

AUTO COMPONENTS SUPPLIER GOES LEAN WITH RFID

**CUTS RECEIVING CYCLE-TIME BY 50%,
CUTS COSTS BY 30%**



You might be excused for getting lost in the Continental Automotive manufacturing facility in Huntsville, Alabama — because that facility covers 850,000 square feet and supports five of Continental's business units. Each day, about eight truckloads of parts arrive here, packaged in reusable containers or pallets. Getting thousands of parts entered into inventory, warehoused, then transferred to the assembly lines where and when they are needed is a critical part of Continental's operations.

It's a massive undertaking ... and it didn't always go smoothly. Bar code scanners were used to check parts in, but damaged tags and mismatched shipping notices often made the process slow and cumbersome. The many manual systems used to store and locate inventory suffered from the typical human errors. As Continental worked toward a leaner manufacturing system, they quickly identified the loss of supplies and containers as an opportunity to save costs and improve just-in-time delivery.

So they began to consider automating their inventory management with RFID.



CUSTOMER PROFILE

Company

- Continental AG
Huntsville, Alabama

Industry

- Manufacturing

Key Results

- Cuts receiving-cycle time by 50%
- Increases accuracy of processes from inventory control to accounting
- Cuts inventory significantly
- Reduced investment cost by 50%
- Enables easy extension to finished goods, shop floor and inventory tracking processes

THE CHALLENGE

Automate the receiving of eight truckloads of parts from 160 suppliers daily to reduce cycle times and costs

Continental Automotive is one of the world's leading suppliers to the automotive industry, employing about 150,000 people in 36 countries. The huge Huntsville plant alone runs thirteen 600-foot assembly lines for two to three shifts per day. Those operations include the manufacture of powertrain components, transmissions, engine controllers, automotive infotainment systems, body controllers, "and a variety of electronics that go into a car," according to Dr. Gokhan Sarpkaya, Project Leader for Logistics at Continental Automotive.

Several years ago, Continental launched its lean-manufacturing initiative, intended to identify ways in which the company could improve its manufacturing processes. As part of that initiative, the plant is converting the existing lines into lean-manufacturing cells. To feed the assembly lines and cells, the Continental facility each day receives eight truckloads containing some 5,000 types of electronic and mechanical parts originating from about 160 manufacturers. Continental receives those supplies directly from its three third-party logistics suppliers, who receive them from the manufacturers.

The logistics suppliers repackage the supplies using one or more of Continental's 80,000 reusable containers or pallets, which are transported to the Continental facility. The personnel who receive the shipments have traditionally used bar-code scanners to check the incoming supplies against the shipping orders in the company's SAP enterprise resource planning (ERP) system, while forklift drivers hunt for available space to randomly store the supplies until they're needed. The containers and pallets are then moved to another on-campus, third-party firm that processes the empty containers and returns them to the logistics suppliers.

In support of its lean-manufacturing initiatives, Continental identified the loss of supplies and containers as an opportunity to save costs. Shrinkage was one result of errors made because the locations of parts were noted manually. Time-consuming delays occurred if the advance-shipping notice sent by the logistics suppliers to Continental failed to match the parts that Continental actually received from those suppliers — or, if the advance-shipping notices failed to arrive in time for Continental to compare them to the shipments. Compounding these issues, it was too easy to damage bar codes on the shipments, which prevented accurate reading by scanners. The manual scanning of bar codes and the manual comparison of

shipping notices to the orders in Continental's SAP ERP system were time-consuming, nonproductive, and expensive processes that were inconsistent with the idea of lean manufacturing. Continental's Sarpkaya and his colleagues had a clear mandate to address the challenges of managing incoming shipments.

Lean strategy drove their decision to come up with a new solution for these processes to decrease the time required to scan bar codes manually, to reduce inventory inaccuracies caused by late shipping notices and human error, and to enable the company to track — and, thus, better manage — its 80,000 shipping containers.

