

DHL, AeroScout, Microlise Team to Track Temperature for Pharma Maker

A European pharmaceutical manufacturer is testing RFID and sensors to monitor temperatures inside vans transporting drugs from Belgium to Sweden.

By Claire Swedberg

May 29, 2007—Delivery and logistics company DHL is testing an RFID-based temperature tracking system for a European pharmaceutical company. The system will track, in real time, the location of vehicles transporting temperature-sensitive products, as well as the temperature inside those vehicles.

The pharmaceutical company has asked not to be identified, says Jeroen Martens, RFID program leader for the DHL Exel Supply Chain, formed at the end of 2005 when DHL acquired Exel as part of Deutsche Post World Net. According to Martens, the firm contacted DHL about a year ago, seeking a tracking system that would provide better visibility of the temperature of its medications as they traveled through the supply chain. DHL Exel Supply Chain provides core procurement logistics, warehousing and sales logistics operations, as well as such value-added services as finishing, co-packing, price labeling, billing, order processing, sales promotion and financial services.

Due to the more stringent European regulation of pharmaceutical product temperature requirements, coupled with a growing number of new temperature-sensitive products, the pharmaceutical company required a more robust solution than the temperature loggers currently in use can offer. Temperature loggers gather data but cannot be read and analyzed until after a shipment reaches its destination—a process that can cause up to a three-day delay. The loggers are also unable to alert shippers in real time if a truck's temperature falls out of the acceptable range for a product it is carrying (usually -20 degrees Celsius for frozen goods, 2 to 8 degrees Celsius for refrigerated goods).

Maintaining a record of product temperature provides companies with proof their products have arrived in the proper condition. While temperature fluctuations may not happen commonly en route, even one unresolved temperature problem can cause the destruction of an entire shipment. Obtaining temperature data in real time offers companies an added layer of security. If, for example, a pharmaceutical manufacturer learns that the temperature has risen out of range for a particular product, it can either alert a driver to rectify the problem, or send a new shipment.

The system being piloted utilizes AeroScout RFID hardware and Microlise communications hardware and software.

The pallets for the pharmaceutical shipments originate in Belgium and are fitted with AeroScout (Wi-Fi) 2.45 GHz RFID tags featuring active 802.11 tags and temperature sensors. On the outside of each van used to transport the pallets, DHL has installed a Microlise unit near each doorway. The unit incorporates GPS and GPRS capabilities, as well as an AeroScout RFID reader, which receives the unique ID number and latest temperature read from each tag on a regular basis. Also incorporated in the Microlise unit is an In Vehicle

Computer (IVC) including a Microlise GPS tracking unit to monitor the van's location, and a Microlise general packet radio service (GPRS) modem designed to transmit all the data collected to a central monitoring station.

From there, the data is made available on Microlise's hosted Web site. "The IVC extracts the temperature tag data from the reader," says Lee Nixon, Microlise's RFID product manager, "then formats that data and sends it back to the host system via GPRS." The IVC can also use the GPRS modem to send an alert if the temperature range is not acceptable, via e-mail or a phone call to the appropriate parties. In addition, the IVC controls the AeroScout interrogator by powering it on and off to save on battery usage.

The pilot was launched in late March, and has tracked only five trips thus far. Early results, however, show the system works, says Andris Berzins, AeroScout's managing director for Europe, Middle East and Asia (EMEA). "We're already pretty confident," he says. The first route being tested is from Belgium to DHL's warehouse in Sweden. Future pilots, Martens notes, may track shipments into southern Europe as well.

The pilot has not been without challenges. Early on, the system was unable to track shipments while the trucks were on a ferry moving from Denmark to Sweden, because the GPRS modem was unable to communicate with the GPRS base station out at sea. "When the truck goes into the ferry," explains Nixon, "there is no [GPRS] coverage, so the IVC cannot communicate with the host application." What's more, during the initial run of the pilot, communications interruption caused the IVC to reboot a number of times, resulting in some data loss.

"Now, during the nine-hour black spot [the communications blackout] on the ferry, we simply store all the temperature data to disk," Nixon says. "Then, when the ferry doors open, connectivity is restored and all of the events are sent over to the host system with their 'actual event' time in place. This means that although the data is delayed—the ferry journey is overnight—when the [pharmaceutical company employees] come in the next day and check the report, it is transparent to them."

RELATED_ARTICLES The next step will be to test the technology on different routes throughout Europe. Presently, however, there is no specific date set for that phase.

This year, DHL also expects to launch a service involving a temperature-logger tag it developed in partnership with IBM, Intel, NXP Semiconductor and SAP (see [DHL Expects to Launch](#)).

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