

SMARTRAC ((•))
The New Home of UPM RFID



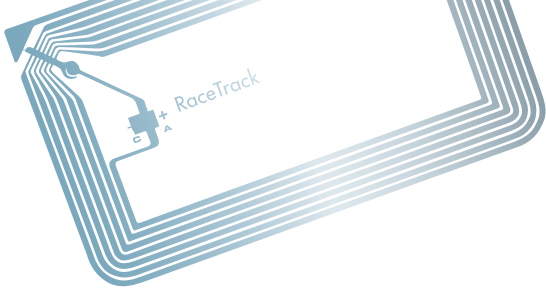
STORIES OF
RFID SUCCESS
IN THE CONSUMER
ELECTRONICS INDUSTRY.



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MAKING THE MOST OF RFID

During the last decade, RFID or Radio Frequency Identification has revolutionized the way a whole host of industries do business. Consumer electronics manufacturers and retailers are now getting in on the act. It's easy to see why.

BENEFITS FOR MANUFACTURERS

There are huge potential advantages for manufacturers using RFID. These include optimized material flows in production and enhanced internal and external logistics, as well as improved product authentication. RFID can also help manufacturers boost accessory sales by making electronics pairing simpler for retailers and consumers.

BENEFITS FOR RETAILERS

For retailers the benefits are no less important. RFID can help overcome some of the industry's most trying problems, including shrinkage, inventory control and management. The technology also improves opportunities for cross-sales, reduces theft and helps with maintenance.

This brochure includes details of all these benefits and more. These real life success stories highlight the versatility of RFID technology and its importance to the consumer electronics industry.





SOURCING COMPONENTS AND MODULES

It's crucial for electronics manufacturers to continually optimize their material flows in production, even though timeframes are already tight. RFID tags on components and modules assist this process by reducing confusion and handling errors. Suppliers tag and ship materials which can be tracked to the production facility and beyond. An automated RFID system receives a delivery receipt for the materials and updates the inventory at the facility around the clock.

HP BENEFITS FROM TOTAL SUPPLY CHAIN APPLICATION

BACKGROUND Hewlett-Packard, or HP, is a provider of technology solutions to consumers, businesses and various institutions globally. The company's offering spans IT infrastructure, global services, home and computing as well as imaging and printing.

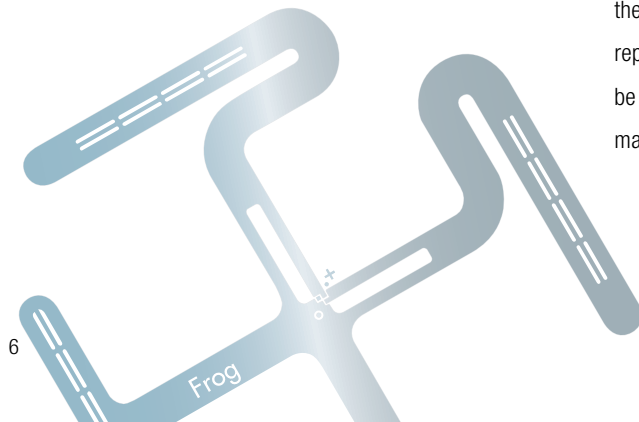
CHALLENGE HP's challenge was to enable an RFID end-to-end solution to increase visibility and efficiency throughout the entire supply chain, including manufacturing, distribution, repair, reverse logistics and recycling. An added benefit would be to utilize the same RFID solution as that required by retail mandates.

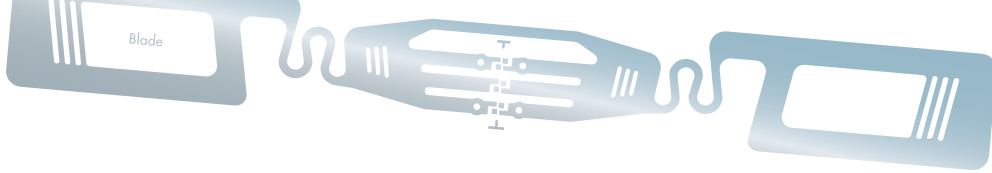


SOLUTION HP developed and implemented a solution using RFID tags from SMARTRAC, RFID printers and a network of readers. In the first year, HP tagged more than two million items at its production facility in Brazil.

