

Headaches and Inefficiency, Asset Tracking With RFID Heals Both

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By: Ashley Lange, October 30, 2009



We all know the frustration of losing articles of clothing. From the lost sock in the dryer to a misplaced shirt in the back of the closet, even the smallest of wardrobes lose items. It's a frustration everyone dreads.

Now imagine dreading that frustration a thousand times a day, and you're beginning to understand the feeling Excel Manufacturing wants to avoid at all costs. Excel Manufacturing is headquartered in El Paso, Texas, and is a leading supplier of Air Force Airmen Battle Uniforms, or ABUs. They ship thousands of uniforms to the Air Force daily. While most uniforms arrive in perfect order, the company works hard avoiding even occasional mistakes.

Wireless Painkiller



Excel Manufacturing teamed with SimplyRFID, an RFID Asset Tracking supplier to place a hi-tech tag on every item they produce. These are not just labels, like you pull off the back of your shirt. SimplyRFID makes Radio Frequency Identification labels – RFID Tags, for short. When these RFID tags are affixed to one single item they create a radio signal that allows each item to be tracked and found. With the tags in place, Excel is now able to pinpoint exactly how many items they have produced that hour, where they are and, when they can ship. Their system automatically checks the Air Force order to see if they are ahead of schedule and keeps them on-track to produce the right product on-time.

SimplyRFiD's solution involves their proprietary system called Nox. This system combines high-powered RFID tag readers, high-definition video cameras, an automated software system and millions of item-level RFID tags. Automatically scanning for the RFID tags, Nox identifies and tracks the garments as they move around the manufacturing floor and on to their final destination.

“Before using this technology, we were dependent on tracking by hand, literally using pen and paper,” says Jose Luis Ortega Jr, Vice President of Excel Manufacturing. “With the Nox system, asset tracking becomes valuable information and gives us a competitive edge.”

How does it all work together?

The day-to-day operations of the system are straightforward. The software automatically receives an order from the Department of Defense's VIM-ASAP system. The VIM stands for "Virtual Item Management," and is the Internet-based data storage site where manufacturers like Excel can get access to and download the information about their orders. Once the orders are downloaded, Nox creates an order queue for Excel to produce and tag each garment assigned to that order. Each garment is tracked from the moment it is requested by the Department of Defense until it gets loaded onto pallets and shipped away.



With the SimplyRFiD Nox system on the job, RFID

readers and high-definition video cameras monitor RFID tags attached to each article of clothing at key points along its journey. These key points are the workstation where items are tagged, the packing station, and the dock doors. At each point in the system handheld readers are used by the employees to ensure that all the tags that need to be in place are there. The handhelds can locate 100 garments per second and anything misplaced or left out is immediately brought to the right person's attention. Stationary antennas are also attached in key areas. The

stationary antennas automatically read each order's data as it leaves the warehouse and send it along to the Department of Defense. The Nox system does it automatically. No person has to intervene!

"One of the reasons we are excited about this system is because it is automated," Ortega Jr. says. "This frees up the employees to handle other tasks without having to worry about entering data or sending information to the DoD." Excel's previous system required them to guess how many items they would ship that day and pre-print labels to attach to items. The new Nox system produces tags on-demand as they are needed. In other words: The system adapts to the work in process and makes it more efficient for Excel to manufacture clothing rather than manage their label system.

With Nox, cameras also automatically record each event. A video record of each item's whereabouts is placed into a searchable database which allows the manager of the system to quickly look up each item movement.

"The beauty of the system is its ease of use," says Alice Richmond, vice president of SimplyRFiD. "It's possible to track every single item at every major point in its journey. For example, if there were a concern about an order shipped on August 28th, that date could be typed in to the search box. Immediately all records for that day, including all videos recorded, would appear. It's possible to get even more specific than that. Typing in the ID numbers, or even just the sizes and date, prompts all relevant information and videos to appear", says Richmond.

Nox and RFID

The technological heart of the system is SimplyRFiD's unique asset tracking and security system, Nox. Powerful handheld readers track the tags within its "sight," or radio frequency range. The reader automatically syncs with the software, and places all identifying tag items into the Nox database. Each handheld Nox reader is capable of reading up to 100 RFID tags a second within a 20 foot radius. And, each Nox fixed reader can locate 190 tags per second in a 60 foot area.

"We developed Nox to increase productivity and reliability, so the speed and range of the reader is key." says Richmond.

Other organizations that currently employ Nox-based systems include the FBI, the USDA, the Department of Defense, Computer Sciences Corp and the State of Florida Attorneys office.





In addition to item-level tags on each piece of clothing,

there are smart RFID tags on each pallet and case. These tags meet standing Department of Defense requirements for shipping. They are passive UHF 900 Mhz Gen2 RFID tags, meaning they work without batteries. Passive tags are powered by activating signals sent from the RFID reader. They are significantly cheaper (about 20 cents vs. 20 dollars) than active RFID tags, which have a wider signal range, but must contain their own internal battery. The item-level tags used in this system are Avery Dennison AD223 tags. Avery Dennison tags all undergo rigorous ALT testing, or Accelerated Life Testing, which simulates effects of certain longer term conditions in a shorter testing time period, says James Creel, Business Development Manager for Avery Dennison Corporation. Tests include a bend test and ESD or electro static discharge test. The environmental testing includes thermal cycling and shock, and temperature-humidity testing.

During additional in-situation tests performed on-site by SimplyRFiD, the tags produced 100% accurate readings in one second over 10 tries. Each roll contains 1500 tags, and come pre-hole punched and ready to apply.

In-house tag printing

While it's possible to order pre-made tags from SimplyRFiD, Excel Manufacturing opted for the ability to print their own tags as they needed them. The printers used in this system are three Zebra R110Xi 300DPI printers. SimplyRFiD recommends this high-performance printer because of its reliability and capability to print over one million



tags a month.

“The Zebra R110Xi offers an unprecedented level of on-demand printing flexibility in tag placement printing,” said Carolyn Ricci, senior product manager, RFID, Zebra Technologies. “And with its advanced reader module, it also offers the flexibility needed to guarantee a simple, cost-free upgrade path to emerging RFID protocols.”

The End Result

Before implementing SimplyRFID's Nox solution, human attention to detail was the last line of defense against errors in shipping for Excel Manufacturing. With thousands of items being packed, human fallibility presented a weakness in the system. By installing an automated system capable of accounting for each item, Excel can now focus on the important job of shipping quality uniforms to their clients. The nitty gritty routine job of data entry, tracking, and printing, is handled automatically, without potential for human error. Even more importantly, Excel can use this system to improve upon an already efficient system, creating a better experience for everyone from employees to clients to the soldiers receiving their uniforms.

Nox for DoD was deployed at Excel Manufacturing on October 16, 2009. In the first day, they successfully shipped over 3,000 RFID tagged items with a capacity for 10,000 items per hour.

Excel Manufacturing

Excel Manufacturing is a technologically advanced clothing manufacturer for Department of Defense battle uniforms.

SimplyRFID

Software developer of RFID logistics and asset tracking systems. SimplyRFID deploys over 30 RFID logistics and asset tracking systems every month with over 2,000 customers since 2002.