Mobile RFID Advantages

RFID In Motion: Don’t Get Caught Standing Still

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RFID Today

Today most manufacturers are at the slap and ship level of deployment. The manufacturer takes a pallet full of goods, breaks it down, applies the tags, re-aggregates the pallets, and ships them to the designated distribution centers and stores subject to the retailer's mandates. Pallet data is captured with fixed RFID readers mounted at specific dock doors in shipping or on conveyors feeding outbound trailers that are used to service that retailer.

The retailer receives the product either at the distribution center or at the stores directly. Product data is captured at the retailer's DC receiving area via dock door mounted readers. At the store level product data is captured via fixed readers as product moves into retail stockrooms and then again, particularly in newer implementations, where the product transitions from the retail stockrooms out onto the sales floor. This enables visibility to compare what's on the sales floor to the point-of-sale information and visibility to what is in the stockroom versus what is out on the sales floor.

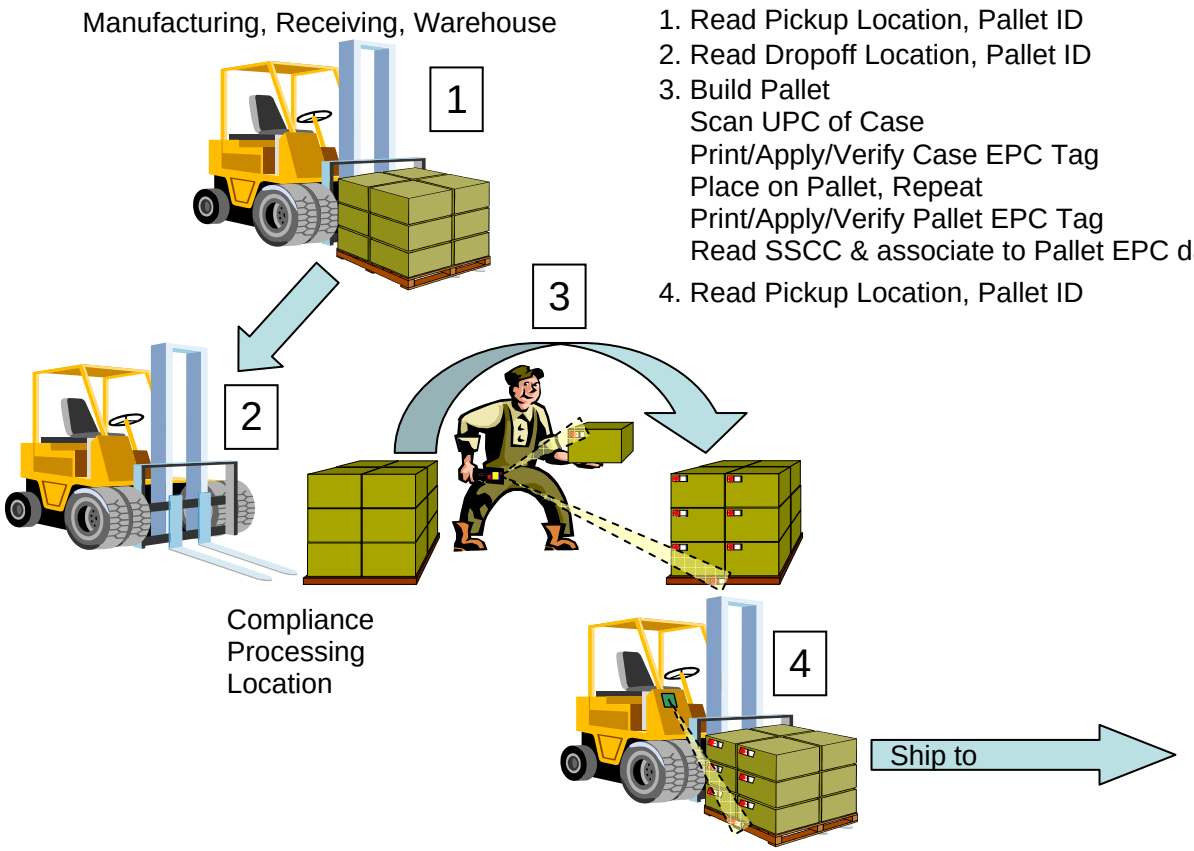
This incremental visibility improves the performance of stocking retail shelving resulting in better demand prediction back through the supply chain and increased revenues for both retailer and supplier via reduction of out-of-stocks (OOS) on the showroom shelves.

