

# MANAGING RETURNABLE ASSETS IN MOTION

## RFID FOR RETURNABLE TRANSPORT ITEMS



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## EXECUTIVE SUMMARY

Companies in a wide variety of industries invest substantial capital in their inventories of returnable transport items or RTIs, the durable and reusable cartons, bins, pallets, wheeled trolleys, cages and other containers used to pack and move goods from site to site. Properly managed, RTIs can be a powerful tool to support efficient and sustainable supply chain practices, helping companies to free valuable capital and other resources by reducing the time and money spent to transport goods.

The challenge has been finding an effective way to track and manage RTI asset pools. Units are often used by non-owners with little accountability, so accurate manual audits can be neglected. Shrinkage can reach 25% annually as RTIs are damaged, lost, stockpiled or simply cycled inefficiently. That results in additional purchases and larger-than-optimal inventories just to avoid shortfalls and downtime.

RFID (Radio Frequency Identification) offers an affordable and efficient way to get the greatest value from RTI inventories. Picture this: At a busy bottling plant, cartons of soft drinks just off the line are being quickly loaded into the plastic RTIs that will carry them to a regional distribution center. As the product rolls through the loading dock and onto a truck, the RTI inventory report is automatically updated – recording not only how many units are headed out, but precisely which units they are, which truck will carry them and which distributor will receive them. Yet no one is carrying a clipboard. No one is counting. There are no forms to sign.

RFID tags on each individual unit make it possible to accurately and automatically track its movement, using fixed readers at strategic in-and-out portals at the distribution center or handheld readers for mobile readpoints at remote/customer facilities. Automating the management of these mobile assets means all users can be held accountable for the units that pass through their facilities, so shrinkage and other losses can be curtailed, cycle times can be optimized and RTI inventories can be right-sized and lean.



## THE VALUE OF RTIs –

They come in a kaleidoscope of sizes, shapes and colors. Some routinely cross borders to travel thousands of miles, while others move back and forth along the same short path for years. The vast inventories of returnable transport items – the reusable cartons, bins, pallets, wheeled trolleys and cages that are used to pack and carry goods from site to site around the world or just across the warehouse floor – represent a huge commercial asset. It is safe to say that millions of these “hard workers” are on the move every day, in communities small and large, all around the globe. The fact is, no one is sure just how many are really out there ... and that is precisely the problem.

Returnable transport items or RTIs (also called returnable transport packaging or RTPs) are a commonly used alternative to one-use or disposable packaging. Companies in dozens of industries employ RTIs for two primary reasons: to optimize operations or to support sustainable supply chain practices.

## OPTIMIZING THE SUPPLY CHAIN

RTIs can help a company improve its supply chain operations in a number of ways. The lower total cost of ownership of a durable package that can be easily returned and reused is such an obvious benefit that many users find that alone is enough reason to invest in a fleet of RTIs. For others, using RTIs rather than off-the-shelf cartons is a way to significantly increase productivity; they can choose or even custom design units that are easier to pack, handle and transport, while providing optimal protection for the goods they ship.

In many industries, choosing RTIs over one-use packaging can yield lower operating costs, measured in the ratio of number of trips per cost of package. RTIs also contribute to higher capital use effectiveness, since funds that would otherwise be spent on transport packaging are available for other, more mission-critical business purposes. All of these benefits are well documented and can support a solid business case for using RTIs.

## SUSTAINABLE PRACTICES

More recently, RTIs are attracting attention for the role they can play in creating *sustainable* supply chain practices. Clearly, one aspect of that role is environmental. Choosing to ship product in a reusable plastic crate rather than a disposable cardboard carton, or a returnable metal keg rather than a one-use plastic jug, can mean less waste in landfills and better use of both renewable and non-renewable resources. Such “green” practices not only allow an organization to meet societal expectations, but can potentially lower their total cost of ownership as well.

However, sustainable supply chain practices can also have a compliance component. For example, those involved in the transportation of pharmacy/medical supplies, hazardous materials and food are heavily regulated to guarantee product safety. Regulations often include very specific requirements to ensure,

among other things, that any RTIs used are non-reactive, non-toxic, and can be/are properly cleaned between re-uses to protect their contents and handlers from leaking or contamination.

