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October 2014  
Volume 5, Number 10  
[www.wasteadvantagemag.com](http://www.wasteadvantagemag.com)

# WasteAdvantage magazine

The Advantage in the Waste and Recycling Industry

**GREEN STREAM  
RECYCLING:**  
Changing the Recycling  
Process on Long Island

**Incorporating RFID Technology**  
into Your Waste and Recycling Operations

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# Incorporating RFID Technology into Your Waste and Recycling Operations

Although RFID technology implementations do require change amongst an operations team, the benefit of the information these systems can provide far outweighs the changes required. In most instances, the output of these tools tends to lead to more solutions than the hauler or municipality originally intended.

■ By Mark Harvey

Radio frequency identification, or RFID, is a generic term for technologies that use radio waves to automatically identify objects. Introduced to the solid waste and recycling industry in 2005, RFID began replacing barcodes on refuse and recycling carts for the purpose of tracking those assets. Now, RFID technology is incorporated into collection operations as a tool to modernize business practices, improve customer relationships and increase profitability.

Today, RFID labels have become an industry standard for tracking containers and providing collection information to improve operational processes. Ruggedized RFID tags, which are fully encapsulated RFID labels, are also available to the industry. These rugged tags improve durability and longevity of asset tracking, ensuring the cart's data is not lost due to damage of an unprotected RFID label or barcode sticker. The advantages of RFID versus barcodes include:

- RFID readers do not require contact or a direct line of sight to read data from tags
- Numerous RFID tags can be read quickly and at greater distances
- RFID technology works in rain, snow and other harsh environments found in the waste industry

- RFID tags have read/write capability, meaning they can take in new data and store it even after the cart has been deployed in the field, allowing for collection data to be gathered and stored during cart service
- The introduction of RFID-equipped carts and collection trucks to the North American solid waste market is revolutionizing how both waste haulers and municipalities are managing their collection services.



The RFID equipment used in an automated residential collection system. Images courtesy of Cascade Engineering.

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## Case Study



Inland Waste Solutions services the City of Harrison, AR's commercial customers with automated collection vehicles equipped with the RFID technology to read Cascade's metal-compatible rugged RFID tags, installed in the field on commercial dumpsters.

### Challenge

The City of Harrison, Arkansas wanted to eliminate a manually collected, bag-based refuse program, and at the same time introduce single stream recycling. Inland Waste Solutions is passionate about using technology to differentiate their company in the market. The City awarded Inland Waste Solutions the contract to provide refuse and recycling services to residents. The new contract required a complete transformation of the former program, including the implementation of technology (carts, RFID tags, onboard computers, RFID systems, and back office software) on both residential and commercial accounts.

### Solution

Inland Waste Solutions partnered with Cascade Carts Solutions to implement the products, technology and services necessary to put into operation the complete solid waste management system envisioned by City leaders. Within six weeks, the companies were able to provide the City with:

- **Accurate Databases:** Equipped with RFID, Cascade's SmartCarts® and A&D process provided accurate inventory and customer databases for tracking Inland's cart fleet and managing all of the City's customers.
- **Improved Participation:** The city-wide single-stream curbside recycling program provides convenient recycling access to all residents, with participation tracking and reporting enabled through the use of RFID-equipped carts and trucks
- **Service Verification:** Cascade's CapturIT® onboard truck systems combined with SmartCarts and RFID-equipped commercial containers provide residential and commercial collection records to verify collection for each customer, ensuring profitable operations
- **Target Marketing:** Collection and participation data allows the City to efficiently deploy effective target marketing campaigns to improve recycling participation rates

"Cascade's RFID technology, CapturIT® systems, allow us to provide the City with detailed collections data that includes the exact time each customer's container was collected," says Monty Davison of Inland Waste Solutions.



With 75 percent of residents participating in curbside recycling, Harrison's newly RFID-equipped solid waste management system is diverting over 50 tons of refuse per month from the landfill, in its first year of operations alone.