The Cost of Slap & Ship

So why is slap and ship so costly to your operations? You start with a pallet that is otherwise ready to ship to the retailer. For compliance you have to tear down the pallet, de-aggregate it, tag it, encode it, re-aggregate onto a pallet and prepare it for shipment to the retailer. All of this represents pure incremental costs beyond the first action. The pallet was otherwise ready to go until you had to implement RFID.

A key to unlocking the ROI from your RFID investment is to get tagging done upstream. Significant incremental benefits can be realized when items are tagged prior to Action 1 in the following graphic.

Compliance: Worst Case



1. Read Pickup Location, Pallet ID
2. Read Dropoff Location, Pallet ID
3. Build Pallet
   Scan UPC of Case
   Print/Apply/Verify Case EPC Tag
   Place on Pallet, Repeat
   Print/Apply/Verify Pallet EPC Tag
   Read SSCC & associate to Pallet EPC data
4. Read Pickup Location, Pallet ID

RFID & Inventory Accuracy

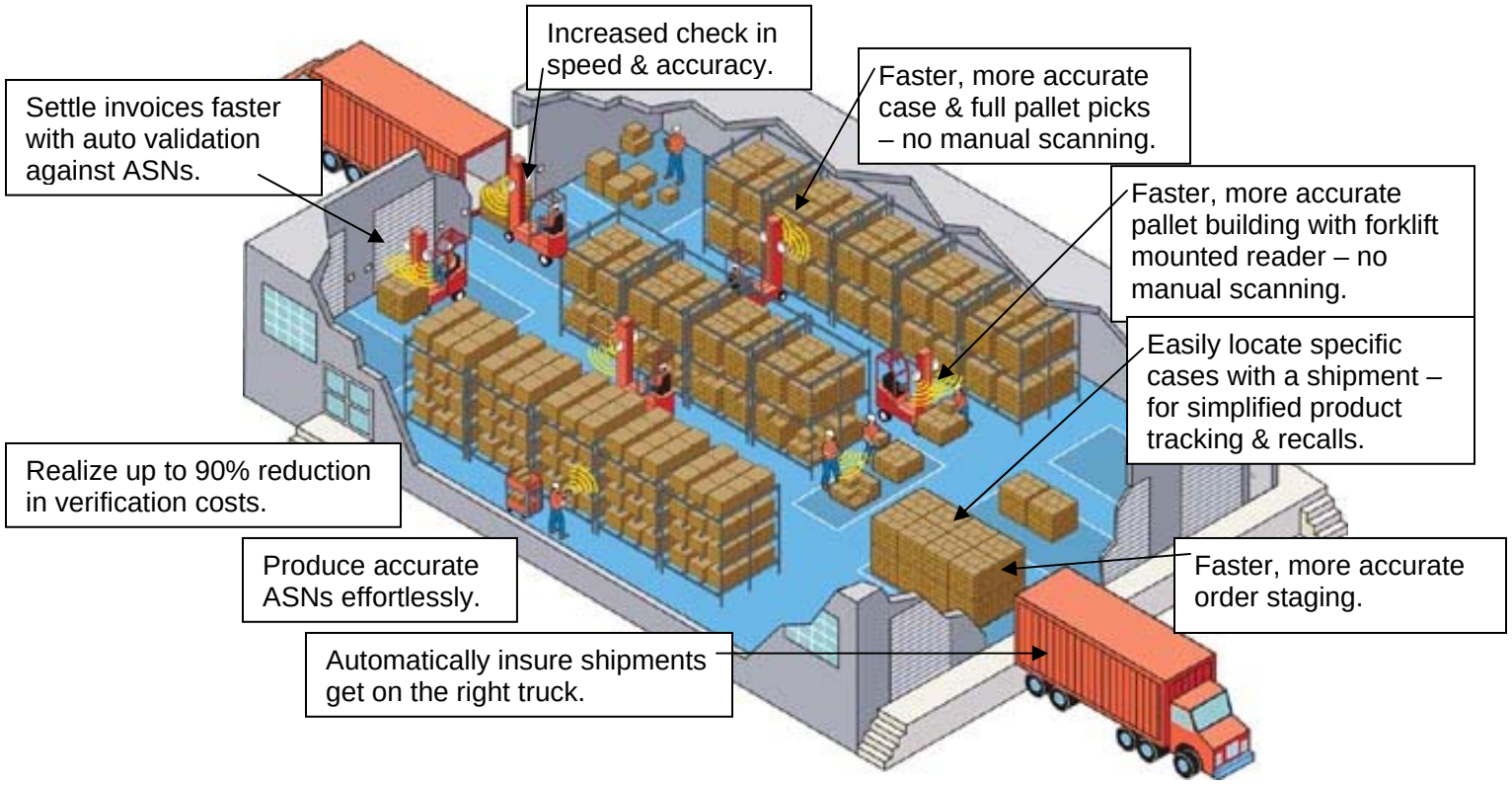
Now, while there is always discussion around RFID and improved accuracies in supply chain operations, we find traditionally that high accuracy levels are attainable using conventional bar-code scanning technology. Warehouses that may run as many as four-million cases at a time achieve cycle count verification accuracies to within one part per million, even with traditional bar codes. Improved accuracy isn't where you are going to find the return you need from RFID…at least not directly.

