

Southeastern Container is leveraging an EPC Gen 2 RFID system to track thousands of bins packed with plastic tubes used to make soda bottles.

By Beth Bacheldor

Mar. 24, 2009—After successfully testing an RFID-enabled system to count the usage cycles of approximately 6,000 plastic bins at its injection-molding facility in Enka, N.C., plastic bottle manufacturer [Southeastern Container](#) is now expanding the system to two other facilities. Ultimately, the company plans to track up to 40,000 of the bins, which are used to transport preformed plastic tubes (or preforms) produced at its injection-molding facilities, to Southeastern Container's blow-molding facilities, where the preforms are then blown into bottles.

The company, a manufacturing co-op handling nearly 70 percent of the U.S. bottle production for [Coca-Cola](#), decided to test radio frequency identification after opting to switch out the cardboard containers it currently uses in favor of specialized, reusable plastic bins.

The cardboard container's design does not fit well in the company's shipping trailers, says John Underwood, Southeastern Container's engineering manager. The containers also take up a lot of space within the warehouse, he adds, because they must be stored assembled. "The bin that we are moving toward provides us some significant economic advantages," Underwood explains. "We will be able to max out the capacity of the trailers when shipping our products, and the bins easily collapse [for storage purposes], so we can maximize the number of empty returns on a trailer." In addition, he notes, the reusable plastic bins have a longer lifecycle.

But the plastic bins are more costly, Underwood says, and Southeastern Container wants to ensure it gets its money's worth by verifying that they last as long as the manufacturer promises. To make that determination, the firm wants to count the number of cycles for which a bin is used to ship loads. "We need to have a very accurate lifecycle count for each bin," Underwood says, "to ensure what the manufacturer has guaranteed is actually what we are getting." Because Southeastern Container did not want to employ a full-time worker to count every bin as it completes a cycle, the company turned to EPC Gen 2 tags, interrogators and antennas.

Working with consulting, implementation and systems integration firm [DecisionPoint Systems](#), Southeastern Container began planning a proof-of-concept pilot approximately one year ago. The implementation went live in early summer 2008. The company affixed the M-Tag, an EPC Gen 2 tag from [Alien Technology](#), to the sides of existing plastic bins the firm had on hand at its Enka injection-molding facility. The RFID tag has an adhesive backing, and is affixed after the bin's surface is heated using a blowtorch (the heat cleans and preps the surface). The tag remains with the bin throughout its lifetime.

A single bin can hold up to 20,000 preforms, Underwood says, depending on their size. When a tagged bin is packed with preforms, a worker applies a bar-code label to identify the type of preforms contained

within. The bin is then moved through an RFID portal containing a [Motorola](#) XR440 industrial-class fixed RFID interrogator and an AN400 RFID antenna. As the portal reads the unique ID number from the bin's RFID tag, an employee utilizes a Motorola MC9090-G mobile computer to scan the bar-code label. [OATSystem](#)' Oat Asset Track middleware correlates the bin tag's ID number with the products as identified by the bar code, and provides a Web service connection to Southeastern Container's ERP system so the tag number and associated products can be fed into the ERP system the company employs to track warehouse and inventory operations.

The bin is then transported to a warehouse and, from there, on to the blow-molding facility. When the bin is emptied, an employee scans the bar code, effectively deleting the record in Southeastern Container's ERP system that correlates the bin's RFID number with the contents contained within.

After making a few tweaks related to antenna positions and adjusting the reader power settings, Underwood reports, Southeastern Container has gotten consistent, accurate tag reads. "We've looked at RFID a couple of times in the past," he states, "but the technology wasn't at a point where we felt it was reliable, and the higher tag costs back then didn't make the technology a good economical decision." Now, he notes, tags cost well under a dollar, and the bins can be read from any orientation.

According to Underwood, DecisionPoint, through its "experience, taking the time to look at all the different RFID equipment that's available out there, and then running tests on several types of readers and tags," was able to provide Southeastern Container with a plug-and-play system that, he says, "has worked pretty much flawlessly."

Now, Southeastern Container is rolling out the RFID system at two additional injection-molding facilities; first in Bowling Green, Ohio, and then in Winchester, Va. The rollouts are expected to launch in the next month, as Southeastern Container begins receiving the new, specially designed reusable containers. The company expects to achieve a positive return on its investment within two years.

Additionally, Southeastern Container also plans to take advantage of other applications that can leverage the RFID tags and interrogators, including tracking outbound shipments of bins as they leave warehouses, then are in transit, received at blow-molding facilities, emptied and returned. "At all those points, we could have RFID portals so we would know, at any given time, where a bin—and, of course, the products the bin contains—is," Underwood states. While no decisions have been made regarding when to add these applications, he says, the company intends to change its ERP system within the 18 months, "and through that process, we have the opportunity to expand our use of RFID. We have no concrete plans at this time, but we probably will take advantage of that opportunity."