## STS: SINGLE ROTOR SHREDDER

*noun*

i) any of various devices used to shred plastics, tires, wood, metal, etc.

ii) a machine for destroying confidential documents and data by shredding them.

iii) a beast of a machine that shreds everything!



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### Results

In less than 12 months the City of Harrison was able to work with Inland Waste Solutions to set up the infrastructure necessary to transform their refuse program into a sophisticated solid waste management system, complete with a single-stream recycling program and technology-enabled collection services at the residential and commercial levels. Cascade Cart Solutions provided the SmartCarts, smart assembly and delivery services, and CapturIT onboard truck systems to enable a smooth transition into the new system. The new solid waste management system is producing notable results, with more than 75 percent of residents participating in the curbside recycling program and recycling rates steadily increasing. Harrison is now diverting over 50 tons of refuse per month from the landfill in its first year of operations. Target marketing campaigns and the financial incentive to dispose of less waste are expected to drive further increases in residential diversion rates.



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### Benefits of Incorporating RFID into Your Operations

When roll-out carts are equipped with RFID tags, service teams and collection trucks can be outfitted with mobile and fixed RFID readers to collect and write data to that tag, giving history to that asset. The accuracy and accessibility of this information is crucial to maintaining customer accounts and positive revenue growth. The benefits of RFID technology in the waste and recycling industry include:

- Elimination of missed collections and unbilled services
- Improved asset management, reducing capital expenditures
- Increased recycling rates through participation verification
- Target marketing customers in specific zones based on data-driven variables
- Useful information to help manage your customers and increase operational efficiencies

### Evaluating the Right Time to Implement RFID Systems

Haulers and municipalities currently use technology in their operations at different levels of complexity. Some manage their business with complex ERP programs with a professional IT support team, while others operate with basic spreadsheets and homegrown knowledge of their customer base and collection activities. In either case, the first step in implementing any technology product is to map the current process, eliminate waste within the process and decide if technology such as RFID can solve specific problems occurring in your business. Proper evaluation steps involve:

1. Define the problem you are trying to solve (collection verification, live vehicle tracking, route balancing, improved customer satisfaction, communication with residents and revenue assurance are a few examples).
2. Complete an analysis of the current business process associated with that problem and the proposed technology tool that can improve the process.
3. Analyze how these tools will be used, who will use them, and what expected value the technology implementation will generate. What are the realistic goals of the new program? How will you measure success?
4. The municipality or hauler must assign a champion or "super-user" that

understands the tools of the system and can draw value from the technology. This super-user is critical for the success of the program as they act as the trainer within the organization and they drive value of the RFID program within their own team, ensuring the tools are being used each day.

Technology implementations require change, which will challenge old paradigms of how to operate in this industry. As a firm believer in the value of RFID and other technology products, I must stress the fact that RFID, GPS tracking, and software packages are tools and not solutions. The solutions come from the output of these tools, which bring useful information to help solve problems and make you more efficient, safe and profitable in an ever-changing market.

### Maintaining RFID Systems

Once you've decided to implement RFID technology, it's important to maintain that system to ensure your information is as accurate and up-to-date as possible to best inform your operations. As with any technology, regular use and maintenance is important for properly functioning tools. Basic maintenance includes:

- Operations teams interacting with software daily to ensure there are no missing inputs, and timely communication to software providers in the case of questions or errors
- Training maintenance employees proper trouble-shooting methods, having a super-user for the hardware is just as important as having a super-user for the software of a system
- Just as drivers conduct a daily safety check of their vehicle, a daily cart tip test at the yard can confirm proper function of the hardware and software before a route begins

Although RFID technology implementations do require change amongst an operations team, the benefit of the information these systems can provide far outweighs the changes required. In most instances, the output of these tools tends to lead to more solutions than the hauler or municipality originally intended. | **WA**

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