In some industries, the use of RTIs is mandated and specified by business partners such as the U.S. Department of Defense or large international retailers like Wal-Mart, Tesco and Metro. A recent wave of legislation on packaging waste, a trend that began in Europe but is making its way to North America and other major industrial nations, is also pushing more enterprises to consider the benefits RTIs could offer to their operations.

### THE COSTS OF RTIs

Used properly, RTIs can help your organization save time and money, improve productivity, protect the environment and comply with regulatory and contract requirements. The challenge is proper management because, while RTIs can save money, they also carry their own costs.

First, there is the initial capital investment. More than 1 billion RTIs are estimated to be in use globally<sup>1</sup> and they are not inexpensive; most typically range in price from \$200 to \$5000 per unit<sup>2</sup>, compared to less than \$20 for a single-use corrugated fiberboard container.

The size of the inventory needed for a given operation – and thus the size of the initial investment – depends not only on the volume of goods to be transported, but on how frequently the product or product mix will change. RTIs are available in a nearly unlimited variety of specialized shapes and sizes, including:

- Air cylinders
- Bread racks
- Collapsible crates
- Dollies (rolling quarter pallets)
- Folding plastic security containers
- Kegs
- Liquid intermediate bulk containers
- Meat containers
- Pallets (wooden and plastic)
- Plastic dairy crates
- Returnable product containers
- Rolling cages
- Shelf ready units
- Stillages (racks for kegs or casks)

1 Returnable Transport Items (RTI) Market Opportunity Assessment: Closed Loop Foundations for Open Supply Chain RFID, *ABI Research*, 2007

2 Hanebeck, C. RFID for Returnable Transport Items, *RFID Monthly*, November 2009

### – Totes

For organizations distributing a fairly fixed product line— like a dairy or a postal operation, for example – one or two types and sizes may meet all foreseeable needs. Others may need a design with enough flexibility to adapt to frequent product line changes, such as the seasonal products of a produce distributor. Still others, like the distributor that delivers automotive components ranging from fenders and windshields to spark plugs and shocks to a manufacturing facility, may need to manage an inventory of customized RTIs that includes a variety of very different types and form factors. The more variable the inventory of products that must be moved, the more complex and potentially expensive the RTI fleet will be.

Another cost associated with any durable asset is the ongoing need for repair and maintenance. Ideally, RTIs should be in near-constant movement, which can make it difficult to plan maintenance to damaged units or ensure routine cleaning. Yet proper maintenance is not only smart; in many circumstances it is essential. Food handling is one example; it would be a problem to transport fresh salad greens in the same crate that yesterday held raw meat or cleaning supplies. Hazardous materials handling is another issue; if two otherwise safe chemicals have a violent reaction when they are mixed, an RTI used to transport one must be properly cleaned before it is used for the other.

Any asset inventory will require periodic replenishing as units are damaged, lost or retired, but RTIs in particular can be subject to significant shrinkage. The reasons why are a function of RTI cycling – how they move, who moves them and how the process is managed.

### CYCLING AND RTI SHRINKAGE

According to experts, RTI assets have an annual shrink rate of up to 25%.<sup>3,4,5</sup> The U.S. Postal Service, for instance, estimates it loses about 20% of its plastic pallet inventory every year – at a cost of nearly \$23 each. In spring 2009, the USPS was forced to make a \$30 million emergency purchase just to make certain it had enough inventory to do its job.<sup>6</sup> A survey of the automotive industry found that 14% of annual container budgets are spent just to replace missing RTIs, at a cost of up to \$1.4 billion annually.<sup>7</sup>

The reasons for these tremendous loss levels become more apparent when we look at how RTIs cycle and who participates in the process. While there are many variations in RTI cycle models, they can be considered as belonging to one of three broad categories: closed loop, open loop and pools.

