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Radio Frequency Identification (RFID) Integration for the Peg-Pérego Corporation

Written by: Rick Raber, CTO - Northern Apex Corporation

Executive Summary

RFID (Radio Frequency Identification) provides vision and clarity into manufacturing, sorting, warehousing and shipping of products. Peg-Pérego, a manufacturer and distributor of children's equipment, including ride-on toys, strollers and high chairs was looking to meet a Wal-Mart mandate that necessitates the use of RFID. The mandate required all Peg-Pérego ride-on toy labels to contain an RFID tag that would enable Peg-Pérego to send Wal-Mart ASN's (advance ship notices). Peg-Pérego manufactures approximately 30 different types of ride-on toys and they sell a high percentage of their products to Wal-Mart.

The use of the RFID label gave Peg-Pérego some additional advantages, including reduced charge-backs, automatic material movements and backflushing of their shipping processes. These advantages also led to a more in-depth RFID deployment with their ConnectShip system and double-sided pack list printer.

"…After the RFID/barcode integrated solution was up and running, …claims from Wal-Mart have decreased over 90%. "

The Mandate

Wal-Mart was requiring many of their top suppliers to RFID tag their boxed items before leaving the manufacturer's facility. The RFID tag enabled the manufacturer to send an automated advance ship notice (ASN) to Wal-Mart, so they would know exactly what was being shipped and would enable them to perform an automated goods receipt and confirm the contents of the shipment.

What is RFID?

RFID stands for Radio Frequency Identification. There are 4 basic components to an RFID system:

- RFID Tag - an RFID tag is a small electronic device that consists of a chip and an antenna. These are 'passive' tags; they are powered by the radio waves from the 'reader antenna' (there are also 'active' tags that have a battery and send out a radio 'beacon' - but they are not used in this type of application). These RFID tags serve as a unique identifier for an object.
- RFID Reader - the reader gathers information from the tag and sends it to your existing network.
- RFID 'Reader antenna' - this antenna is attached to the reader and the electromagnetic energy produced by the antenna (the "radio waves") power up the RFID tag so it can be read.
- RFID Software - sometimes referred to as 'middleware' - drives the data exchange between the RFID equipment and your existing ERP/MRP/SAP (software) systems.

Dock Door RFID Portals

Advantages

While barcode technology improves production in many cases, a barcode reader has to be able to have a clear 'view' of the barcode in order to read the unique identifier. RFID does not require 'line of sight' and can be read from a distance, making it the perfect choice for a large manufacturing and shipping operation. By placing 'RFID readers and antennas' at strategic places along the production process, components are tracked; giving you better visibility into the manufacturing process - from receiving to shipping!

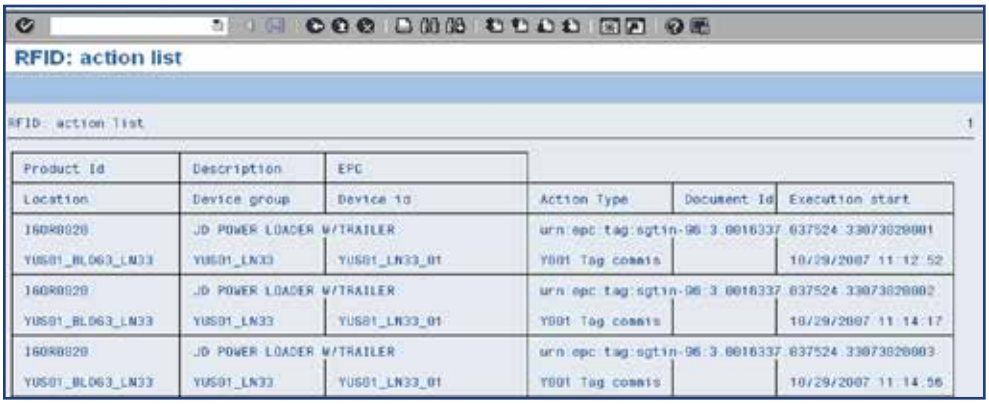
The Solution

Each of Peg-Pérego's product packages have an RFID-enabled label applied at the end of their production line. As the label is applied, the Galaxy RFID software system feeds data into SAP via the Auto ID infrastructure - which allows for an automated backflush of completed assemblies.

RFID Print and Apply Operation and Software Interface

The next step in the process includes RFID-tag verification and a data report to production every 15 minutes. The tags were verified using an RFID reader/antenna combination. Once each tag was verified, the data collected helped produce a finished-goods inventory and a backflush of raw components in Peg-Pérego's SAP software system. This allowed the production management team to know what had been completed and what still needed to be completed; as well as which raw components were still available in inventory.

After identification and verification with the SAP system, the items are then packed onto pallets in fixed quantities and moved onto trailers. As they are moved onto the trailers, the pallets are scanned by the RFID dock door portals and



SAP Integration Screen Shot

Completed Product Being Moved to the Warehouse

confirmed as good/complete or bad/incomplete pallets by product and type. By using the Galaxy RFID system integration with SAP, quantities are validated to ensure there are no duplicates prior to accomplishing a material move between the production facility and the warehouse.

When the pallets arrive at the warehouse, from the intercompany transfer trailers, the pallets of product are again scanned as they move through the warehouse dock doors and the material move is again documented in their SAP system. The outbound shipping conveyor in Peg-Pérego's warehouse is also RFID enabled.

When an order is entered and ready to be pulled for shipping to the customer, the shipping staff scans the barcode integrated within the delivery document and the Galaxy software platform automatically retrieves the shipping information for the delivery from an SAP web service. The Galaxy order fulfillment system prompts the operator to load the order in sequence, meanwhile the software validates quantity and guarantees proper line-item match. The fulfillment record of the completed order is then automatically transmitted back into SAP to facilitate the generation of advance shipping notices (ASN'S) and invoices.

To further streamline the shipping process, Peg-Pérego saw the value of integrating the RFID order fulfillment system, the SAP order based shipping information and ConnectShip, their multi-carrier shipping solution. This integrated feature creates the appropriate carrier's label, notifies UPS or other carrier and freight companies when a shipment needs to be picked up, where it's being sent, and what is included in the shipment.

The most recent enhancement is a double-sided pack list printer that was put in place to alleviate manual folding and stuffing of pack lists. The functionality of the printer has allowed the drop-ship process to be efficiently improved.

Conclusion

The RFID integration into Peg-Pérego's processes has radically increased efficiency and decreased errors, saving them time and money. After the RFID/barcode integrated solution was up and running, mistakes and complaints from customers have decreased dramatically; claims from Wal-Mart have decreased over 90%. In addition to customer complaints decreasing, Peg-Pérego has seen significant savings in over-shipments and missing items. As an example: Wal-Mart would send in a complaint when 5 items were shipped instead of 10 items, but when 15 items were shipped instead of 10 items, there would be no complaint. Not only did these errors cost Peg-Pérego a substantial amount of money, but they also wasted a significant amount of time tracking shipments looking for lost product in the warehouse and throughout the production facilities.

For additional information, please contact Kevin Knuth
260.637.2739 x 105
260.452.6015 Mobile or
kknuth@northernapex.com