

From RF EAS to RFID Solutions

RF Technology To Be Taken To New Heights

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RFID is an auto-identification technology, however, unlike many of today's technologies, RFID has no line-of-sight reading requirement, so it provides many new opportunities to improve supply chain efficiency while easily supporting enhanced Electronic Article Surveillance(EAS) applications. In addition, RFID gives you the ability to read multiple items at the same time, a feature called anti-collision.

The retail apparel industry was the first market to embrace electronic article surveillance (EAS). About 10 to 15 years ago, the packaged goods or hard goods markets began to adopt EAS, using pressure-sensitive labels. Today, you will find EAS applications running the gamut of retail formats from batteries to health care products and being used in a wide variety of other innovative functions.

Radio frequency(RF) technology is particularly attractive to manufacturers, because it can contribute to operational efficiencies. Paper-thin RF tags can be hidden virtually anywhere on any products or embedded into any type of packaging. RF source tagging - the process of embedding RF circuits into products or packaging - offers a distribution advantage as well. Instead of producing multiple inventories, manufacturers can simply deactivate tags on any merchandise destined for non-RF-EAS stores. RF source tagging allows fast, efficient bulk RF deactivation at conveyor speeds of up to 400 feet per minute regardless of tag orientation inside the shipping carton.

RF EAS source tagging doesn't require touch deactivation, so security tags, embedded in product packaging, can be deactivated automatically as items are scanned for price at the point of sale. At the customer service counter, employees using a hand-held verifier can easily check for "live" tags, which indicate that an item may not have been legitimately purchased. This can help prevent fraudulent returns.

The success of EAS systems in reducing retail shrinkage has been indisputable. As retail markets become continually more competitive, the reliance on technology to create a competitive



advantage has increased. Today, the average shrinkage or loss due to theft takes approximately two percent of sales. The use of EAS can significantly curb the shrinkage rate.

Checkpoint Systems, Inc., is a leading provider of RF based loss prevention systems to the US\$1 trillion global retail industry. The company's acquisitions of Meto AG and AW Printing strengthened this position and laid the foundation for expanded source tagging. The global service bureau networks of these newly acquired companies has expanded Checkpoint's role in the swiftly evolving retail supply chain management industry.

Checkpoint's radio frequency (RF) source tagging provides retailers with all the benefits usually associated with electronic article surveillance (EAS), along with some additional and significant advantages. Hidden from shoplifters and employees alike, Checkpoint source tags provide tamper-proof protection for profitable high-theft items—and that "spill-over effect" extends protection throughout the store. Suitable for virtually any type of merchandise, low-cost Checkpoint source tags allow retailers to take advantage of open display while reducing or even eliminating labor costs associated with in-store security tagging.

RF Technology Drives Up Automotive Product Profits

The automotive-aftermarket retailer Pep Boys is pursuing source tagging as its business expands. The chain estimates that approximately 80 percent of its vendors are participating in the program with new ones signing up at a steady pace. "We have taken an aggressive approach with our suppliers to establish a source-tagging program," says Sam Rowell, VP of Pep Boys, Philadelphia, which operates some 660 stores nationwide.

In August 1999, the chain launched its first source-tagging. Executive meetings were held to establish a process for suppliers to follow. Initially, the chain asked the supplier to tag only those items identified for protection. Previously, many stores had wire and glass cases in the tool departments. But since suppliers started source tagging, the chain has been able to leave its tool department

unlock. "Tools, which were a high-shrink item for us in the past, are no longer locked up," Rowell says.

The impact was twofold. "We have seen a reduction in the theft of high-shrink items," Rowell explained. "At the same time, we have seen an increase in sales of the items we pulled out of the cages or lockup and made more accessible to customers." Pep Boys' employees have benefited, too. "A lot of our high-shrink stores have seen shoplifting drop," Rowell added, "which has greatly improved employee morale.

RF Technology - De Facto Standard In Spain

Checkpoint Spain is successfully introducing Checkpoint's new line of products and services. It provides manufacturers with automation system applying RF tags to products before supplying them directly to retailers.

Checkpoint Systems was selected by Carrefour, Spain's largest hypermarket retailer that has sales currently more than 8 billion euros (approximately US\$7 billion) and 58,000 employees, to install its integrated scan/deactivation and digital RF systems in all of its stores in Spain. This means that Carrefour now has the necessary infrastructure to receive and sell goods tagged with RF source in all 121 hypermarkets and in its more than 300 supermarkets.

"After carefully comparing the competing solutions, we concluded that Checkpoint's RF source-tagging program was the optimal way to fight shrinkage in all our stores without compromising a friendly environment for our customers. Radio frequency has now become the de facto standard in Spain, which allows manufacturers of consumer goods to respond quickly to the current demand from retailers receiving the goods tagged with the source directly at the stores," said Manuel Goncalves, the Director of Loss Prevention at Carrefour.

Checkpoint Strengthens RF Technology With RFID

Radio frequency identification (RFID) is one of today's most exciting and fastest growing technologies increasing efficiencies and improving profitability

for retail, commercial/industrial and library applications. RFID combines an intelligent chip with an RF circuit to deliver a tag capable of storing, processing and communicating information while simultaneously protecting products from theft. RFID is an auto-identification technology, however, unlike many of today's technologies, RFID has no line-of-sight reading requirement, so it provides many new opportunities to improve supply chain efficiency while easily supporting enhanced Electronic Article Surveillance (EAS) applications. In addition, RFID gives you the ability to read multiple items at the same time, a feature called anti-collision. Since the product information can now reside on the RFID tag, it can be embedded in the product packaging, thus is no longer susceptible to problems created by mangled bar codes.