The real question is what is my current cost of achieving that level of accuracy? A lot of that accuracy is achieved through independent labor intensive verification operations. One study that came out of IBM reveals that 70% of a typical DC's cost is labor. Breaking that labor number down further we find the largest cost component of labor is in shipping (15%-25%), receiving (20%-30%) and picking (40%-50%). A lot of these areas today employ fairly redundant labor expensive methods for QC'ing/validating current movement of material and picking of material. Yes, they are achieving high levels of accuracy, but at a significant cost. How can they achieve these levels of accuracy with better labor efficiencies and better velocity through the system? Tagging inventory upstream with RFID tags and automating your processes via a mobile RFID solution.

Today we spend significant time stopping to scan bar codes. Collectively, over time, we introduce latency in the speed and efficiency with which we are able to move products through the supply chain. If you can remove bar code scanning from an operator's activities and collect the data through RFID, operators become more efficient at moving material and a wealth of efficiencies can be achieved.

What this ultimately means is that if you are going to implement RFID, which represents some incremental costs in terms of product tagging, you'll need to modify your processes to optimize the benefits of RFID. This is not a new concept. We changed processes in warehousing and distribution centers when we moved from paper pick lists to real-time RF based data collection using bar code technology. We will change the way we do things again, because RFID allows us to automate data collection and get better utilization of our facilities, our labor, and achieve better velocity through our warehousing operations. And again the benefits of data collection automation are maximized by moving the tagging and implementation of RFID upstream. This moves the costs of tagging products to points upstream where greater efficiencies of tag programming and application can be realized. It also reduces costs associated with segregating tagged versus non-tagged products.

Over the past several years we've done a deep investigation into the current practices within warehousing and distribution to look at how these practices would benefit from the combination of a mobile RFID solution and tagging "upstream". See below.



Most any internal full pallet move in a warehouse requires two data points - "what have I got" and "where am I putting it/where am I going to get it". These two elements are needed whether it is a movement from manufacturing into storage, storage to a case pick location, a pick location to shipping and receiving, to damage or to cross docking.

Mobile RFID – Shipping & Receiving

If you look specifically at shipping and receiving, these are really just specialized instances of a warehouse move. You still have the same basic data content that you need to capture - "what have I got" and "where is it going/where is it coming from"? Today that is generally done by scanning a bar code on the pallet load that represents the load itself. The location is captured by scanning a bar code over the dock door as you go in or out. The earliest RFID implementations have all focused on a fixed reader placed at the dock door. You capture the "what is it" by reading the content of the pallet for as many tags as you can capture via the RFID reader as the forklift takes the load through the portal. The location element is implied by the network address of the fixed reader itself.