RESULTS

- ▶ All the benefits of RFID technology in a complete end-to-end supply chain application
- ▶ Compliance with RFID retail mandates
- ▶ A reduction in inventory through increased visibility regarding the whereabouts of the company's products
- ▶ Improved insight into the company's own operations





PRODUCTION, INTERNAL LOGISTICS

RFID tagging enables product-tracking during the manufacturing process. Tags are attached to products at the beginning of the process and an automated RFID reader system reveals their locations at each manufacturing phase. Products can also be recorded to the inventory automatically. RFID tags allow products to be processed faster, improving efficiency and productivity.

TOSHIBA IMPROVES WORKER PRODUCTIVITY BY 57%

BACKGROUND Toshiba, a world leader in high technology, is a diversified manufacturer and marketer of advanced electronic and electrical products, such as information and communications equipment and systems, electronic components and materials, power systems and household appliances.

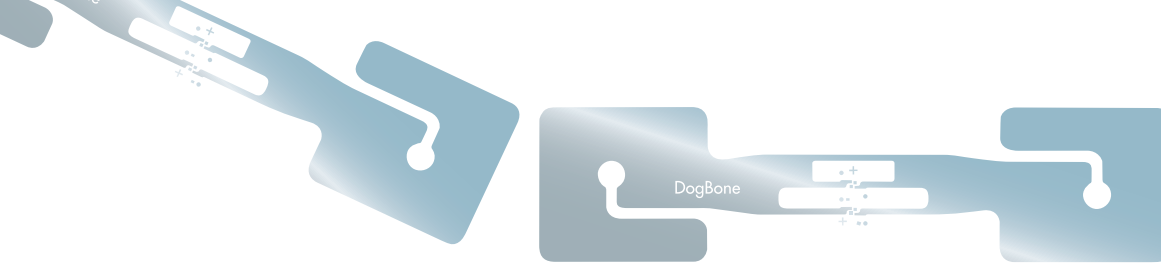
CHALLENGE Toshiba Europe handles the customer-specific configuration of every Toshiba laptop destined for the EMEA region. At the Regensburg plant, handling staff were receiving pallets containing 36 laptop PCs by scanning the bar codes on each box individually. There was an obvious need to improve productivity and efficiency.



SOLUTION Toshiba fitted pallets with our Gen2 ShortDipole tags. Currently, the entire pallet can be processed instantly by passing it through an RFID reader gate at the entrance. Toshiba's plant now handles 15,000 PCs a day compared to the previous 9,500, with a peak capacity of up to 30,000 units a day. With one tag on each laptop, that means over 4 million tags annually.

RESULTS

- ▶ Improved supply chain management
- ▶ Unblocked warehouse bottlenecks
- ▶ Worker productivity up 57%
- ▶ RFID interphase available to retailers
- ▶ ROI within one year



EXTERNAL LOGISTICS

Logistics is the key to success for global electronics manufacturers distributing products to numerous destinations worldwide. An RFID system improves efficiency throughout the supply chain: RFID tags provide information that simplifies the distribution process, for example in inbound and outbound logistics.

SONY OPTIMIZES GOODS FLOW AND DELIVERY

BACKGROUND Sony is a leading manufacturer of audio, video, communications and information technology products for the consumer and professional markets. Sony Supply Chain Solutions Europe is the company's primary European distribution centre.

CHALLENGE Sony's challenge was to increase efficiency and throughput and to reduce shrinkage and claims disputes in the company's European supply chain. A large volume of electronic goods passes through Sony's European Distribution Centre, so the manufacturer needed an accurate method of reading RFID tags on individual products – particularly to avoid false or cross reads.