THE SOLUTION

RFID system with Zebra handheld and mobile RFID readers

The company's first step toward that new solution was deciding on the technology on which the solution would be based: radio frequency identification (RFID). "We decided on RFID because we saw that it could support the enormous volumes of incoming components we received each day, because it didn't require unobstructed lines of sight between the RFID tag and the scanner—making it more flexible and practical to use in our facility — and because of its low cost, compared to other technologies," says Sarpkaya.

After determining which technology it would use, Continental refined its solution requirements. "Our number one requirement was integration with our SAP system," says Sarpkaya. "Any application under our roof must get along well with SAP."

Another crucial requirement was the ability to transfer data between the Huntsville facility and the third-party logistics providers. Beyond that, the company decided the new solution would have to direct the placement of incoming shipments within the facility, so that components could always be located when needed. It also would have to include a range of hardware elements to support RFID — including handheld scanners for the company and its logistics partners, and forklift-based readers for the Continental site — and would have to implement File Transfer Protocol and wireless technology. After an extensive search, Continental decided to adopt a receiving solution from Xterprise, a Microsoft® Gold Certified Partner. The solution is based on the Microsoft BizTalk® RFID technology platform, along with Xterprise application software and Zebra hardware. Continental chose Xterprise based on its track record with RFID, SAP integration, and reusable pallets, as well as its expertise on the Microsoft application platform. "We were already a Microsoft shop, so the choice of a Microsoft-based solution was the fastest, easiest, and most cost-effective way to deploy and maintain a solution in our environment," says Sarpkaya.

KEY SYSTEM COMPONENTS

Zebra products

- Zebra RD5000 RFID mobile reader
- Zebra MC9090-G RFID handheld reader
- Zebra AP-5131 access point

Applications

- Inventory receiving and tracking

To make that solution possible, Continental deployed Zebra RFID scanners at its own facility and at those of its third-party logistics suppliers and container processor. The external companies use handheld scanners; Continental workers use both handheld and forklift-based scanners. Each reusable container or pallet has an RFID tag with a unique ID.

The solution has enabled Continental to reengineer and streamline its receiving processes. Those processes include the following:

1. Continental initiates a shipping request to a logistics partner from its SAP ERP system, using an EDI (Electronic Data Interchange) 862 message. The request is associated with a specific container or pallet identifier.
2. The logistics partner fulfills the request, putting the requested components into the associated container or pallet. The partner scans the RFID tag, and the information is sent to Continental as an advance shipping notice, using an EDI 856 message.
3. At Continental, Xterprise Clarity RTI (Reusable Transport Items) software automates the workflow associated with the incoming shipping notification, using Microsoft SQL Server® 2005 data management software as its database. Microsoft BizTalk Server 2006 R2 acts as a translator or bridge between Clarity RTI and the SAP ERP system, and forwards the Clarity RTI information to SAP.
4. Continental workers unload the incoming shipments. RFID scanners on the forklifts automatically read the tag numbers. Xterprise Clarity AGR (Automated Goods Receipt) software confirms that the received shipment matches the original shipment request and forwards that information to the SAP system — again, with BizTalk Server acting as a translator between them. SAP identifies a storage location for the shipment.
5. All information now residing in the ERP system is made available to Finance to perform a three-way match of the purchase order, shipping notice, and received goods.
6. The Clarity AGR software receives the storage information from SAP, through BizTalk Server, and transmits it to a screen on the forklift. The driver moves the shipment to the identified location.
7. Empty containers and pallets are sent to the third-party processing company, tracked by another RFID scanner, and forwarded to the logistics partners to be used again. Continental and Xterprise developed and deployed the solution over six months, and it went into production in October 2008.

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Gokhan Sarpkaya, Project Leader for Logistics, Continental Automotive



THE RESULTS

Cuts the time for the parts receiving cycle by 50%

Continental wanted to reduce waste such as the time and cost to receive and handle incoming shipments. The solution has met those goals, according to Sarpkaya. The receiving-cycle time has been cut in half — saving 20 minutes per incoming shipment. The costs associated with that process have been slashed by 30%.

