

GE Aviation Finds Value in RFID

The government and commercial plane parts provider says its RFID system saves time and reduce errors for internal shipments.

By Mary Catherine O'Connor

Oct. 13, 2005—John Hamilton, logistics operations leader for GE Aviation, a General Electric division that manufactures jet engines for civil and military aircraft, says that when his company saw the specter of an RFID mandate coming from the Department of Defense (DOD), it quickly started looking at how it could get value out of RFID to improve its own operations. In August 2004, GE Aviation began a proof-of-technology pilot for an internal, closed-loop RFID tagging system. After working through some challenges regarding tag readability and data integration with its warehouse management system, the division completed the pilot early this year and made the RFID system a part of its business process.

"Our goal was to determine that the technology would work for us," says Hamilton. The company knew it would need to begin using RFID to comply with mandates. As such, it wanted to explore how the technology could benefit its operations outside the scope of those mandates.

"We were progressing in fits and starts," says Hamilton. One problem the GE team faced was finding a functional interface between the RFID system and its warehouse management system. It had hired an RFID systems integrator, but ended that relationship when it realized it had enough software expertise in-house to develop an interface that would work. "We were able to unravel the shroud of mystery around middleware and get it done with our own staff," he says.

The tag and reader vendors GE Aviation hired, which the company would not disclose, assisted Hamilton and his staff in finding the best ways to tag the metal-rich parts. GE Aviation also developed an internal RFID lab to test different readers, tags and printer-encoders.

GE Aviation operates a facility in Lynn, Mass., which it calls its Flight Support Center. There, it maintains an inventory of plane engine components and other aviation parts. Each day, a truck loaded with these parts leaves the Flight Support Center, bound for GE Aviation's primary parts distribution center (DC) in Erlanger, Ky. An EPC Class 1 UHF smart label on each pallet is used to receive the shipment into the Erlanger facility quickly. Tags are not applied to cases or items on the pallet.

Prior to the RFID system's deployment, workers at the Lynn facility would read the bar-coded ID number of each case of goods they placed on a pallet, then scan the bar code label applied to the pallet in order to associate the case with its pallet. Encoded to the pallet bar code label was what GE Aviation calls a ship control number (SCN). The SCN correlated with a database listing all items on that pallet. In some cases, this might have been one very large object. In others, it could have been a list of 50 boxes of nuts and bolts, or some other hardware.

When the pallets were received into the Erlanger facility, however, this SCN was not used, partly because GE Aviation had started using the Erlanger DC just a few years earlier and had not yet established the SCN

infrastructure there. Moreover, the other GE Aviation facilities that feed into Erlanger did not use the SCN system. In order to receive goods from Lynn, or either of the other two sites, workers at Erlanger needed to scan the bar code label of each case on a pallet to enter that information into the WMS.

With the new system, Erlanger workers use the SCN—now encoded to a self-adhesive smart label affixed to the pallet rather than to a bar code—to receive each pallet of goods from Lynn. While the company could have retained the use of bar code labels instead of switching to smart labels, deploying the RFID system satisfied its interest in determining how it could use RFID in ways other than required by the DOD mandate. This SCN is compared with an advance shipment notice that is forwarded electronically to Erlanger before the shipments arrive. Only the SCN is encoded to the pallet tags; EPCs are not used since it is a closed-loop system.

Because workers previously had to read all bar codes on the goods on each pallet to receive them into inventory, the pallets' movement into the facility was slow, resulting in a queue of pallets on the receiving dock as the truck was unloaded. Now, that queue has been eliminated because the forklift operators can drive each pallet off the truck, through a portal reader and—as long as the pallet tag is read successfully—straight to a staging area, where the pallet is broken apart and the goods are put away.

"Given that all of those parts are going into stock for product support, we want to get it into inventory as quickly as possible, in order to drive fulfillment," says Hamilton. "So the real benefit [of RFID] to us is that you no longer have to queue the material for check-in. The check-in is done automatically."

Hamilton has not yet worked out all the financial details. Still, he believes that through a reduction in labor costs at the Erlanger facility, GE Aviation has already recouped the costs of developing and deploying this RFID system. Another expected benefit of the RFID system, he adds, is improved data accuracy over the older method, which relied on workers scanning bar codes on cases or items in order to receive them into the DC's inventory.

GE Aviation plans to expand this RFID tagging system next year to its facilities in Evendale and Winchester, Ohio, so that all pallets coming into Erlanger will be RFID-enabled. In late June, anticipating the mandate that will likely be written into its DOD contracts next year, GE Aviation began tagging a few of the items it ships from its Evendale site to the DOD depot in Susquehanna, Pa. The company encodes these tags in compliance with DOD guidelines, using DOD data constructs.

For now, the two RFID systems are run separately. Eventually, however, Hamilton expects the two systems to merge, and GE Aviation to begin placing smart labels on cases or items at its Flight Support Center. The company does not yet know how it will merge its internal SCN identification system with the EPC and unique identifier (UID) data that its commercial and military trading partners will require, nor when and how these different numbering systems will be encoded to and associated with the tag.

In addition to supplying plane engines and other aviation parts to the DOD, GE Aviation provides parts to Boeing and other companies. Last week, Boeing announced it would begin requiring some of its suppliers to place RFID tags on parts used to create its 787 aircraft (see [Boeing Wants Dreamliner Parts Tagged](#)).

"A year or 18 months from now," says Hamilton, "I believe we'll be in the same place with commercial RFID mandates—if, for example, Boeing wants us to tag orders—as we are with the DOD mandate right now."