SOLUTION An integrated video/RFID system was implemented in Sony's supply chain. A tag acquisition processor serves as the RFID network infrastructure and middleware. With this solution, Sony is able to scan products many times at item level, and record all cases with the IP video system. Currently, the solution traces 1.2 million customer orders annually in Germany.

RESULTS

- ▶ An optimized goods flow and efficient proof of delivery
- ▶ Productivity improvements, reduced throughput times
- ▶ Improved customer satisfaction
- ▶ The ability to follow product categories at the serial number and unit levels
- ▶ Less shrinkage

PRODUCT AUTHENTICATION

Product authentication is one of the key elements of brand protection. Manufacturers need to ensure that retailers sell original articles and that the service chain handles genuine products. An RFID tag system provides a fast and reliable way to verify a product's authenticity. The tag instantly exposes pirated copies, facilitates compliance with product safety regulations and helps stop products from straying into grey markets.

RFID TAGS ASSIST IN BRAND PROTECTION

BACKGROUND Manufacturers are committed to protecting their valuable brands. They use various means to verify that retailers sell genuine products and that service shops offer maintenance for these products alone. Manufacturers also seek to limit the distribution of their products to the official retailer network.

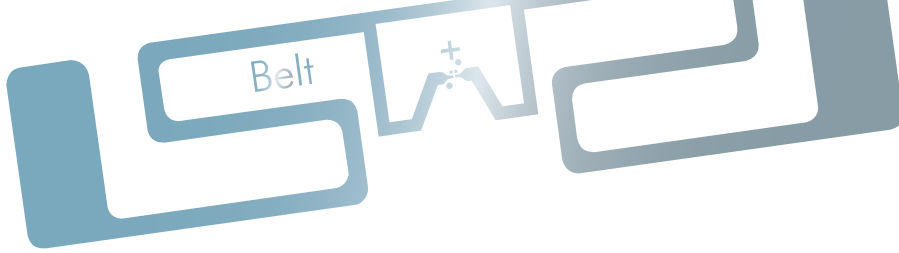
CHALLENGE Pirated copies can severely damage the reputation of an established brand and they also lead to substantial financial losses. For example, an exploded mobile phone battery, even though it is a pirated copy, may undermine the reputation of the original manufacturer. Moreover, products sold through grey markets reduce brand owners' revenues.



Solution RFID tagged items provide an instant and reliable way to authenticate products. Retailers are able to verify that they sell original products and service shops can make sure that they handle authentic, trusted goods. As a result, RFID tags also facilitate compliance with product safety regulations.

RESULTS

- ▶ Improved brand protection
- ▶ Fast and reliable product authentication
- ▶ Avoidance of grey markets
- ▶ Product safety



INVENTORY

For an electronics store it's essential to optimize the number of items in stock to increase sales. An RFID system complete with 'smart shelves' enables real-time inventory and control of stock levels in-store. The system automatically places orders to the supplier well before the last item is sold out, so that replacements arrive on time. Optimized inventory levels result in increased sales and customer satisfaction, which is especially important during peak seasons.

RETAIL SALES UP WITH AN AUTOMATED RFID INVENTORY SYSTEM

BACKGROUND Clerks in retail stores count items in the inventory on a regular basis. The items are often counted manually before orders are placed to manufacturers, and also for accounting purposes.

CHALLENGE In an electronics store there's a huge volume of items such as video games and accessories. It takes time and effort to keep the inventory up to date, and even then, some items in the store sell out. The situation is even more intense during peak seasons when customers rush in. Evidence from the textile industry suggests that stores could increase their sales by 10 percent if they were able to optimize the amount of items in stock.