Given those reductions, Sarpkaya anticipates an annual return on investment of about 100%. Some of those savings come from increased labor productivity. Before Continental implemented the new solution, incoming shipments were received by two workers — one operator who scanned the bar codes and logged the shipments into the SAP system, and a forklift driver who looked for, and placed the shipment in, a storage location. The new solution automates the scanning and logging of the shipment, enabling the forklift driver to manage the process without additional effort. In addition, advance-shipping notices from the logistics partners no longer arrive late at Continental, eliminating the need for company personnel to manually confirm that incoming shipments match the goods released by those partners.

“By adopting the RFID solution, we’ve done more than improve the receiving-cycle time and cost,” says Sarpkaya. “We’ve also freed personnel to work on other parts of our lean-manufacturing initiative, multiplying the impact of the solution on Continental.”

Increases accuracy of processes from inventory control to accounting

The receiving cycle is not only faster and more cost-effective, according to Sarpkaya, it's more accurate and effective, as well. Errors due to manual data entry have been eliminated, boosting the accuracy of a variety of processes, from inventory control to accounts payable.

"We now have greater visibility into our inventory and flow of materials," says Sarpkaya. "That gives us the potential to reduce on-hand inventory and the costs associated with that inventory. We envision inventory costs coming down significantly. We're already seeing reductions in shrinkage, which means reduction in cost."

Management of the company's 80,000 reusable containers and pallets is also improved. For the first time, Continental now knows where its containers and pallets are at all times. That gives it more accurate data for cost-accounting purposes and reduces the money spent annually to replace lost containers.

Reduced investment cost by 50%

In addition to the continuing savings resulting from more efficient operations, Continental saw immediate purchasing savings by choosing the Xterprise and Microsoft solution instead of a proprietary, UNIX-based solution. Sarpkaya estimates the one-time savings at about 50%. "Because this solution is based on the Microsoft application platform, especially BizTalk Server, it was faster and less costly to deploy than any other RFID solution we considered," says Sarpkaya. "We used BizTalk Server to speed the integration of the solution with our SAP system, which could have been a far more costly and time consuming process otherwise." The eight-month development and deployment schedule promised by Xterprise was ambitious enough, says Sarpkaya — but Xterprise managed to beat that schedule by at least two months. "We were able to adopt the Xterprise and Microsoft solution so easily that there was no need for a proof of concept," he says.

Enables easy extension to finished goods, shop floor and item-tracking processes

Acceptance of the solution by Continental employees was quick and enthusiastic, says Sarpkaya. "Once our people saw how the solution could help them to work more easily and more productively, they responded very positively," he says. Employees also have been quick to suggest additional ways that the RFID technology could be deployed at Continental — and Sarpkaya says that the use of the Microsoft application platform makes those extensions easy to contemplate. For example, beyond tracking incoming shipments, the solution could be extended to track the company's finished goods shipments to its customers, the major automotive manufacturers.

The same solution infrastructure could be deployed on the shop floor to track components and monitor the manufacturing process. Sarpkaya also envisions enhancements to the already successful receiving application. "We're now tracking at the pallet and case level," he notes. "The next logical step would be to track each component or item as it comes into our facility. That would provide granular visibility and management of incoming shipments and inventory."

About our partners

Xterprise Incorporated is a leader in RFID Item-Level inventory management and in the development of enterprise-class software applications for the retail market. These highly scalable applications combine the Clarity™ application framework technology, Microsoft platform technology, continuous improvement and lean supply chain expertise, enterprise systems integration along with RFID to deliver previously unachievable levels of value to their clients. Xterprise's applications deliver rapid ROI for the retail market.

Microsoft-based solutions offer much-needed value to



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manufacturers, who are under increasing pressure to generate greater returns on the assets that they have employed. This focus on efficiency scales across all the critical functional areas—from getting products to market faster to streamlining the supply chain, optimizing the manufacturing operations, and generating new revenue streams. For more information about Microsoft solutions for the manufacturing industry, go to: www.microsoft.com/enterprise/industry

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