

Continental Automotive uses an Xterprise RFID system on a Microsoft BizTalk platform to track incoming electronic parts in reusable totes as they pass from third-party logistics providers to the manufacturer.

By Claire Swedberg

Oct. 24, 2008—[Continental Automotive](#) has deployed an RFID system to track its incoming inventory at its 800,000-square-foot manufacturing facility in Huntsville, Al. The global automotive components maker is using radio frequency identification to track reusable containers that pass between the factory's three third-party logistics providers and its manufacturing facility, where parts are received and assembled into interior and power-train components, which are then shipped to automotive companies.

The system, built on a [Microsoft BizTalk Server 2006 R2](#) platform and SQL server, employs [Xterprise Technology's](#) Clarity Automated Goods Receipts (AGR), which manages data regarding inbound raw materials, and Clarity Reusable Transport Items (RTI) software, for tracking reusable totes.



Gokhan Sarpkaya

Continental receives more than 5,000 types of electronic automotive parts, such as transmission controllers, air bag controllers, GPS units, car stereo components and other electrical devices from 158 suppliers, about 80 percent of which are located offshore. Those materials are first received by one of the three third-party logistics service suppliers ([J.I.T. Services](#), [Multitronics VMI](#) or [Span](#)) located within a few miles of the facility. There, the items are unpacked and loaded into reusable plastic containers. These containers are transported to the Continental facility—in some cases, on reusable plastic pallets—where they are then unloaded from trucks and brought into the building by forklift.

Prior to deploying the RFID system, Continental Automotive personnel would scan bar-coded labels on the containers as the items were received. In addition, says the company's logistics project manager, Gokhan Sarpkaya, the logistics service providers sent advance shipping notices that were processed manually by Continental's staff. This process sometimes resulted in advance shipping notices being recorded late.

Therefore, the company sought an automated goods receipt system that would enable it to reduce inventory inaccuracies caused by late advance shipping notices and human error, decrease the long processing time created by scanning each container's bar-coded label, and allow management to track the 80,000 reusable containers, which have a combined value of approximately \$3 million.

The RFID solution has reduced shrinkage and container stockpiling, which had led to excess totes at some sites, and shortages at others. With each RFID read, Continental can track the locations of the containers and the products within them. The new system is expected to increase processing speed by 70 percent, by reducing the time spent reading individual bar codes.

Sarpkaya, who had an interest in RFID and had received [Computing Technology Industry Association \(CompTIA\)](#) RFID certification, began searching for an RFID solution in early 2006. His company started researching 30 RFID systems integrators, reduced the number to five, then selected Xterprise, which had experience with reusable pallets when it provided RFID software and systems integration to [iGPS](#) (see [iGPS Rolls Out RFID-Enabled Plastic Pallets](#)), and which offered an RFID system using Microsoft BizTalk Server, something Continental's corporate IT department sought. BizTalk Server integrates several business workflows required in the receiving, quality-assurance and put-away processes, says Enrique Andaluz, Microsoft's industry market development manager, and also enables real-time messaging across business processes, eliminates errors and reduces manual intervention.

At its factory, Continental fitted five forklift trucks with [Motorola](#) RD500 RFID interrogators. Third-party logistics providers each have a Motorola handheld reader provided by the automotive manufacturer. All reusable containers and pallets are tagged with UHF EPC Gen 2 RFID tags encoded with a unique ID number.

Initially, Continental sends one of its logistics providers a shipping request for specific items. That order is linked to a designated container's ID number in Continental's [SAP](#) ERP system. Employees at the third-party logistics provider pick the items requested, then load them into that particular tote. After the container is filled, its tag is scanned with a handheld interrogator, and the tag's unique ID number is transmitted via a wireless connection over BizTalk Server to the SAP system, using Clarity RTI software.

Once the tote tag is scanned, Continental knows the items are packed in the container and en route. If pallets are used as well, in situations in which a top and bottom pallet will better keep the tote's contents contained, a tag is attached to one of the pallets. That tag is then scanned and linked to the tote's RFID tag.

When the container arrives by truck at Continental's Huntsville facility, a worker uses an RFID-enabled forklift to unload it. During that process, the forklift reader captures the container tag's ID number and transmits it, via a Wi-Fi connection to the Clarity AGR software—which also links the ID number to the materials order—to the SAP system, thus indicating the tote has arrived.

The SAP system stores not only the container data but also the location within the manufacturing facility where that container should be put away—whether in a selected rack or mini-load Automated Storage and Retrieval System (AS/RS). The Clarity AGR software then sends that location information to the forklift interrogator, which displays it on a screen on the forklift for the driver to read. In this way, the driver can save time otherwise spent looking for a location for each container.

When a tote is put away in the mini-load AS/RS, it travels down a conveyor belt and passes an [Alien Technology](#) ALR-9900 Enterprise RFID reader, which captures the container's tag ID number and forwards it to the Clarity RTI software, confirming that the pieces are going into the mini-load AS/RS.

When a container's contents are all used in the assembly of electronic components, the empty tote is then sent to be cleaned and passes another ALR-9900 Enterprise reader. This prompts the system to decommission the container and change its status to empty before it is returned to the third-party logistics provider.

The challenge in this system, according to Rick Koskella, Xterprise's account manager, involved finding RFID tags that would read properly on the plastic containers, which contain carbon fiber, intended to reduce electrostatic charge to the electronics housed within. The fiber, Koskella says, acts similarly to metal, making it difficult to read the tags. To solve the problem, Xterprise utilized [William Frick and Co.](#)'s custom-built tags, that included a layer of foam backing between the tote and the [UPM Raflatac](#) RFID inlay contained within the tag.

Continental Automotive's implementation is the first to use radio frequency identification with MS BizTalk Server 2006 R2, Andaluz says, though he adds, "We have others underway." Six weeks prior to going live, Koskella says, the research team put the system through acceptance testing to ensure every tag is readable. The system now works with a 100 percent read rate, he claims.