SOLUTION Smart shelves fitted with RFID readers control stock levels automatically. When the amount of RFID-tagged items on a shelf drops below a certain level, the system places an order to the supplier. Early notification helps suppliers boost production, and more items are delivered to the store before the last ones are sold. Moreover, the RFID system gives an accurate account of the number of items currently in stock.

RESULTS

- ▶ Increased sales
- ▶ Optimized stocks, especially during peak seasons
- ▶ Automated order system and inventory
- ▶ Enhanced customer satisfaction

CROSS-SALES

RFID tags inside a store are able to provide customers with additional information. This can be arranged with information checkpoints like current price-checking stations which present detailed information about products on-screen. For example, it's easy to check the compatibility between one product and another. Checkpoints can also be used for other types of sales promotion, like making real-time special offers or offering information about convenient accessories. The RFID system increases the efficiency of sales resources and enables better customer service.



RFID TAG SYSTEMS IMPROVE CUSTOMER SERVICE

BACKGROUND Items in stores don't always have a price tag attached, which means customers have to look for a clerk to check the price and request product information. Often, the customer wants to purchase accessories at the same time or hunt for bargains.

CHALLENGE Customers need plenty of information about products but sometimes they aren't able to get it. For example, someone wants to buy an iPod but might also want to check the price, look at detailed product information or accessorize it with loudspeakers. However, the clerk may be busy serving other customers.



Solution An RFID tag system provides a convenient way to share information with customers. When a store has information check points equipped with RFID readers and the items for sale carry RFID tags, the customer purchasing the iPod is able to check product-related information from a screen without the clerk's help. In addition to the price, the information can include compatible products, accessories and special offers.

RESULTS

- ▶ Improved customer service
- ▶ Increased sales
- ▶ More effective sales staff

ANTI-THEFT

Shoplifting is a major problem worldwide. An effective RFID system can reduce theft considerably. A single label, which includes RFID and EAS (Electronic Article Surveillance) functionalities, can prevent external and internal losses and improve profitability. Compared to the traditional EAS system, RFID tags contain a considerable amount of information and deliver it instantly. Therefore, RFID systems have numerous advantages, such as updating inventory in the event of shrinkage.



RFID TAGS OFFER IMPROVED THEFT-PREVENTION

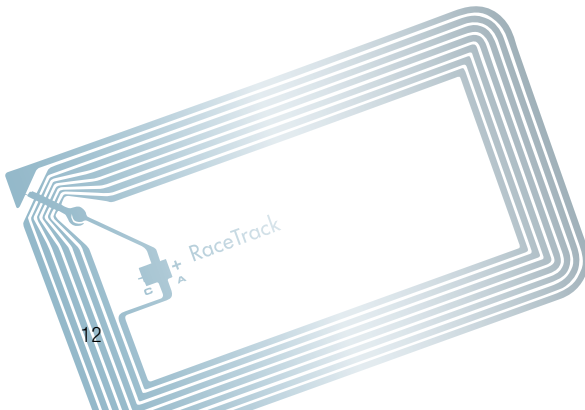
BACKGROUND To prevent theft, retail stores use Electronic Article Surveillance (EAS) systems which activate an alarm if someone tries to leave the store without paying.

CHALLENGE EAS systems only indicate if something is being carried out of the store. The downside is that they don't reveal how many items the shoplifter is carrying or how many people are involved. Internal losses are another issue: company staff often take home the employer's property and forget to return it.

SOLUTION RFID tags not only substitute EAS tags but also offer the advantages of UHF Gen2 technology. Our RFID tags can activate the alarm, reveal the total number of items being stolen and update the inventory if necessary. Correspondingly, RFID tags prevent internal losses: they record how many items have been taken, when and where.

RESULTS

- ▶ Prevention of theft and internal losses, less shrinkage
- ▶ Items linked to the inventory system
- ▶ One label in place of two (RFID+EAS)



RENTAL USE



Video rental shops deal with an enormous number of DVDs and games each day. An RFID system simplifies the entire rental process – not only by monitoring and validating rentals and returns, but by updating the inventory as well. RFID tags are convenient for this task as they persist through countless read cycles while also preventing theft and shrinkage. In general, an RFID system improves revenues and profitability. Compared to bar codes, each disc can carry a unique identification number.