If we look at an alternative solution based on a forklift mounted RFID reader you can still capture the same two data elements; the "what is it" by reading the pallet via the forklift mounted RFID reader and the location by use of a location tag placed in the dock door vicinity. A major advantage of the mobile solution is economical. In a typical warehouse you'd have around 100 dock doors, and those dock doors would be serviced by as few as 10 to 20 different forklifts. In the fixed RFID portal world you'd need 100 fixed RFID readers. In the mobile RFID world you'd only need 10 to 20 mobile RFID readers – a much more economical solution. Furthermore, the mobile RFID readers can be leveraged in other internal warehouse moves where it can generate further improvements in visibility, efficiency and velocity.

Mobile RFID – Case Picking

Case picking is another instance where a mobile RFID solution is beneficial. Today, the bar code for the pallet is available to the forklift operator on a spool. The operator scans the bar code for the pallet and is given his first pick location. The operator goes to it and scans a location or a pallet tag that he is picking from. That validates to the system that he is picking the right product. He is told to pick six cases and put them on the pallet. We hope he has picked six and not five. He hops in the forklift and is assigned the next location and repeats the process until done. At that point the pallet is taken to a shrink-wrap machine and in many cases to an audit station where they check the correct count and SKU for that particular pallet load. At best, if the operator got the count and SKU's correct for that pallet load, you now have a redundant activity at an incremental expense. If he did not get it right, you have to break down the pallet and correct it. The cost of recovery is very high.

Now let's look at this same operation using a mobile RFID reader. You start again with that empty pallet. You are assigned a location and when you get to that location you start picking packages onto the pallet. The RFID reader automatically reads RFID tags for these cases as they are put on the pallet but also takes advantage of RFID serialization capabilities. You now have the ability to actually automatically count the cases as they

are put on the pallet and thus automatically validate that the correct product in the correct quantities is being put on the pallet - as you go. If there is an error and the operator hops on the forklift and says that he's ready for the next location, he'd be informed of the error and corrective action can be taken right there where it is easiest and most cost effective to correct.

So, you are validating the accuracy of the load as you progress and eliminating the requirement for some additional QC checks on the pick. You have a streamlined flow where you do not require any bar coding or any data collection activity on the part of the driver, and you are actually utilizing the driver to the maximum requiring him only to pick up and move the material that you want.

There is a place for both fixed RFID readers and mobile RFID readers in the warehouse. Fixed readers are best suited for conveyor based movement and consolidation points like the stockroom to sales floor transition. Mobile readers are perfect for tracking manual or vehicle based movement of products and goods through your operations.

Mobile RFID Solutions

All of the analysis that we have done on these and many other use case scenarios is certainly not just an academic exercise. We have taken our knowledge and understanding of these different use scenarios to define and develop RFID enabled products. The first of which, the MX3 RFID handheld reader, has been shipping since December 2004. Typical applications for this handheld device have been in use scenarios for verification, exception based handling, damaged pallet and case correction, and slap and ship type of operations. We are starting to see the unit move back into internal operations as well for hand pick to pallet type operations.

The other area of significant development for us is in the development of RFID solutions for forklift operations. As you have seen from several of the earlier use scenarios, a significant amount of material movement and transactions in supply-chain execution and distribution operations are done with a forklift and can be improved with a mobile RFID reader. So, it is LXE's major initiative this year to fully develop a complete set of antenna arrays and a forklift mounted reader for RFID data collection. Typical applications for this device include, as mentioned earlier, shipping, receiving, case & pallet picking and internal warehouse moves - pick up and put away.

The bottom line is that when it comes to RFID, don't get caught standing still. You won't see the returns you want on your RFID investment unless you bring RFID deep into your warehouse. And you can't do that unless you are mobile.

For more information on mobile RFID reader solutions, call us at 1-800-664-4593.

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