

# Optimizing Waste Collection with RFID



## RFID technology enhances waste management efficiency



### Overview

For waste management solutions providers and systems integrators, focus on efficiency, economy, and traceability is critical. Radio frequency identification (RFID) is a powerful tool for waste collection, disposal, and management, delivering unique and compelling benefits to city governments, waste removal contractors, and their residential and commercial customers. The technology enhances the efficiency of waste management operations, and supports environmentally responsible waste disposal policies and

practices. HID Global is committed to the growth and development of RFID technology in waste management and provides the most robust RFID solutions in the industry.



The industry is large and growing. Private waste management companies in the U.S.—over 15,000 of them—produce combined annual revenue of approximately \$80 billion. Local governments, businesses, and individuals have a common interest in making waste collection and disposal as cost effective as possible.

RFID technology provides significant cost benefits by automating various aspects of the operation including verification of container pick-up, tracking customer usage, and measuring route efficiency. It is essential that the automatic identification technology used in these systems be as complete, effective, and reliable as possible to ensure consistent performance and to fully realize the benefits of the system.

An effective RFID system lets waste removal operators increase service levels to both residential and commercial customers.

- Route optimization improves service and cuts cost.
- Programs like pay-as-you-throw encourage service providers and users to work together to control costs.
- Recycling incentives let providers offer targeted programs to improve utilization.
- The elimination of error-prone manual data entry helps improve efficiency overall.
- Automatic bin identification and data collection make the whole system significantly more reliable, increasing both service levels and billing accuracy.
- And, for specialized waste management applications—corporate document disposal services and medical and toxic waste disposal—the ability to provide optimal levels of security and traceability enhances the value and effectiveness of these services.

## **Implementation of Environmentally Responsible Waste Disposal Policies**

The ability to automatically collect data does more than just lower costs; it improves service in waste disposal operations, and significantly impacts levels of recycling within the community. Today, most local governments are implementing an environmentally responsible waste management policy through recycling. These vary in form, but can target specific recyclables, constituencies, or neighborhoods, and can offer incentives to increase participation. Initially recycling may have been driven by environmental concerns, but over time it has become a matter of good governance and a substantial contributor to profitability. Reliable identification of recycling bins at the time of pickup ensures that material is properly processed, maximizing efficiency and return on investment, and reducing the impact of waste on the environment.

## **Partnering for Implementation**

Effective systems combine best practices with proven hardware—tags and readers—and sophisticated software. HID Global provides the industry's broadest array of tags and readers and works with experienced service providers, systems integrators, and manufacturers to deliver uniquely powerful systems. Strong relationships and experience have made HID a highly sought-after partner in the industry, and our field-proven components are the "glue" that ties tailored, multi-component systems into an effective whole.

## Technology Trends, Products, and Solutions

System solutions for waste management are generally comprised of a variety of hardware and software components depending on the technologies deployed. Traditionally, waste bin data was recorded, if at all, manually by disposal vehicle drivers. This time-consuming, labor-intensive, error-prone process left a great deal to be desired. In some cases, bar codes offered some improvement, but that technology by itself was not robust enough to support industry requirements for quality, reliability, and durability. This drove the adoption of RFID technology in waste management systems, with early concentration in Western Europe. Solutions involved a variety of components including various types of tags, readers, and software. As in any technology, new products and approaches were continually developed to deliver more effective, more efficient, and more reliable solutions.

Today, waste management service providers rely on systems integrators with access to a variety of interoperable software and hardware solutions that can optimize operational efficiency, increase levels of service, control costs, and reduce environmental impact.

## Robustness is Critical

Waste management can be a challenging operation in many ways—weather, rough handling, changing procedures, and even vandalism. A robust system is needed to withstand stresses, wear-and-tear, and change. In short, in such a demanding application, robustness is a critical aspect of any technological solution.

The selection of tags and readers can have a huge impact on the success of a waste management initiative. System integrators, bin manufacturers, and lift manufacturers expect reliability. Every installed tag must work and keep on working. Because unique customer identification is critical, there can be no duplication of ID numbers. Components must be reliable and come with warranties and reliable support.

Users worldwide rely on HID Global for RFID transponders and reader boards. With decades of experience and millions of components in use, and in some of the most demanding applications known, HID Global has demonstrated the knowledge and commitment needed to consistently deliver robust systems and compelling benefits to stakeholders.

