Motorola's Manufacturing RFID Solutions

Business Challenges

The case for manufacturing efficiency has never been more important than it is today. Manufacturers are faced with globalization, increased competition and other economic pressures and must continuously look to drive "people" costs down, increase asset utilization and reduce material costs, while at the same time address customers who are demanding faster delivery, better customer service and customized products. Today's manufacturers are looking to RFID to address many of these challenges.

According to AMR Research, early adopters of RFID could cut supply chain costs by 3-5 percent and achieve a 2-7 percent increase in revenue thanks to the better inventory visibility that RFID provides. RFID can impact the entire manufacturing process from receiving raw goods to transferring or shipping finished products by improving inventory visibility to feed just-in-time systems, allowing manufacturers to make faster, better and smarter decisions.[2]

RFID solutions can ultimately help manufacturers reduce operating costs by reducing labor costs, claims and returns, thereby increasing operating income. RFID can reduce working capital by enabling reductions in inventory and lowering inventory write-offs from unsaleables and returns. Manufacturers can also increase revenue by reducing inventory and retail out-of-stocks, improving promotional execution, shrink management and forecast accuracy. On the shop floor, production time can be enhanced, as the flow of raw materials is better aligned to demand and build requirements. Product quality rises as line-sequencing and parts verification applications are implemented, increasing customer satisfaction.

Improving receiving and sortation processes by deploying RFID readers at dock doors allows manufacturers instant verification of the entire contents of a shipment by reading an RFID-tagged case, container or pallet. The content's status and information is updated and automatically communicated to the factory's WMS/ERP system at the point of entry. The contents, now identified, are routed to sortation, then delivered with RFID-enabled material handling equipment, such as forklift trucks, to assembly, put-away or staging and delivery. RFID minimizes human errors and time-consuming steps in the process, increases inventory accuracy and provides real-time information for managers to make accurate decisions.

"Today's manufacturers confront a number of converging events that will transform the consumer product supply chain and make RFID a necessity."[1]

Deloitte Touche Tohmatsu Australia

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For shop floor applications such as work in process (WIP), RFID-tagged raw material and sub-assembly parts are routed and tracked throughout work stations along the assembly line and the entire production process. RFID automates the validation of sequence and components and speeds build times. Customization requirements can be built into the system and validated immediately, eliminating costly reworks. RFID can track the history of the production and finished goods, important information for shipping and possible recalls.

For finished goods shipping out the back door, RFID tags on out-going pallets and containers contain vast amounts of information including contents, product history, origin and destination points, order information and handling instructions. RFID can track 'pedigree' information — where the product is, where it has been, who accepted it and at what stage. It reduces shipping delays by increasing staging accuracy and ensuring the right shipment is on the right outbound truck. RFID allows you to "certify" the shipment. Establishing agreements with trading partners to leverage RFID data as "proof of delivery" can speed the processing of transactions and and significantly reduce claims or returns.

CASE STUDY #1

Purdue Pharma

Purdue Pharma, a pharmaceutical manufacturing company with plants in New Jersey and North Carolina, added RFID labels to bottles of its OxyContin and Palladome pain products to meet Wal-Mart's RFID mandate (a significant retail customer of Purdue Pharma and its wholesale drug partner, HD Smith). Purdue is also deploying RFID in anticipation of new federal and state regulatory requirements to combat counterfeit and stolen drugs, a rapidly growing market, costing the world wide pharmaceutical industry more than $30 billion each year.[3]

Net results from deploying RFID

The RFID tags allow the three companies to track every pharmaceutical shipment and to share product and shipment information. Each bottle, RFID-tagged with its unique EPC identifying number, can be traced through the supply chain from its origin and manufacturing date to its destination shipment point, ensuring product integrity and safety. "We have to identify counterfeit drugs before they penetrate our supply chain, and identify vulnerabilities in our supply chain" said Aaron Graham, vice president and chief security officer at Purdue. Also noting that Purdue may not see an immediate ROI in dollars Aaron further commented..."How do you put a price on patient safety?"[4]

CASE STUDY #2

Boeing

Boeing, an aeronautics manufacturing company, required seven workers (four Boeing employees and three supplier employees) to transfer, unload and manually enter the shipping/receiving data for parts and material shipments at its Auburn, Washington plant.[5] The process required nearly two hours a day, per Boeing employee, to read and record the bar codes from each shipment. It was a labor-intensive process and open to errors.

In September, 2005, Boeing began attaching RFID tags onto carts that hold parts and materials. Each tag carries unique information that lets Boeing know that a pallet has arrived. The incoming goods are placed on the carts and then fork-lifted through receiving doors where tags are automatically read by a reader mounted on the door frame. The information is instantly transmitted to Boeing's warehouse management systems that can automatically generate a wire transfer to the supplier.

Net results from deploying RFID:
Boeing's labor requirement was dramatically reduced from four workers to one (the material supplier also benefits from a labor reduction); the important shipment information is accurately transmitted in seconds instead of hours. Inventory accuracy and visibility are both dramatically improved. Boeing was able to recoup their investment within 6 months, based upon the savings in labor costs alone and is looking to roll out the technology to additional facilities, as well as test RFID to track tools and supplies in some of its other plants. According to Tim Burke, a Boeing program manager, "RFID is a no-brainer."

CASE STUDY #3

National CPG Manufacturer

The following representation outlines how a mid-sized manufacturer of consumer products can use RFID technology to meet the demands of its business applications.[6] Competitive challenges face all manufacturers, and getting the right product to retailers at the right time is critical to meeting the demands of the consumer. Leveraging RFID solutions at its two national distribution centers, this CPG manufacturer with $1M in annual sales, would see significant savings through improvements to stock visibility and accuracy as well as picking and shipping processes. The company was able to reduce stocking levels by practically eliminating the safety-stock required to compensate for retail out-of-stocks, and losses due to theft or misplacement.

Net results from deploying RFID:

- Saved approximately $1.7M by improving shipping/receiving/picking efficiency and accuracy
- Reduced overall inventory at each distribution center delivering an annual savings of $ .5M
- Improved stock visibility, thereby reducing thefts and unsaleable inventory — saving the company over $1M on an annual basis
- Increased sales due to a reduction in out of stocks
- Reduced labor expenses by saving over 50,000 hours annually through process improvements with RFID for delivery verification, inventory checks, counting and error correction data entry, and truck loading

RFID Solutions and Benefits

The process improvements and bottom-line benefits that RFID can provide are significant:

- Improves speed and accuracy for tracking pallets, cartons and containers
- Increases speed and efficiency with fewer errors throughout the entire assembly process
- Helps reduce stock levels and operating costs
- Improves inventory management and provides for more efficient picking operations due to real-time inventory, routing and movement information
- Improves efficiencies for work-in-process (WIP) reporting
- Improves inventory visibility to feed just-in-time (JIT) systems

1- Deloitte Research Study. Radio Frequency Identification: Critical Considerations for Manufacturers
2- AMR Research Inc. ePC/RFID and Its Imminent Effect on the Supply Chain (2002)
3- RFID Journal. www.rfidjournal.com "Pharma Finds Rising RFID Incentives"
4- ComputerWorld. www.computerworld.com "Pharmaceutical, health care firms launch RFID projects
5- BusinessWeek Online. "RFID's Second Wave" August, 2005
6- Case study scenario is based on general industry knowledge and references as well as results generated by using the EPCglobal Auto-ID Calculator

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