TOUCH AUTOMATION STREAMLINES INVENTORY MANAGEMENT PROCESSES

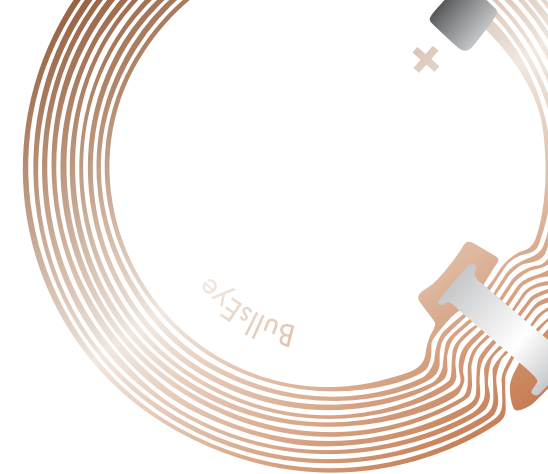
BACKGROUND Touch Automation is an industry leader in the development of automated dispensing solutions for movies, music and video games. The company provides merchandizing systems to more than 1,000 grocery stores and other retail locations across the USA.

CHALLENGE Touch Automation wanted to develop a convenient way to rent or purchase CDs and DVDs while reducing the threat of theft and shrinkage. The company built a state-of-the-art automated dispensing solution line, and sought a partner to deliver tags that would perform across hundreds of thousands of read cycles.

SOLUTION Our BullsEye tag streamlines critical inventory management processes. This round HF CD/DVD RFID tag, with read-write capacity, is encoded with CD and DVD stock-keeping unit (SKU) information. They are prepared generically, so that RFID-tagged merchandise can be shipped to any system located within retailers' enterprises. This enables retailers and Touch Automation to monitor rentals, returns and purchases as well as fine-tune stocking processes for higher revenue per system. Touch Automation uses our tags for all of its CD and DVD products.

RESULTS

- ▶ Multi-orientation readability
- ▶ Outstanding performance in metal environments
- ▶ Authentication of goods and reduction of thefts and losses
- ▶ Cross-sales opportunity at POS (point of sale)



WEB SHOPS

Internet retailers rely on efficient logistics, so they try to make the logistics chain as short and fast as possible. An essential phase in the chain is the return process. RFID tags are of enormous importance in this matter, as they simplify the handling of returned items and improve the efficiency of the process. Moreover, tags track the movement of shipments throughout the chain. As a result, the items sold can be shipped directly from manufacturer to customer, avoiding unnecessary storage and reducing delivery times.



RFID SYSTEMS IMPROVE INTERNET SHOP LOGISTICS

BACKGROUND Logistics is the core business of internet retailers marketing consumer electronics. When an item is sold, it often arrives first at the retailer's warehouse, and it is shipped from there to the customer. Also, internet retailers handle returned items manually: packages are opened and the bar codes scanned.

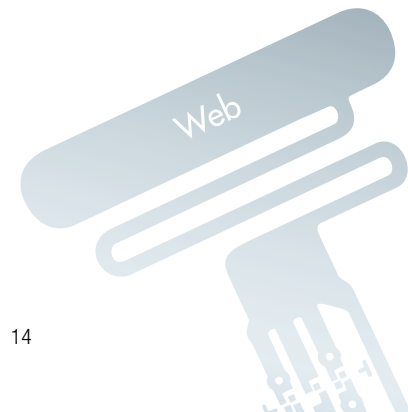
CHALLENGE The logistics chain between the manufacturer and customer is longer than needed, meaning deliveries are slower and costs increase. If tracking systems don't provide accurate and real-time information for individual items, they are less effective than required. A reduction in manually performed tasks is necessary to improve the return process.



