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# Adding RFID to Ford's Supply Chain

There are no mandates for using radio frequency identification in the automotive industry today, as there are in retail with Wal-Mart, or with the government and the Department of Defense. While the automotive sector has been using RFID successfully in production processes for some time now, the

use of it elsewhere in the supply chain has been slow in coming—until now.

In 2005, TNT Logistics North America launched an RFID initiative designed to help its automotive customers automate workflow, provide real-time visibility, reduce inventory and prevent business interruption in their complex supply chains. The initiative was piloted with Ford Motor Co.'s F150 truck assembly plant in Dearborn, Mich.



TNT Logistics North America is part of a global logistics company that designs, implements and operates complex supply chain solutions on a national, regional or global scale for midsize to large enterprises. Its goal with the RFID program was to contribute to the success of Ford and other suppliers by embracing new technology and developing innovative, value-added services.

As part of the Ford/TNT initiative, active (battery-powered) RFID tags and a network of wireless locating sensors supplied by WhereNet have been set up to provide real-time location and status information for thousands of mobile racks shared between the assembly plant and TNT's North American material-sequencing center (MSC). The center is a 375,000-square-foot facility that receives, picks, packs and ships parts to the Ford F150 assembly plant. The parts are sequenced into custom-designed racks and ready for delivery to the plant for immediate installation on vehicles moving down the assembly line. Devices located at MSC's dock doors trigger the active

RFID tags to identify the dock door, trailer number and load ID when a rack filled with parts is loaded onto a truck bound for the Ford assembly plant. Through this automatic data-collection process, utilizing RFID technology, the system confirms the load has been built, and validates its ready-to-ship status. The system even triggers an advance shipping notice (ASN) so the factory knows what material is en route.

Additional steps in the initiative include automated gate-arrival, load and unload validation, rack traceability and real-time location system (RTLS) alerts to improve communications between the MSC and the assembly plant. To help prevent interruptions and manual interventions in the automotive supply chain process, these business events are fulfilled using Tibco Software's complex business-event processing and real-time visibility software.

When deployed by all the participants in Ford's supply chain, the system will provide real-time visibility of all parts as they move from the supplier to the carrier, the MSC, the plant and ultimately the final destination: the assembly line. What's more, the solution will help to automate workflow, reduce inventory and prevent business interruption in the assembly process.

The MSC delivers small-lot, sequencing and metered parts to Ford's truck assembly line. Small-lot parts can be picked up by an individual and delivered in small plastic kanban totes, usually weighing no more than 35 pounds when loaded with parts. Sequenced parts are packed into custom-built racks in production order—a loaded rack weighs 1,000 to 2,000 pounds and requires a forklift to move. Metered parts are similar to small-lot parts but are transported in much larger containers that can weigh more than 500 pounds when loaded, requiring a forklift for movement. Prior to the RFID initiative, the operation experienced a series of disconnected electronic and manual processes. The possibility for business interruption—late deliveries, part shortages, misplaced or

lost parts and so on—was always present.

WhereNet's active RFID tags emit a signal every four minutes and are tracked by a series of location sensors installed at TNT's MSC and inside the Ford assembly plant. The transmitted tag data is accumulated, sorted, evaluated and summarized into actionable dashboards in the form of charts and graphs indicating performance levels. The Internet-based graphical user interface (powered by Tibco General Interface, an Internet-application platform) was configured for the MSC outbound-load validation process, which displays rack load status on LXE mobile computers mounted on forklifts. For the RFID solution, TNT is using several different software applications, such as a warehouse management system (WMS), a warehouse tracking system (WTS) and WhereNet's Visibility Server Software (VSS), which provides the tools required to manage assets and the WhereNet Real-Time Locating System. The system is integrated using Tibco middleware to move transactions between the different applications.

The originality of the initiative hinges on deep partnerships with WhereNet and Tibco. TNT uses WhereNet's active-RFID based solutions on a daily basis to optimize outbound logistics in support of synchronous material flow. As Ford expands its use of active RFID tags, location sensors, WhereNet software and infrastructure—and continues to add more RFID-enabled sites to its supply chain network of suppliers, logistics providers and plants—the value of the network will increase. In the process, collaboration will also increase between all supply chain partners who collectively enable more lean and flexible processes.

RFID has the potential to transform manufacturing and retail industries. TNT and other early adopters have already witnessed the tangible benefits the technology has to offer for simplifying operational efficiency. By leveraging Tibco's next-generation active RFID software adaptors, businesses like TNT are now capable of fulfilling orders with the utmost

accuracy, and delivering on customers' expectations and need for real-time information.

The seamless integration of technology at Ford, TNT, WhereNet and Tibco is strong evidence that the RFID project was a success. Real-time electronic connectivity across multiple platforms (third-party logistics providers, supplier and assembly plant) via electronic data interchange (EDI) has been in place for many years. But real-time visibility of physical parts as they move between multiple sites—synchronized with electronic data flow for event management to prevent business interruption—has never been done before.

Ford has an integrated active RFID solution that can be deployed around the world at more than 50 manufacturing sites to leverage the capital investment made in the WhereNet infrastructure. Success will be further measured through the expansion of this active RFID solution by implementing additional locations in the automaker's global supply chain.

*Terry McIntyre (904-996-1960) is manager of corporate technology services at TNT Logistics North America. Come here him speak at RFID Journal LIVE! 2006, to be held May 1-3, on how TNT is using RFID in the automotive supply chain.*



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