

Mondi Uses RFID to Track Paper Rolls

The manufacturer of corrugated paper products deployed a system it codeveloped with IPICO, which plans to market it to other companies in the paper industry.

By Laurie Sullivan

Dec. 4, 2006—Mondi Packaging a U.K.-based manufacturer of corrugated paper products, is installing an RFID system to track and monitor paper-roll consumption at its factory in the English city of March.

According to Mike Clarke, Mondi's RFID solutions business leader, when the project begins operations this week, it will include three clamp trucks, 10 roll stands, a handheld RFID interrogator for mobility throughout the plant, a registration RFID interrogator that provides a unique number to the paper roll, a probe RFID interrogator placed deep inside the paper-roll core to detect the quantity of paper left on the roll and a stock-count RFID interrogator to read multiple stacked rolls simultaneously. "We will start to validate the business case in January 2007," Clarke says, declining to note Mondi's investment in the project. "We want payback in less than 24 months to make this a commercially viable solution."

Mondi and IPICO, a Canadian RFID-technology vendor, designed the system, known as SmartCore, which relies on IPICO's passive IP-X dual-frequency RFID tags. When an IP-X tag receives a 6.8 MHz signal from an RFID interrogator, it transmits a 125 kHz signal conveying its unique ID number. The companies chose the dual-frequency IP-X tag for SmartCore because it works best in electromagnetic (EM) and moist environments.

Clarke says his firm will use SmartCore to resolve two fundamental problems in the paper industry: stock management and waste management. By attaching the IP-X tag to the cylindrical core around which a roll of paper is wound, Mondi hopes to reduce product waste by allowing it to more closely monitor paper consumption—between 27,000 and 28,000 paper rolls annually.

SmartCore will interface with software designed for the corrugated paper industry, and used by Mondi to manage inventory and shipments. Escada Systems, a North Yorkshire, England, supplier of systems for corrugated paper manufacturers, provided the software, which will collect and process data from RFID tags inserted to identify the rolls and calculate the quantity of paper left on them.

Mondi also plans to embed roughly 1,000 RFID tags into the floor of the plant, thus creating a position-tracking system that will make it easier to locate between 950 and 1,150 paper rolls stored at the plant each month.

IPICO's president, Gordon Westwater, says the project took two and a half years to develop because there were many challenges to overcome. These included filtering out interfering RF noise emitted by factory machines and compensating for the paper roles' high moisture content, which can absorb RFID signals. The two companies continually tested frequencies and changed reader and antenna configurations until they found an RFID solution that worked despite the EM interference and environmental moisture.

With the challenges resolved, IPICO intends to offer the platform to other companies in the paper industry. "We purchased the intellectual property rights from Mondi and plan to take the application into the market," he says. "Where these projects fail is when companies believe the technology is proprietary and want to keep it for their own savings."

One expert close to the project says efficiencies gained from RFID could conservatively reduce annual costs at Mondi's March plant by more than £100,000 (\$193,220). If the application proves successful, Mondi hopes to roll out the RFID platform next year to the nearly two dozen corrugated manufacturing plants it operates across Europe.

Companies drawn to RFID technology say the advantages range from better business processes that cut costs and reduce inventory, to improvements in asset management and order forecasts. Wall Street is paying attention. Steven Chercover, vice president and senior research analyst for paper and forest products at investment firm D.A. Davidson & Co., says, "It's good if you're an early leader, but early leads eventually evaporate, and then it becomes mandatory to offer and use the technology."

IP-X operates within multiple frequency bands. When entering the RF field of an IP-X interrogator, an IP-X transponder transmits its ID code continuously but at random intervals, enabling readers to receive IDs from several tags simultaneously. This, says IPICO, allows its hardware to use "tag talks only" (TTO) technology, which differs from the EPCglobal EPC and ISO 18000-6 standards, where interrogators talk first to initiate communication between reader and tag.

In July, IPICO proposed that the IP-X RFID air-interface protocol on which it has built its business be adopted as an International Standards Organization (ISO) standard (see IPICO Submits Its IP-X RFID Air Interface to ISO). Although the company claims IP-X as its patented, trademarked technology, it declared that other vendors can use the IP-X protocol on a royalty-free basis.

RELATED_ARTICLES IPICO is not the first company to offer a system that tracks paper rolls. In 1999, International Paper, a \$24.5 billion papermaker, set out to replace an imprecise bar-code system that produced inaccurate inventory information and missed customer shipments from its Texarkana, Texas, warehouse (see IP Unveils RFID-Enabled Warehouse). Four years later, IP deployed a system similar to Mondi's. Interrogators were mounted on clamp trucks that transported paper through the warehouse. Workers applied RFID tags prior to wrapping the paper around the core. RFID interrogators then tracked the flow of products automatically as they left the winding machine and moved through warehouses.

IP's RFID division, ASURYS, also began marketing the RFID system to customers that buy its paper rolls. In May 2006, the company absorbed ASURYS into its packaging group in a company-wide restructuring plan. International Paper, however, pledged to maintain in-house RFID expertise that can support paper and packaging.

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