Checkpoint has partnered with Mitsubishi Materials and has embarked on a multi-year R&D program to leverage their experience in RF technology to create the most robust family of RFID products on the market. With over 3 billion RF EAS labels manufactured last year, Checkpoint has enough experience to design and manufacture RFID labels to suit the variety of applications, which can benefit from RFID solutions. For retail applications, RFID technology enables to track a product through its entire life cycle. Imagine being able to track the date and point of manufacture, serial number, receiving data, warranty and end user data, service history and utilization profiling for any product. Accurate inventory can be taken in real time while walking down the aisles of the store utilizing a hand held RFID reader. RFID also provides significant improvements in customer self-service by eliminating the need for the customer to find and scan a barcode. The RFID makes checkout process simpler. Everything will be okay just by passing the product over an RFID reader, which captures the individual product information into the POS system and simultaneously provides protection against shoplifting and fraud.

For commercial and industrial applications, RFID has unlimited potential to enhance the way that materials are tracked through the supply chain. RFID has applications wherever inventory

Retail chains, industrial companies, and libraries can all use RF technology to increase productivity and profitability throughout the supply chain. From the loss prevention capabilities of RF EAS to the streamlined inventory management and customer self-checkout support of RFID, Checkpoint's RF technology is providing a single answer to asset identification and protection.

management accuracy and efficiency are important from the pallet level down to the individual item level. Checkpoint has successfully utilized RFID technology in manufacturing area to improve the efficiency in Work-in-Process inventory and automated receiving. Other areas where RFID can be applicable to includes warehousing/distribution, airline baggage handling, parcel shipping, pharmaceutical manufacturing, work-in-progress management, medical supply/device tracking, document management, anti-counterfeiting; industrial bar code supplement or replacement, ski lift-ticket validation and industrial laundry sorting.

Checkpoint offers an entire family of RFID products sold under the Performa brand. These include low-cost 13.56 MHz RFID tags, advanced readers and application development software.

Check-in, Checkout, Checkpoint

Another lesson in integrating RFID technology into information systems comes from outside traditional supply chain disciplines. RFID technology has found a home in the nation's libraries and Checkpoint's Intelligent Library System(ILS) has become a primary choice for these applications. The ILS greatly speeds up the processing of library materials by providing a swift one-step motion for issuing books, eliminating the need to locate and scan a barcode. Simultaneously, the library's circulation system is automatically updated, and the security is disabled in the software. The ILS also allows for automated checkout and check-in, patron self-checkout, built in security, circulation management, and highly efficient inventory, all integrated into one system. Libraries have reported dramatic results in reducing materials handling time by as much as 75%. The enhanced security capability offered by Checkpoint's ILS not

only activates an alarm when an item is being removed without permission, but also records the unique identification of the offending item.

In 1998, Rockefeller University became the first library in the world to install the RFID-based ILS. Since that time, the Intelligent Library System has delivered on all its promises according to University librarian Pat Mackey who attests that the system's technology has been exceedingly reliable.

The network implementation was another key integration concern. The Checkpoint system patrols the library exits by interrogating every passing tag. Every item is identified against a list of items that have been properly checked out. If an item is not checked out properly, an alarm sounds with recording the offending item.

Since the first installation at Rockefeller in 1998, Checkpoint has successfully installed the ILS in libraries across the country. Among the many facilities that are using the ILS, the Annenberg Library at the University of Pennsylvania is one of the oldest academic research libraries in the country. The Cerritos Millennium Library, which chose to integrate the ILS into its new facility last year, is the first titanium building in the United States and one of the most futuristic libraries in the country with 300,000 volumes placed amid a stone-paved "Main Street," complete with a 15,000-gallon salt-water aquarium. Checkpoint's ILS can also be found in Canada in the Windsor Public Library in Windsor, Ontario. As the ILS continues to find its way to libraries across the globe, more and more librarians are realizing the advantage of RFID technology, which can provide through heightened security, faster and easier inventory and the efficiency of patron check-in and checkout.

Management Is Key

Asset tracking is an area of increasing attention. Whether the assets being tracked are automobile parts or library books, the benefit of a successful surveillance system is to be able to know where your asset is and who has it. Checkpoint, who had been in the access control business, has now leveraged the breakthroughs in RFID technology in order to develop an Asset Management System that combines Threshold Enterprise access control software with leading edge Radio Frequency Identification (RFID) for a single solution. This provides the ability to intelligently associate asset events with standard access control events. It means that RFID is a system that can enforce business rules regarding legal possession, unaccompanied assets, and prohibited egress. Threshold Enterprise software, the most advanced Graphical User Interface(GUI)-based security software, runs on Microsoft Windows NT and includes features such as multiple event viewers, imaging/badging capabilities, custom reporting, and the potential for future expansion.

RF Technology = A More Efficient Supply Chain

Retail chains, industrial companies, and libraries can all use RF technology to increase productivity and profitability throughout the supply chain. From the loss prevention capabilities of RF EAS to the streamlined inventory management and customer self-checkout support of RFID, Checkpoint's RF technology is providing a single answer to asset identification and protection.