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Michigan Households Get RFID-enabled Rewards for Recycling

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An RFID-based incentives system uses EPC Gen 2 tags attached to collection bins, in order to track participation and give out prizes and discounts.

By Mary Catherine O'Connor

Oct. 9, 2009—Rewards for Recycling, a Michigan startup launched by Richfield Management (a waste disposal and collection company in southeast Michigan) is putting RFID to work in a system that delivers incentives—such as discounts at local restaurants or retail stores—to households that recycle their trash. Daniel Garman, the company's sales representative, says that since the firm launched the program six months ago, six towns in the state's Genesee and Oakland counties have adopted the program, amounting to 80,000 participating households.

Rewards for Recycling works by tracking how often a household places its recycling bin at the curb for pickup, and then rewarding that household based on how frequently it does so. Local governments cover the costs of deploying the service in their area, using a special assessment that residents pay for trash collection. The monthly collection fees to participate in the program, Garman says, amount to 75 cents per household. It's up to each local community to either absorb the costs or add them to household collection fees.

The system is based on passive EPC Gen 2 UHF RFID tags. Attached to each of two opposing sides of a recycling bin is an Alien Technology Squiggle tag encased in a rugged, adhesive housing, manufactured by label converter Metalcraft.

A bin's two RFID tags are encoded with the same unique ID number. As a recycling truck drives down a collection route, an Alien ALR-9900 Gen 2 RFID reader mounted inside the vehicle reads the unique ID number of each bin's tag. The interrogator is linked to a touch-screen computer that is mounted inside the cab of the truck and contains a GPS receiver. Universal Tracking Systems, based in Orion, Mich., designed the RFID system and helped Rewards for Recycling deploy it. Universal Tracking also developed the software that collects the tag data from the reader and associates each tag read with the truck's GPS coordinates (and, thus, the nearest household) at the time of the reading. The software uses this data to update each household's recycling history in a central database.

Based on this information, Rewards for Recycling then sends the households discounts or other rewards on behalf of local businesses. In addition, special gift certificates and prizes are placed in a raffle, with households that recycle every week having the greatest chance of winning.

Unlike similar programs, such as RecycleBank (see RFID Helps Reward Consumers for Recycling), Rewards for Recycling does not base its rewards on the quantity of items placed in a recycling bin—rather, its incentives are based on frequency. Households that put their bins out every week earn higher rewards than those who do not. However, Garman says, even households that never recycle receive some small incentives—perhaps just a $1 or $2 discount coupon for a local business—as a means of enticing them to receive greater discounts by recycling.

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Rewards for Recycling targets communities that have historically had very low recycling rates—below the already-low national average of around 25 or 30 percent. According to Garman, the program's efforts are working. "The minimum we've seen is a doubling of the recycling rates," he says. In some places, such as Davidson Township, the rate rose from 18 percent to well over 50 percent after the program was introduced. "The goal is to get everyone who doesn't recycle to start doing it. Right now, it's actually cheaper for these communities to dump everything in the landfill, because there is plenty of space and the commodity prices for recycling are low. But that will change, and when it does, the community will already be in the habit of recycling."

Al Gatt, Universal Tracking's president, says installing and optimizing the RFID readers inside the 14 collection trucks currently involved in the program required some custom engineering—specifically, for the reader antennas. "We had to engineer special [antenna] brackets and bolt them to the outside of the vehicle," he says, "and point the antennas out to the curb. We probably get about 30 feet of read range, consistently."

Initially, the drivers were given handheld RFID interrogators and asked to use them to read the tags attached to the bins. But this solution didn't work, Gatt says. "The handhelds didn't hold up in that environment. The weather here is not an easy thing to deal with—especially in the winter."

Using a GPS receiver as part of the solution, Gatt says, not only enables the system to easily associate each bin with a household, it also provides a means by which local communities will be able to track their fleets of recycling trucks in real time, though a cellular communication module built into each touch-screen computer. "We are going to integrate this with a routing solution that will direct the drivers on the route," he states, while also letting city administrators know where the trucks are, and how fast they are moving.