SOLUTION An RFID tag system introduces clear improvements to supply chain management. RFID-tagged items can be shipped directly from manufacturer to customer, while RFID readers track items throughout the shipping process. Similarly, the RFID system makes the return process faster and more effective, as tags can be scanned automatically from unopened packages and the respective invoices updated.

RESULTS

- ▶ Improved logistics management
- ▶ Shorter delivery times
- ▶ Enhanced customer satisfaction
- ▶ Reduced costs for retailers and customers



ELECTRONICS PAIRING

Electronics manufacturers boost their sales by offering customers suitable accessories. An RFID system assists in this matter by 'Electronics Pairing', i.e. automatically recognizing a suitable pair for a device, such as a correct remote control for a TV set. The system also enables Plug&Play functionality. Another great advantage of the RFID system is its ability to distinguish an original spare part from a copy to prevent faulty usage.

ELECTRONICS PAIRING VERIFIES THE USE OF GENUINE SPARE PARTS AND ENABLES PLUG&PLAY FUNCTIONALITY

BACKGROUND Electronics manufacturers seek to provide an easy way for customers to find suitable accessories. They also like to have genuine spare parts used in repairs to their products rather than copies.

CHALLENGE Incorrect parts are sometimes used in repairs to electronic products. This can result in a product malfunction or even present a health hazard. Similarly, it can be difficult to find correct accessories for consumer electronics like TVs. Customers can waste a lot of time looking for a suitable remote control or performing unnecessary software set-ups, for example.



SOLUTION Electronics Pairing is one of the great benefits of using RFID tags. It means a repair shop can easily, accurately and rapidly recognize correct spare parts using the information carried by the RFID tag. Moreover, the information in the tag makes it a lot easier to match accessories to a product. For example, the RFID system recognizes the correct remote control or digibox for a television instantly, or the correct cartridge for an inkjet printer or air filter.

RESULTS

- ▶ Easier use and adaptation of accessories
- ▶ Confirmation of the correct use of equipment
- ▶ Confirmation of the right people using equipment
- ▶ Prevents the use of copies
- ▶ Benefits of Plug&Play functionality

MAINTENANCE & SERVICE

RFID technology is invaluable in maintenance business as it makes the process faster and more convenient for everyone. An RFID tag contains information about a device, such as the production batch and service record. With this information, maintenance personnel are able to determine the need for a service without delay and get started on the required tasks. RFID tags are superior to bar and IMEI codes due to their ability to store a large amount of information which can be updated as necessary and read automatically.



RFID TAGS ENABLE A MORE EFFECTIVE MAINTENANCE PROCESS

BACKGROUND When an electronic device is brought to a store for maintenance, service assistants scan the bar or IMEI code for basic information about the device, such as the model and type, from the manufacturer's database. The assistants also have to enter more information about the device into the database before delivering it to the maintenance shop.

CHALLENGE Receiving a device like a phone for maintenance is a complicated process. Service assistants often have to search for specific information about the device and type details into a database. They also have to look up maintenance records and ensure that the right customer receives the device as well as remind them of the next service date.



SOLUTION RFID tags create an opportunity to automate much of the maintenance process. Stores or maintenance shops are able to establish service centres which automatically scan RFID tags and save the information in a database. An RFID system identifies devices individually and provides detailed information such as maintenance records, production batches and software versions. The RFID system can also serve as a reminder about service intervals, help identify the customer and support invoice itemization.

RESULTS

- ▶ A more effective maintenance process
- ▶ Faster, more accurate information flow
- ▶ A complete electronic maintenance record

WARRANTIES, RETURNS AND RECALLS

Managing warranties and returns becomes much more efficient once products have RFID tags applied. The tags confirm that a product is genuine, not a pirated copy. Moreover, they provide information about the warranty expiration, service record, product safety and the production batch. The latter is useful when a product needs to be identified correctly in campaigns like significant product recalls.