3 Fontanella, J. RFID Reached Its Tipping Point – And No One Noticed, *AMR Research*, 2008

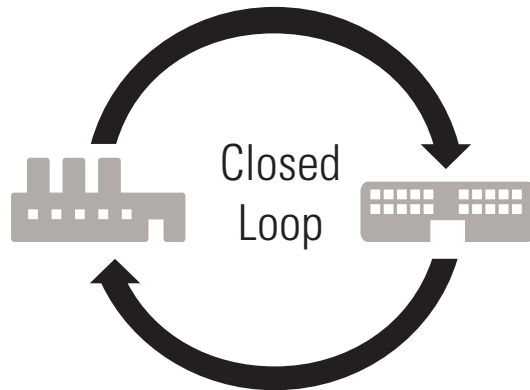
4 McKerrow, D. What makes reusable packaging systems work. *Logistics Information Management*, 1996

5 Breen, L. Give me back my empties, or else! A preliminary analysis of customer compliance in reverse logistics practices. *Management Research News*, 2006

6 Keeping Tabs on Containers, *Asset Management News*, 2009.

7 Mixer, K. Auto and RFID: What's the Roadblock? *AMR Research*, 2005

### The Closed Loop Exchange Model

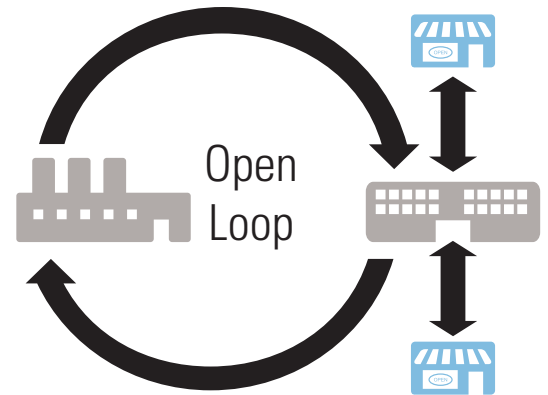


The closed loop model is the simplest cycling system for returnable transport items. RTIs are exchanged between two parties that are members of the same organization – for instance, moving parts from inventory to the manufacturing location. RTIs in a closed loop cycle might remain within a single facility or they may move from one site to another. The supplier is the point of origin for shipped goods, responsible for packing and delivering loaded RTIs, while the receiving site is responsible for returning empty RTIs. The parent entity typically owns the RTI inventory, which is managed by swapping a number of loaded RTIs for an equal number of empty RTIs at each delivery.

#### CHALLENGES OF THE CLOSED LOOP MODEL:

- Systems may not be properly balanced, as RTI units may not be emptied at the same rate as they are filled.
- Suppliers often don't know what RTI inventory is available before they are ready to load.
- Because all RTI traffic and ownership is "internal," proper inventory audits and controls may be seen as low priority.
- The partners are dependent on each other. If one side fails, the system fails.

### The Open Loop Exchange Model



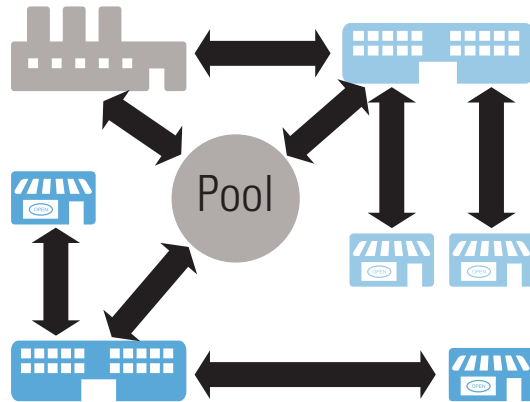
An open loop exchange involves two or more companies who work together as trading partners, as when a manufacturing plant ships to regional distribution centers, which then deliver product to retail customers. The inventory is typically owned by the originating shipper, who depends on regular return of empties through the supply chain.

Management requires a record of the type and quantity of RTIs delivered to each customer and a way to ensure that a like number is returned each trip. RTIs may be marked to help ensure their return, as in the case of branded bottle crates or dairy bins.

#### CHALLENGES OF THE OPEN LOOP MODEL:

- Systems are often not properly balanced, as it can be difficult to get the right number of RTIs returned from end-of-chain users.
- Suppliers often don't know what RTI inventory is available before they are ready to load.
- Producers over-stock RTIs because they fear running out during peak shipping periods. This increases the overall level of inventory and slows down circulation of RTIs.
- Goods recipients may have limited back-of-house space, as in the case of retailers. So they tend to sort, count and store RTIs based not on ownership or cycle times, but by size and color, the way the container folds and stacks, and where it fits. This contributes to "lost" RTIs that are simply misplaced.
- Processes and data are not synchronized between players. This challenges the rapid exchange of information, as well as exchange of RTIs.
- Players are not equally invested in protecting RTI assets. Often, lacking any incentives or systems to encourage timely returns, non-owner customers simply fail to return empties. In retail settings, they may even re-purpose RTIs as temporary display units.

