



Tag-on-Demand: The New Face of RFID

By William Faulkner, President, Logopak Corporation

Radio Frequency Identification (RFID) technology is becoming an increasingly popular way of tracking and managing inventory and the reasons aren't hard to discern. While barcodes identify a specific type of product, the data capacity of an RFID tag is big enough to contain a unique code, one that's specific to an individual product, made at a particular factory during a particular day on a particular shift.

Although the RFID tag can be used to store any information, the global standard for product identification using RFID tags is called the Electronic Product Code (EPC). An EPC can be, for example, an EAN + serial number or an SSCC number. This works like a "license plate" and can be used for looking up information such as an item's price, expiration date, weight or other product information in a database. By reading this number at production lines, palletizing machines and loading dock doors a specific item can be tracked throughout the entire supply chain. There is an optional memory area on some types of RFID tags, which could be used to store up to 64 characters of information (512 bits), which could be used for storing any additional information, if desired. The RFID tagged product with its dossier can be individually tracked as it moves from location to location, finally ending up in the consumer's hands.

This, of course, has a dramatic effect on inventory management, providing retailers with a pinpoint knowledge of their current inventory. In a study performed at Wal-Mart, using RFID reduced out-of-stock situations by 30 percent for products selling 15 or fewer units per day. Other benefits include reduced labor costs, simplification of business processes, and fewer inventory inaccuracies.

Small wonder, then, that Wal-Mart required its top 600 suppliers to apply RFID tags to products shipped to its Texas distribution centers. More recently, the Wal-Mart division, Sam's Club, has mandated that every full single-item pallet shipped to its distribution center in DeSoto, Texas, or directly to one of the stores served by the DeSoto center, must bear an EPC Class 1 Gen 2 RFID tag. Those failing to comply will be charged a \$2 per pallet service fee, which will eventually rise to \$3.

Add to this the fact that the Department of Defense has now mandated RFID labeling for its vendors' shipments, and pushed by the Food and Drug Administration and the State of California, the pharmaceutical industry is moving toward RFID, will the near ubiquitous barcode soon become the Betamax of the automatic ID world, nothing more than a nostalgic curio?

Not likely. Barcoding infrastructure is already in place at tens of thousands of factories, warehouses and retail establishments around the country. And because the technology is both mature and widely employed, the cost of barcode labelers and readers is relatively low. In addition, RFID tags, particularly

older-style tags, sometimes do not work optimally when placed next to liquid or metal. A perfect example here being a pallet composed of cans of paint, say, or canned soup. So to comply with the growing number of RFID mandates and to label products better handled through barcoding, manufacturers will have to maintain two labeling systems, one for barcodes and one for RFID – right?

Flexibility in Labeling

Wrong. That would be costly and, because one labeling system would be standing idle while the other was in operation, inefficient. Fortunately, the increased complexity of today's auto ID environment is addressed by a relatively recent innovation known as "tag-on-demand". This approach is illustrated by the Logopak 920 PFR, a rugged, factory floor printing and labeling system that can label pallets on from one to three sides with self-adhesive labels in large formats with scanner-readable barcodes coupled with clearly written dates and codes. The need for human readable text is an important though sometimes overlooked aspect of labeling, providing as it does a fail-safe mechanism as insurance against reader failures, power outages, or other unforeseen occurrences.



So far so good, but then the 920 PFR goes a step further and permits users to apply an RFID tag to the back of the barcode label. Thus, the pallet can be labeled only with a barcode label, on from one to three sides, or with an RFID tag affixed to the barcode label, or with one of these RFID enabled labels in combination with barcodes alone on one or two other sides of the pallet – all depending on the needs of the user.

This is possible because instead of embedding an RFID tag in every label, which is the standard industry practice; the 920 PFR has a separate roll of RFID tags. If a label requires an RFID tag it is dispensed from the roll, programmed with the appropriate product data, verified that it is readable and then applied to the adhesive side of the printed label at the applicator head. If, for instance, the pallet is destined for Wal-Mart, the system applies the appropriate RFID tag. If the next several pallets are headed for Sears, who does not require RFID tags, then barcodes alone are printed and affixed. Needless to say, this reduces cost by eliminating the need for an RFID tag to be embedded in every label, and provides the palletizing operation with an exceptional degree of flexibility.

Control of operating procedures can be carried out remotely via Ethernet thanks to the Logopak Control Center software, which also permits real-time monitoring and diagnostics – aided by an integrated web cam, if desired. Diagnostic information, including video and still photography, can be shared with Logopak Technical Support via the internet, thus allowing a fast and accurate reaction.

Though failure rates are decreasing as the technology matures, everyone who has worked with RFID knows that not every tag works the way it is supposed to. The Logopak 920 PFR handles the problem of faulty transponders in an elegantly simple way – it makes sure none of them get attached to the pallet. It does this by reading and verifying each tag before it is applied to the back of a label. Should a faulty

tag be detected, the 920 PFR simply drops it into a receptacle at the bottom of the machine and replaces it with another, avoiding delays as well as faults.

In addition, readability of those tags that are attached is enhanced because when a label with an RFID tag is attached; the 920 PFR bends the label – creating a Flag-Tag – so that the RFID tag is held away from the product surface for better readability.



RFID and the Future Store

With this combination of flexibility and Flag-Tag readability it is perhaps not surprising that Logopak's tag-on-demand should be chosen for Metro Group's Future Store initiative.

Germany's Metro Group is the world's fifth largest retailer, and its Future Store initiative, which initially involves 100 suppliers, 10 central warehouses and approximately 250 stores, is an ambitious attempt to rethink the nature of retailing. RFID technology is being employed along the entire process chain, from production all the way to shelf location at the retail destination. It is even being used to add value for the customer. For instance, a shopper considering a certain blue blazer might take that blazer to a kiosk on the store floor. There, the RFID tag can be read, and information relevant to the blazer, such as which items match the blazer and where they are located in the store, display on a screen.

The initiative is already paying dividends. A study conducted by consultants Kurt Salmon Associates found that RFID has reduced out-of-stock situations for Future Store by 9 –14 percent, assuring a more

consistent availability of goods for the customer. In addition, the study found that waste was cut by up to 18 percent. On top of that, tag-on-demand has reduced RFID operating costs. Tag-on-demand is thus proving to be a cost-effective way of meeting the needs of an RFID-enabled future while simultaneously satisfying the requirements of today's barcoding environment.

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