “It takes, literally, seconds to locate someone in the company.” By knowing which individuals are in a staff meeting, employees can better determine whether they should interrupt—for instance, they would not need to disrupt a meeting to deliver a message to someone if they discovered that person was not actually in the conference room.

At present, I’m Here Model Factory 1.0 is commercially available only in the Japanese market. However, Ohno notes, “We have several large government and commercial customers evaluating the system.”



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