### The Pool Model



In a pooled exchange, a pool operator owns the RTIs that cycle between a number of players. The operator matches RTI quality to the supply chain partners' requirements and quantity to their traffic needs. RTIs can be pooled between a number of customers and manufacturers, with various options for accounting, including:

- **Variable pool** – The operator tracks the volumes of RTIs issued and returned, charging the user per unit circulated.
- **Dynamic pool** – Each supplier is provided a dedicated, often uniquely branded pool of RTIs at a fixed price. There may be additional per-unit charges for special services from the pool operator, such as washing and logistic management.
- **Pool brokerage** – A brokerage can operate as either a variable or dynamic pool. Suppliers are invoiced directly for the RTIs they load, with customers paying a commissioned contribution to operating costs.
- **One way rental** – The pool operator charges suppliers a variable price on a 'per trip' basis, with the operator responsible for collecting empty units after delivery.

#### CHALLENGES OF THE POOL MODEL:

- The pool manager cannot know the condition or availability of assets until receiving and checking them. This makes it difficult to anticipate and prepare for:
  - The number and type of RTIs that will need to be cleaned or repaired
  - Demand-side variations, when a product sees a sudden or seasonal increase in demand
  - Supply-side variations, such as weather-dependent harvests
- All players are independent, so their processes and data are not synchronized and they are not equally invested in protecting RTI assets.

### Challenges Common to All Exchange Models

In addition to the model-specific issues, there are a number of across-the-board challenges that affect RTI asset management:

- Players in any exchange tend to keep RTIs longer than they are needed, resulting in longer cycle times and unnecessarily high inventories.
- Processes for RTI audit and tracking are typically manual, relying on paper documents and prone to error, resulting in poor inventory control.
- RTI tracking is a low priority for most users, since the goods are what is perceived to be important.
- Users often don't understand the cost and value of RTIs. They are often perceived as "cheap" and not worth the effort to track.
- Most systems cannot track individual units through the exchange system. That means there is no way to hold users accountable for units in their possession and loss and damage cannot be charged back to the responsible parties.
- Many companies find it difficult to know how many RTIs they have, let alone know where they all are.

Given how difficult it can be to manage this moving asset, it is small wonder that shrinkage runs so high.



# A BRIGHTER PICTURE WITH RFID

Picture this: At a busy bottling plant, cartons of soft drinks just off the line are being quickly loaded into the plastic RTIs that will carry them to a regional distribution center. As the product rolls through the loading dock and onto a truck, the RTI inventory report is automatically updated – recording not only how many units are headed out, but precisely which units they are, which truck will carry them and which distributor will receive them. Yet no one is carrying a clipboard. No one is counting. There are no forms to sign.

At the distribution center, a forklift off-loads most of the shipment – and while the receiving clerk updates his product inventory, the RTI inventory has already updated itself, recording which units are moving to Warehouse 3. Meanwhile, a local supermarket has placed a late weekend order. So the last 15 units are being loaded into a delivery van for this driver’s last run of the day; the tracking system has already recorded their destination.

Twenty minutes later, in the back lot of the market, the driver loads his hand truck. One quick scan with an RFID handheld reader captures RTI data on all 15 containers. He keys in the store name and sees that he should find 12 empties inside awaiting pickup. But when he drops the full RTIs in the delivery area, he finds only 11 empties stacked and ready to go.

No problem. He pulls out his RFID handheld again and uses a location feature that provides audible and visual cues to lead him right to the missing container, hidden under a stack of broken-down cartons. Another quick scan of the now-complete stack of empties, and he can load up and head for home. Before he pulls off the lot, the RTI asset management system has already received the last dozen pick-ups into inventory ... and scheduled them for loading tomorrow morning.

Welcome to RFID in RTI management.

## HOW RFID CAN IMPROVE RTI MANAGEMENT

RFID is a solution ideally suited to meet the challenges of RTI asset management, enabling the real-time tracking of each individual RTI asset – from the moment it leaves your facility to the moment it is returned, again and again.

