RFID Maximizes Pharma Supply Chain Efficiency

One of the world's largest RFID-based drug management systems implements Smartrac's RAIN RFID tags to guarantee the integrity of its supply chain

Pharmaceutical and medical goods are one of the most sensitive and supervised product groups worldwide, which means that any product tracking and management system must be completely reliable and proof against theft, fraud or counterfeiting.

Hanmi Pharmaceutical Co., one of Korea's largest pharmaceutical companies, employs RFID to increase efficiency, monitor product movements, and to help it carry out government regulated quality managements. The company already uses RAIN RFID tags to track 60 million product units annually, from packaging to picking and shipping, enabling an automated process from order receipt to the shipment of a packed carton to a wholesaler.

Since 2009, the company has been demonstrating best practice in the handling of sensitive pharmaceutical products throughout the supply chain. Hanmi installed an automated picking system (APS) to work alongside RFID, using EPC Gen 2 passive ultra-high frequency (UHF) RFID tags and readers to identify products, and to then collect, box and ship those items without the need for human intervention. The only manual portion of the process, in fact, is an inspection carried out by Hanmi's staff as each box is packed for an order.

A break with tradition

In the Korean pharmaceutical industry, the distribution structure (direct deals as well as wholesale transactions) is complex, and the process is still largely managed by hand during manufacturing and dispatching pharmaceuticals. In addition, in the distribution process there are many difficulties in managing proper inventory and expiry dates, because POS systems are not properly used at every drugstore nationwide.

Hanmi's RFID-based traceability system, in contrast, can effectively manage a product's production history, inventory status and logistical traceability in this complex pharmaceutical environment, thereby protecting the rights of the owners and reducing unnecessary inventory management costs in the logistics process.

While the new system did face some initial resistance in terms of industry conservatism and simple lack of knowledge about RFID technology, after the introductory phase the take-up of Hanmi's system was rapid and nationwide, covering the entire country in the nine years since its introduction.

Full authentication of each pharmaceutical product

Hanmi's Pedigree system, which is used to manage the distribution of individual drugs between their production by pharmaceutical companies and their dispatch to hospitals and pharmacies where they are sold to patients, is not just an efficient distribution management system. It can also prevent the distribution of health-threatening fake medicines and solve the problem of unlicensed medicines being distributed in the pharmaceutical supply chain.

The use of an up-to-date tracking system has also been accelerated by the Korean Ministry of Health and Welfare's Pharmaceutical Affairs Law, which over the last six years has obliged manufacturers to attach RFID or Code 128 barcodes to the prescription drugs. Hanmi uses RFID to both prescription and over-the-counter (OTC) drugs.

Custom tags for specific needs

Hanmi implements Smartrac RAIN RFID tags in its solutions. To satisfy Hanmi's requirements, Smartrac developed customized RFID inlays and tags for inventory and supply chain management, which feature small form factors between 35x18 mm and 15x11 mm, as well as a special format of 97x13 mm.

These customized tags and inlays comply with Hanmi's specific needs – which include tagging even very small vials and ampoules – and feature Impinj Monza ICs. The RFID system uses a tunnel gate antenna system developed by Hanmi, based on Impinj reader equipment.

Smart products make smart factories

Hanmi is working hard to solidify its leadership as a contract development and manufacturing organization (v) internationally.

The next phase of development for the company will be to use "big data" accrued from the existing RFID-based manufacturing system, which it started to install at its Smart Factory in 2009. The existing RFID system will be used to track and record information on its products at each step of the supply chain, from production to sale. This information will be used to create new analytical tools.

This new input will be used to more efficiently produce various drugs such as double layer tablets, film-coated or uncoated tablets, hard gelatin capsules, and poly capsules, in any volume from small amounts of experimental drugs to large production runs for mass production. Streamlining of the Smart Factory's production processes based on this data will ultimately enable Hanmi to maximize efficiency and competitiveness.

AVERY DENNISON