RFID TAGS PROVIDE PROOF OF WARRANTY

BACKGROUND Manufacturers rely on a printed certificate such as a store receipt as proof of a product warranty. Moreover, store clerks often only use visual inspection to verify that customers return genuine products like mobile phone chargers or batteries.

CHALLENGE It's quite easy to alter or falsify printed warranty certificates, which means that manufacturers have to pay for repairs to products whose warranties have expired. The same concern affects product recalls: how can a store clerk verify that a customer has returned a genuine product, such as a laptop battery?



SOLUTION Electronic devices and many other types of products can carry an RFID tag inside them. With the tag, it's fast and easy to identify the returned device and check information such as the warranty expiration date, service record and production batch. Store clerks can verify the information in seconds and send the returned products to the correct destination automatically. RFID tags can also carry information about product safety.

RESULTS

- ▶ Faster and easier return process
- ▶ Assurance of a genuine product
- ▶ Improved product safety
- ▶ A platform created for returned or replaced products



ASSET TRACKING

Large corporations often put a lot of effort into tracking shared devices like laptops. An RFID system greatly facilitates this matter: it reveals the current locations of the devices and indicates if the devices have been taken out of the company's premises. In addition, access to the corporate network is convenient since the RFID tag system is able to identify each laptop, which also means fewer passwords are needed.

RFID SYSTEMS ASSIST ASSET TRACKING

BACKGROUND Corporations often have a number of devices, such as laptops or mobile phones, available for use by every employee. They track these devices by keeping Excel spreadsheets or handwritten lists, or by trying to memorize which employee borrowed what device. Furthermore, employees using company laptops need to have current passwords to access the corporate network.

CHALLENGE When a number of devices are involved, it takes time and effort to locate them. Some shared laptops might be on the company's premises, while others are out of the building. Numerous calls are required to find a device. Moreover, personnel using shared laptops may easily forget the passwords, meaning they have to call the system administrator for new ones. Device shrinkage is also a reality that many corporations aim to eliminate.



SOLUTION An RFID tag system is able to track every device, revealing the current locations of devices inside a company's premises. An RFID reader installed in building doorways or entrances to the grounds notifies when a device has been taken off the premises. It is also easier to access to the corporate network with RFID labelled devices, as the tags can be used to identify each device. This means that fewer passwords are needed but information is still protected. RFID tags also help track computers and other property within the building, while keeping records of service dates, warranties and software updates.

RESULTS

- ▶ Prevention of asset losses
- ▶ Real-time property accounting
- ▶ ID recognition of network access and prevention of information theft
- ▶ RFID systems assist asset tracking

RECYCLING



The recycling process for used electronics is fast and safe when devices carry RFID tags. The tags can carry valuable information that makes it possible to recycle one component at a time and enables automatic sorting and materials identification. As a result, RFID tags make the whole process faster and also help prevent health hazards. Moreover, tags promote the safe reuse of goods, as they contain information for control and security purposes. This information can also be used to avoid dumping and avert black market sales activity.

RFID TAGS ENABLE AUTOMATED RECYCLING

BACKGROUND Recycling is increasing worldwide. Manufacturers are developing a state of readiness for a safe, fast sorting of components and materials.

CHALLENGE Disassembling a high-tech product can be a challenge as it may contain harmful materials, and currently the task is often performed by hand. It may also take time and effort to sort out each component in an environmentally sustainable way.

SOLUTION RFID tags make it possible to identify and sort components automatically. They provide solutions that can improve processes like the refill and return of ink cartridges to the right customer or the automatic sorting of recyclable components from a television. In addition, we meet the requirements of the ISO 14001 Environmental Management Standard and promote sustainable growth.

RESULTS

- ▶ An automated and efficient recycling process
- ▶ Environmental sustainability
- ▶ Prevention of health hazards