Each RTI is equipped with a unique, durable RFID tag that identifies the type and size of the unit, as well as the date it was placed in service and other essential data you need to monitor. Many types of RTIs can be purchased with RFID tags already affixed, or RFID tags can be quickly, reliably and inexpensively applied to existing RTI fleets. RFID tags are available in many form factors, from adhesive-backed tags to tags specifically designed for ideal application and performance on metal RTIs.

Once an RFID-enabled RTI system is in place, information on the tags can be automatically captured whenever the unit is within range of an RFID reader – whether it is a fixed reader located at a warehouse door or loading dock, a mobile reader mounted on a forklift or pallet jack, or a handheld reader carried into a trading partner’s facility for a quick inventory. Error-prone paper processes are replaced with highly accurate data capture processes – including a complete audit trail for regulatory and contractual compliance.

Unlike bar code scanning, RFID does not require line of sight. Multiple tags can be read simultaneously without any human intervention. By completely automating the tracking of RTIs, you get an accurate count of RTIs at any known point in the supply chain, in real time. For some, RFID means greatly improved inventory and tracking accuracy. For others, it can mean having access to inventory data that was never available before because it was simply too costly to generate.

## INDUSTRY APPLICATIONS FOR RFID RTI SYSTEMS

RTI Environment	RFID Application	Value
Convenience store	Producer-to-store level inventory tracking	Improve product turnover and optimize stock levels
Food and beverage	Complete documentation of distribution/shipment, generated automatically	Reduce cost of recalls; enhance regulatory compliance
Manufacturing/production	Inventory visibility	Improve inventory control
Nursery/floral	Scan an entire flat of product without breaking it down to barcode scan each item	Reduce waste and improve inventory turns; collect data without interrupting regular workflow
Postal and courier services	Fully automated scanning/routing of mail and parcels	Reduce costs, errors and tedious human intervention
Waste management/recycling	Automatically records exact time and place of each pick-up	Improved bin/RTI allocation visibility Streamline accounting and customer billing

RFID tracking can identify the route that a damaged or lost RTI has taken and allocate charges accordingly. By providing the precise location of RTIs at any given time, it provides an easy means to identify and shut down shrinkage points within your system. RTI tracking can be integrated with your logistics database for better process control, allowing you to plan maintenance cycles and keep your RTIs on the move, rather than lost somewhere collecting dust.

## MAKING THE BUSINESS CASE

Companies considering adding RFID to their RTI management systems are often primarily concerned with supply chain visibility – tracking the flow of goods on or in the RTIs. However, there is another, perhaps even more promising application – asset management of the pool of RTIs themselves.

Best of all, both supply chain visibility and asset management are well served by adding RFID tracking systems to your RTIs, so you don't need to choose one or the other. RFID-based RTI tracking dovetails nicely with existing bar code product tracking. Because loss and inefficient cycling of expensive RTIs is so costly, asset management provides a quick, easily definable return. So implementing the easier-to-justify asset management business case first can serve as a "toe in the water" to RFID supply chain optimization later.

One study found that a typical project to manage retail distribution returnable transport items pays for itself in just two to three years, with 150% ROI (expressed as net present value) over five years.<sup>8</sup> One U.S. food and beverage company with nine manufacturing facilities reported reducing returnable packaging purchases by nearly 20% after implementing its RFID-driven RTI asset management.<sup>9</sup> As one expert put it, "Cost is often mentioned as a barrier to implement RFID technology, but in introducing RFID to track returnable transport items, cost is not generally a barrier."<sup>10</sup>

## RFID: THE TECHNOLOGY OF CHOICE FOR RTI MANAGEMENT

### VALUE: Asset Management

An RTI asset management system using RFID provides some very clear operational benefits:

- Because RFID is an inexpensive way to tag and track every RTI asset in real time, from the moment the asset enters a facility to the moment it leaves, the entry hurdle is low.
- Unlike bar code scanning, RFID does not require line of sight. It can read multiple tags simultaneously without human intervention. So once the system is set up, the cooperation of non-invested players is no longer a requirement – tracking is automatic.

- Data is automatically captured as soon as the asset comes within read range, completely replacing error-prone manual and paper-based processes.
- RFID not only provides exceptionally accurate real-time asset visibility, but also delivers a complete audit trail – enabling compliance with regulatory and contract requirements.
- With improved RTI visibility, cycling and inventory management can be optimized to reduce costs.
- Organizations can realize a major improvement in accountability and security, including deterrents to theft, careless handling and loss.