Robust Solutions Deliver Stakeholder Benefits		
QUALITY	RELIABILITY	DURABILITY
<ul style="list-style-type: none"> <li>Consistently high levels of out-of-box performance</li> <li>Lean manufacturing principles ensure continuous improvement</li> </ul>	<ul style="list-style-type: none"> <li>Adherence to industry standards ensures interoperability</li> <li>No replication of transponder UIDs or serial numbers</li> <li>No need for line-of-sight detection</li> </ul>	<ul style="list-style-type: none"> <li>Able to withstand extreme environmental stresses</li> <li>Shock resistant</li> <li>Highest out-of-the-box product reliability and performance</li> </ul>

In addition to robust technology, products, and service, the waste management industry demands solid relationships with solution providers. Partnerships among contributors to a solution must be based on mutual trust and a shared focus on customer value.

Effective solutions can be complex, involving hardware, software, people, know-how, training and communication that results in a whole that is far greater than the sum of its parts.

## **HID Global Waste Management Solutions**

HID Global offers transponders suitable for a broad range of operations—residential and commercial bins, medical waste containers, skips, bottle banks, and more—along with reader boards, support services, and years of experience in RFID implementation. Our innovative products are compliant with standards, and are fully interoperable with other standardized components and systems.

With a complete menu of robust RFID transponders, in form factors and frequencies that support the wide variety of applications and technology requirements, HID Global has the right tag and reader board for virtually any waste-related application. An effective solution can include our standard off-the-shelf components as well as custom design services. Every component is backed by our expertise, engineering support, and world-renowned customer service. Each component is designed specifically for the task, providing absolutely unique identification of bins, out-of-the-box reliability, and long life.

With years of experience and literally millions of transponders in use, our product line sets the standard in secure contactless applications worldwide. Our bin tags are among the most widely used in the world. The chip is directly bonded to the antenna for reliable performance and durability, the device is then encapsulated in resin to provide maximum tensile strength and unmatched resistance to weather, shock, and humidity. Designed for installation during the bin manufacturing process, all of our tags can also be easily field-retrofitted to existing bins. This is particularly important for service providers with large investments in existing containers.

Our bin tag is specifically designed for waste management applications, but HID offers an extensive portfolio of tag types to satisfy the wide variety of customer demands. Our ultra-thin Epoxy tags are ideal for curbside boxes or for embedding via plastic injection during manufacture. We also offer on-metal tags that can be screwed or welded, tamper evident RFID seals or plug tags to fit into pre-drilled holes. Our product line includes tags and reader modules that meet ISO standards for low frequency (125 KHz or 134.2 KHz), high frequency (13.56 MHz), and ultra-high frequency (UHF 60-960 MHz) RFID implementations including FDX-b BDE, HDX, EN 14803 and ISO 11785 standards, making HID transponders fully interoperable with system elements that may already be in place.

Reader board modules can be incorporated into hand-held or vehicle-mounted devices, and connected to a variety of controller and host systems. As a trusted single-source component provider and one of the most experienced innovators in the industry, HID Global simplifies purchasing, ensures compatibility of components, and helps control costs and add value for bin manufacturers, system integrators, and operators.

## HID Global Waste Management Solution Selector Guide



Product Name	Bin Tag	InLine Tag	IN Tag/Epoxy Disc	Plug Tag	Seal Tag	OMNIKEY® Multi-tag Reader Core
Application	Screw-in	Screw-on or weld	Encapsulated or screw-on	Plug-in	Integrated cable tie	Embedded
Frequency	125 KHz, 134.2 KHz, 13.56 MHz, 860-960 MHz (Worldwide)	860-960 MHz (Worldwide)	125 KHz, 13.56 MHz	125 KHz, 134.2 KHz	13.36 MHz, 860-960 MHz (Worldwide)	125 KHz, 134.2 KHz

### Why HID Global

#### Experience

HID Global is recognized for its leadership position in the development of secure contactless technology, with over 2 billion transponders in the field.

#### Partnership

HID Global works in partnership with manufacturers and system integrators to develop state-of-the-art systems to meet the most stringent real-world demands.

#### Interoperability

Fully tested, field-proven, economical solutions are fully compatible with the widest range of readers and back-end data systems in the waste management industry.

#### Trust

HID Global is the trusted worldwide leader in solutions for the delivery of secure identity, serving customers over 100 countries worldwide.