

Rolls-Royce Tests RFID's Potential to Drive Its Supply Chain

The U.K. engines manufacturer is exploring ways RFID might be used to improve its internal processes.

By Rhea Wessel

Nov. 20, 2007—Rolls-Royce, a manufacturer of gas turbines, engines and parts used in aircraft, ships and submarines worldwide, has been testing RFID for use in tracking its internal supply chain. Ultimately, the company hopes to determine whether the technology can be utilized across its entire operation, to cut costs and improve its logistics operations.

Headquartered in London, Rolls-Royce is exploring how RFID might help it refine the complicated processes it relies on to build and service engines and parts, says Andy Higginson, logistics service line manager at the company's defense aerospace division, and to make those processes easier to monitor. Specifically, the manufacturer is interested in documenting, in real time, aspects of its operations that could potentially hurt production. "RFID can show us where problems are in advance," Higginson explains, "to help us manage the problems."

To that end, the company has conducted a series of RFID trials, including an eight-week pilot that took place earlier in 2007, to track cases of parts moving between a warehouse in Bristol and a maintenance, repair and overhaul (MRO) facility in Ansty. The MRO facility ships out 2,500 to 3,000 deliveries to customers each month.

A Rolls-Royce RFID project team first performed a technical assessment with help from IBM. "We were looking for the place where we could get the best bang for our buck," Higginson says, adding that the company wanted to define its information requirements so it would not be overwhelmed with data collected via RFID.

Once the information requirements were established, Rolls-Royce tested RFID hardware from six vendors—including nine passive and four active RFID tags and interrogators—at its facilities in Derby and Bristol, the headquarters of its defense aerospace division. Rolls-Royce preferred not to purchase equipment off the shelf without first testing it, or to hire a systems integrator. "This was about being on a journey to educate ourselves," he recalls.

In most cases, the tests revealed that the packaging of aircraft parts did not appear to cause RF interference, which can make it difficult to read the tags. Instead, the most significant factor for getting highly accurate read rates was shown to be tag orientation. Later trials revealed some specific interference issues—for example, when tagging bags of fasteners or other small components. To avoid RF interference with tagged bags of metal screws (metal is known to interfere with RF signals), the bags of screws needed to be placed in double bags, with the components in one end and an RFID tag on the other, to provide tag/metal separation.

Once the RFID equipment testing was completed, Rolls-Royce began a live trial employing ultrahigh-frequency (UHF) EPC Gen 2 tags from [Alien Technology](#) for tracking parts between Bristol and Ansty. At that point, the company determined that it wanted to use RFID to track parts flow throughout its Bristol warehouse, provide status reports on the parts' locations in the warehouse and track when the parts left the Bristol warehouse and were received at the MRO facility in Ansty.

From the trial, the company determined that its existing tracking mechanism for the inbound pipeline (based on bar-coding technology and a supply chain system from [Exostar](#)) already provides sufficient visibility, and that there would be less incremental benefit from using RFID technology at this stage. The trial ran for eight weeks, and Rolls-Royce reports being able to successfully read tags 99.7 percent of the time during its tests.

RELATED_ARTICLES In early 2008, the manufacturer plans to implement an RFID pilot to track parts in an extended supply chain between its warehouses in Bristol, Derby and Indianapolis, and its MRO facility at East Kilbride, Scotland. The pilot will most likely employ passive UHF EPC Gen 2 tags. The parts will also be tracked internally, within the Scottish MRO site, between a warehouse and the repair operations areas.

In the future, Rolls-Royce plans to extend the supply chain test to incorporate customers' premises and include the tracking of both engines and piece parts, utilizing a combination of passive and active RFID technologies. Specifically, active tags will be used on high-value engine assets to provide more accurate tracking and location visibility, and to potentially carry engine configuration and maintenance history.

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