### VALUE: Supply Chain Visibility

In addition to improved management of RTIs, adding RFID can also deliver immediately improved supply chain visibility:

- RFID-enabled shipment tracking helps ensure that your products are in the right place at the right time to meet retail and consumer demand.
- Improved visibility helps optimize inventory handling to reduce stock holding at all points in the supply chain.
- Tracking RTIs and the goods they carry without human intervention can reduce inventory pick errors and mis-ships, as well as associated labor costs.
- Returns and recall management are improved with real-time tracking and locating.

### VALUE: Business Process Improvement

As one expert has said, "RFID technology does not itself bring benefits; it is in the interaction with business processes that benefits are attained."<sup>11</sup> The table below outlines some of the process improvements that can be achieved by implementing an RFID solution for RTI asset visibility.<sup>12</sup>

RTI costs	Potential benefits through asset visibility
Investment in RTI fleet	<ul style="list-style-type: none"> <li>• Minimal sizing and configuration of RTI fleet</li> <li>• Increased RTI availability</li> </ul>
Rental charges	<ul style="list-style-type: none"> <li>• Reduced deposits</li> <li>• Decreased rental charges</li> </ul>
Replacement cost	<ul style="list-style-type: none"> <li>• Reduced shrinkage and counterfeiting</li> <li>• Extended use life of RTI through improved maintenance</li> </ul>
Repair and maintenance cost	<ul style="list-style-type: none"> <li>• Enables automatic handling of preventive maintenance</li> <li>• Allows collection of historical repair data</li> </ul>
Transport cost	<ul style="list-style-type: none"> <li>• More efficient staging</li> <li>• Fewer emergency transports</li> <li>• Reduction of erroneous shipments</li> </ul>
Warehousing and handling cost	<ul style="list-style-type: none"> <li>• Decreased use of warehouse space</li> <li>• Enables automatic sorting and handling</li> <li>• Allows automatic cleaning procedures</li> </ul>

8 RFID Benchmark Study: Making Waves: RFID Adoption in Returnable Packaging, LogicaCMG, 2004

9 Lindell, B. Building the Business Case for Reusable Transport Packaging, presentation at Pack Expo International, November 2008

10 Hellstrom, D. The cost and process of implementing RFID technology to manage and control returnable transport items, *International Journal of Logistics Research and Applications*, February 2009

11 Hellstrom (2009)

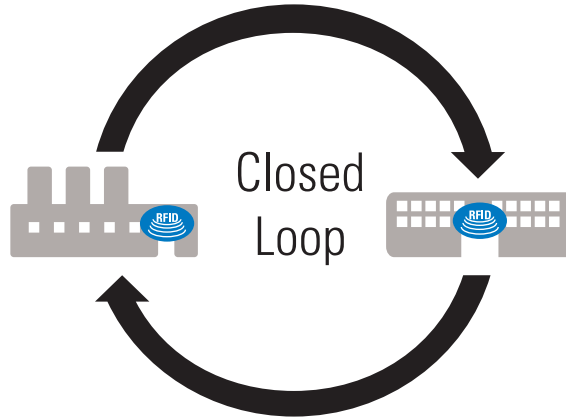
12 Johansson, O. and Hellström M. The Effect of Asset Visibility on Managing Returnable Transport Items. *NOFOMA Conference*, 2007



## RTI CYCLE MODELS – WITH RFID

Let's revisit the three exchange models we looked at earlier to see how RFID can effect change for the better.

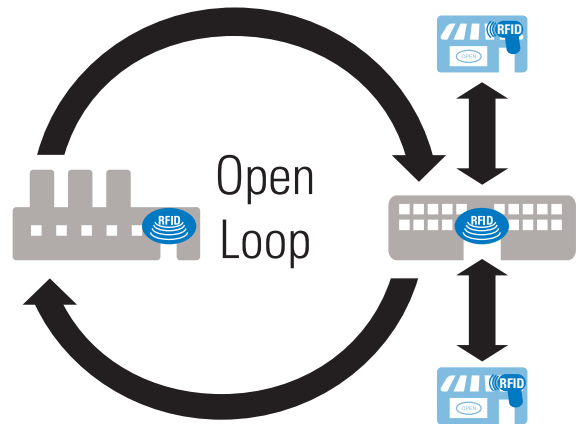
### Closed Loop with RFID



The supplier/owner in a closed loop system can now track:

- RTIs sent by the producer
- RTIs received at distribution center
- RTIs received by carrier; returned by carrier

### Open Loop with RFID



The supplier/owner in an open loop system can now track:

- RTIs sent by RTI provider to producer
- RTIs received at producer; returned by producer
- RTIs received at distribution center; returned from distribution center
- RTIs received at delivery location; returned from delivery location
- RTIs received at packaging center
- RTIs returned to RTI provider

## USE CASE: CLOSED LOOP MODEL HEAVY MANUFACTURER

Freightliner-Western Star Trucks is the leading heavy-duty truck manufacturer in North America. Their Plant Automation team wanted a way to streamline the tracking of parts movement from inventory to the factory floor in the Portland plant. They found it by RFID tagging of its RTIs.

Tote and tug movement is tracked as each passes through one of the two dock door portals equipped with Motorola RFID readers and antennas. A transaction receipt is then automatically generated and sent to the Freightliner supplied SQL database on the corporate server. This receipt details the location, date and time the transaction occurred, as well as the tote and tug information.



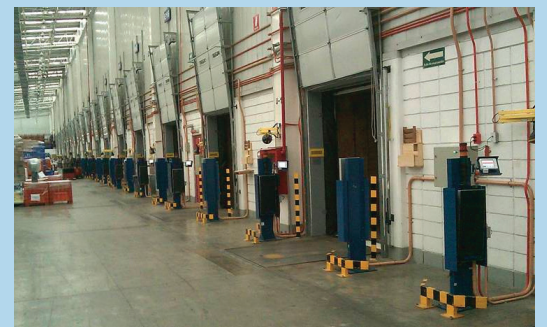
The solution has had a direct return on investment. Labor costs associated with inventory control are down significantly, as are inventory pick errors and mis-ships, and production lines receive timely and correct parts. A roll-out is planned for the rest of Freightliner's North American plants.

## USE CASE: OPEN LOOP MODEL DEPARTMENT STORE CHAIN

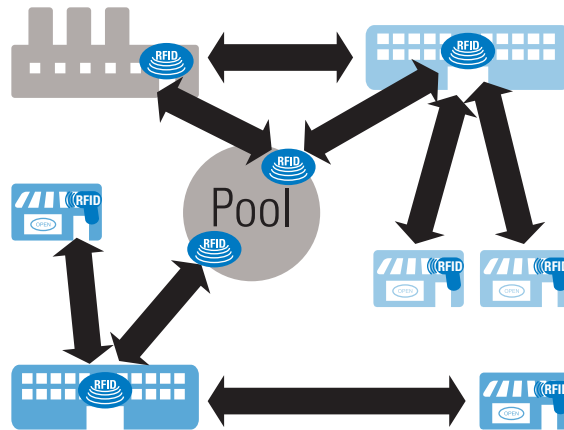
Liverpool, a 76-store Mexican department store chain, started testing RFID of its RTIs back in 2005. Most of its 2,500 suppliers ship product to one of Liverpool's main distribution center in RTIs rented from the company. That made it possible for Liverpool to fully control its rollout of RFID – tagging was handled internally on all 600,000 units, without requiring suppliers to make any changes to their business processes or invest in RFID technology.

Liverpool's initiative meant that 2,300 suppliers were participating in the RTI tracking system since its roll-out in 2007. Liverpool uses its tagged RTIs for both supply chain visibility and RTI asset management; at the distribution center, the tags are read and used to confirm incoming shipments, as well as ready them for distribution to retail stores. Suppliers drop off full cases and take away empty ones.

Recently, the last 200 suppliers, who ship their product in custom one-use cartons, began tagging shipments as well. Liverpool is now able to track 100% of incoming products automatically through Motorola fixed readers installed at more than 25 doors. A company spokesperson says, "We saw important benefits for our operation process. This is the first step towards in-store RFID as well, which will give us better inventory accuracy and increased sales, as well as reducing inventory cost and time."



