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WEGMANS GOES A CUT ABOVE WITH RFID FOR SUPERMARKETS

Challenge

Wegmans Food Markets became one of the first supermarket chains to get involved with RFID—and continues to be one of the most innovative. With more than 70 stores, the Mid-Atlantic chain ran an ambitious pilot to determine if RFID could help get fresh meat to customers faster.

Because meat is expensive and perishable, there is a strong business case for improved tracking. There are many challenges to using RFID to identify meats, including the metal tables, knives and equipment used in preparation; damp air and low temperatures; absorbent packaging materials; and the high moisture content of the product itself.

Wegmans wanted to test RFID's ability to overcome these challenges and designed a proof-of-concept pilot to assess the viability of using EPCglobal Gen 2 RFID technology in meat processing and distribution operations. Wegmans' meat labels are a size that is not widely used, and the company did not want to change legacy processes, so finding RFID smart label media that was consistent with its current label formats was a potential concern.

Solution

Wegmans selected its Meat Manufacturing Center and Meat Distribution Center for use in the pilot since both environments are completely controlled by Wegmans. Large pieces of meat from suppliers are received at the Meat Manufacturing Center, where they are cut and wrapped into retail-ready packages. Six to 12 of these packages are placed into plastic totes, which are later loaded on a pallet. Pallets are shipped to the Meat Distribution Center, and individual totes are sent off to various store locations. The pilot was designed to determine if RFID could reliably identify both totes and pallets at each facility, from the time totes were loaded at production until totes and cases left the distribution center bound for retail stores.

Wegmans' goals and challenging environments produced numerous variables to test. An extensive facility analysis was conducted to determine where RFID reading points should be established. Multiple models of RFID readers from different manufacturers were considered, and various Gen 2-standard RFID inlays were evaluated. Smart label printing/encoding was one variable that Wegmans did not worry about. The company saw no need to evaluate multiple vendors because of the reliability and performance it had experienced from Zebra barcode label printers throughout the years.

"We've never had problems with our Zebra printers," explains Kristen Andersen, Wegmans EPC project manager. "We felt good about using Zebra again for the RFID encoding."



Zebra® R110Xi™ Printer

Customer

Wegmans Food Markets

Industry

Grocery

Challenge

Determine if RFID could improve the processing and distribution of fresh meat to customers.

Zebra Solutions

- Zebra R110Xi printer

Results

- The R110Xi performed at a successful production rate of about 98 percent.
- Read rates ranged from 95 to 98 percent and improved another two to three percent when reader firmware was updated.
- Wegmans gained a lot of experience with the technology and expanded the pilot to test RFID reading on other types of products.



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Wegmans selected VeriSign to design and oversee the six-week pilot, and Zebra served as the labeling and printing specialist.

“The success of a pilot depends on the knowledge of many people,” says Tom Zarley, project manager for VeriSign. “Ensuring that key stakeholders have the opportunity to contribute to planning and design of the pilot and leveraging the experience of technical experts significantly contributed to the breadth of learnings realized in this project.”

One of the first issues they addressed was selecting a label. Most labels with RFID inlays are 4" x 6", but Wegmans wanted smart labels to fit the 3" x 5" format that it already used for including text and barcodes on meat packaging. The uncommon size wasn't all that set Wegmans' smart label needs apart. Meat contains a lot of moisture and is packaged with absorbent material, creating challenging RFID reading conditions. The label material and adhesive also have to withstand cold storage and condensation. Zebra engineers considered all these factors when developing media recommendations.

Wegmans considered eight different inlays from five manufacturers. Based on its experience and testing, Zebra ultimately recommended smart labels featuring inlays from Alien Technology and Omron Electronics.

“Test labs only do so much,” says Andersen. “Zebra came to the site and saw what was needed. They helped us solve our inlay and label problems and helped the pilot get off the ground.”

During the trial, Wegmans used a Zebra R110Xi™ printer/encoder to produce more than 30,000 smart labels, which were applied to totes and pallets at its production facility. Because Wegmans already used Zebra printers for barcode labeling, legacy label

formats were easily converted to support RFID by adding a command line, saving the company the time and expense of developing new RFID label formats from scratch. No unencoded or weak smart labels were applied to totes or pallets because they are automatically checked by the printer/encoder and marked as void to prevent their use.

Results

The combination of carefully chosen media and a Zebra R110Xi printer/encoder produced a successful production rate of about 98 percent. Read rates ranged from 95 to 98 percent, depending on the reader and the operation. During the trial, Wegmans uploaded new software to some readers to update the firmware, which improved read rates two to three percent. Firmware for the Zebra R110Xi can also be updated remotely, but adjustments were not necessary because of the strong performance the printer/encoder provided.

Wegmans designed the pilot to gain experience with RFID and to see if it could be used in meat processing environments. The pilot was successful in meeting those goals. Wegmans gained a lot of experience with the technology and knowledge on selecting equipment, where it should be placed, and the importance of matching smart label media to the application.

“The technology does work and the pilot fulfilled all our expectations,” says Andersen.

The pilot was later expanded so Wegmans could test RFID reading on other types of products. Read rates varied significantly by product and packaging. The testing showed meat is not the hardest product to identify with RFID, and a one-tag-fits-all approach to product labeling will not be successful.



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