

# Belton Industries Tests Tags on Textiles

The South Carolina manufacturer is considering the deployment of RFID technology to track rolls of fabric and streamline its order-fulfillment process.

By Claire Swedberg

Nov. 22, 2007—Belton Industries, a Belton, S.C., textiles manufacturer, has completed a proof-of-concept test of RFID technology for tracking its products as they are loaded onto trucks. The company says it is now studying specific ways it might deploy the technology, and analyzing the costs and benefits.

Belton Industries manufactures specialty woven fabrics made primarily from polypropylene. These fabrics are used in industrial, agricultural, horticultural, environmental, civil engineering and furniture applications. In its factory, Belton produces yarns, weaves them into fabrics and finishes the textiles to meet customer specifications. The fabrics are converted into rolls measuring 3 to 210 inches in width, and stored in the company's warehouse while awaiting shipment. Ultimately, the rolls are loaded onto trucks based on a manual pick-and-pack method. However, this process can be time-consuming and leaves opportunity for human error.

In seeking a better option, Belton Industries opted to conduct a proof-of-concept test using RFID, says Linda Clinkscales, the company's director of information services. It hoped for an automated system that would verify that the correct fabric rolls were loaded onto each truck. The company believed that an RFID system—consisting of an interrogator mounted at the loading dock and tags attached to the fabric rolls—had the potential to accomplish that goal. Initially, however, it needed to determine whether RFID tags would work in its environment, Clinkscales says. Because the fabrics are of a variety of densities, read rates were a concern, since reading through some rolls could be difficult.

Systems integrator Profitable Inventory Control Systems (PICS) designed and deployed the RFID system used in the testing, which took place in September. According to Joe Milam, PICS' director of sales, the test proved RFID labels could be read by RFID antennas mounted on the dock door with labels placed, in some cases, on both ends of the fabric rolls, at a rate of about 58 successful reads out of 60 tags.

For the purpose of the test, Belton placed UPM Raflatac Rafsec EPC Gen 2 RFID labels on the ends of the rolls, wrapped in plastic or other packaging, as they were pulled off the shelves to be shipped. An AWID interrogator with four antennas was set up at the dock door. The antennas were installed with a configuration of two on each side of the door, the lower antennas facing up and the upper antennas facing down—thereby making an X with their RF transmissions.

This configuration, says Milam, enabled Belton to capture RFID tags as the rolls passed through the portal at various heights. As the truck filled up, the forklift operators needed to raise the loads higher as they approached the truck and passed the antennas. They found, however, that they could raise the rolls as much as 8 feet off the floor, and the tags could still be read—in that case, by the lower antennas.

"We wanted to show Belton Industries how the technology would work in their environment," Milam says. "We [installed] the equipment and put RFID labels on the rolls." The equipment consisted of the interrogator

and four antennas, as well as a PC cabled to the reader, though the computer was not connected to Belton's own network. "We just wanted to show how the technology worked—and in the short term, we've proven that."

Several rolls were not readable, Milam says, though he indicates that was due to a specific effort to obtain bad reads. The group attempted to position the tags in such a way that they could not be read, thereby gaining a better understanding of the best tagging practices.

RELATED\_ARTICLES Clinkscales says she was pleased with the results of the test but now must weigh the costs of the deployment, which Milam estimates at about \$30,000 for tags, a reader, antennas, a printer, software and integration. "The next step is to evaluate the payback," Clinkscales says. "I thought the pilot went really well."

If Belton Industries decides to deploy an RFID-based solution, Clinkscales says, the company could employ the system to manage inventory within the warehouse, as well at dock doors. She envisions fixed-position interrogators located around the warehouse, or RFID readers mounted on forklifts that would allow the company to track the location of its products within the facility.

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