### Pool with RFID

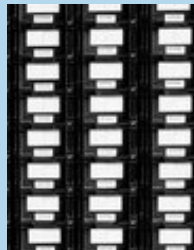


The pool operator can now track:

- RTIs sent by pool to producer
- RTIs received at producer; returned by producer
- RTIs received at distribution center; returned from distribution center
- RTIs received at delivery location; returned from delivery location
- RTIs received at packaging center
- RTIs returned to pool operator

### USE CASE: POOL OPERATOR/LOGISTICS MANAGER

Packaging Logistics Services (PLS) is a British RTI pool operator and broker. After testing the waters with RFID in 2009, the company not only went ahead with plans to track its own assets with RFID – it is also helping its customers across Europe to set up RFID tracking for their own RTI inventories.

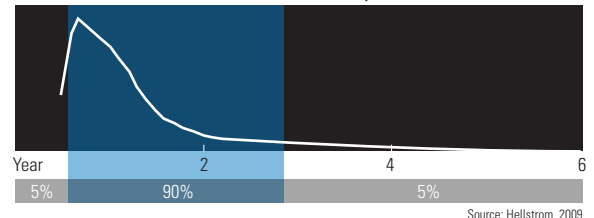


Packaging Logistics owns a pool of nearly 2.5 million containers and pallets, which it leases to European customers. In addition, the firm also manages the RTI inventories of other companies, tracking their shipping, receiving, location and condition, and offering maintenance services such as cleaning and repair. About a year ago, PLS began using RFID on its own fleet of pallets and containers in order to better track the movement of its inventory as it made its way to retailers. The firm quickly realized that RFID tracking enabled the company to better track, service and return its RTI assets, and began to encourage its clients to do the same. Clients will be able to track the location of products they ship by linking retailer orders with specific pallet or container RFID numbers, and reading those labels as the shipments are loaded or unloaded from trucks.

For all three models, the gains with RFID tracking are tangible and quantifiable. One study reported that, conservatively, RFID tracking made it possible to increase the number of monthly round trips for each unit from 3.97x to 4.62x, a 16% improvement.<sup>13</sup> More cycles per unit means lower operating costs, lower RTI inventory and lower total cost of ownership.

Accurate tracking means higher accountability across the supply chain. A case study of implementation of RFID asset management in a global milk and dairy products cooperative based in Europe showed that the company was able to decrease its annual roll container loss by 7.5%, while simultaneously reducing the number of containers needed by 20%.<sup>14</sup> The table below shows how quickly the company was able to recoup its RFID investment – 95% return in just under three years.

### Distribution for RFID Payback Period



### SUMMARY

RTIs can be a beneficial tool in a wide variety of industries. But because they are often under-valued by those who handle them, they can also be subject to high loss and shrinkage levels. RFID offers an affordable and efficient way to keep RTI inventories visible and working. RFID tags on each individual unit make it possible to accurately and automatically track its movement, using fixed readers at strategic in-and-out portals at the distribution center, or handheld readers for mobile readpoints at remote or customer facilities.

Automating the management of these mobile assets means all users can be held accountable for the units that pass through their facilities. That means shrinkage and other losses can be curtailed, cycle times can be optimized and RTI inventories can be right-sized and lean.

<sup>13</sup> Bowman, P., NG, J., Harrison, M., Illic, A. Reusable Asset Management Model, BRIDGE Project, June 2009

<sup>14</sup> Hellstrom (2009)

## WHY MOTOROLA?

You want an RTI asset management solution that works – just **works** – for you, your enterprise and everyone in your supply chain. You want an affordable solution that makes sense. You expect a smooth deployment, a quick payback and ongoing results that prove out the business case you've built.

Motorola's RFID Solutions for RTIs are designed to do just that.

We established our leadership in RFID by helping some of the world's leading companies launch some of the largest, most successful implementations in the industry. Along the way, we established a long list of RFID firsts — including the first commercially available EPC RFID handheld reader, the first EPC RFID portal system and the first EPC RFID mobile reader.

Motorola has the broadest portfolio of RFID readers in the industry, featuring an industrial-class line for durable and rugged operation and a business-class line for carpeted space and customer-facing environments. The portfolio boasts RFID reader form factor options from fixed to handheld to hands-free to mobile.

Whatever your application, whatever your environment, your ideal RFID solution starts with Motorola. Call us to learn more.





[www.motorola.com/rfid](http://www.motorola.com/rfid)

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