HK RFID Awards

香港無線射頻識別大獎

Leaders in Business Excellence Creation

2010

Organizer 主辦機構

GS1 Hong Kong

Hong Kong RFID Awards 2010

Presentation Ceremony at GS1 Hong Kong Supply Chain Management Excellence Summit, November 5, 2010

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Welcome Message

The Hong Kong RFID Awards was first launched by GS1 Hong Kong in 2008 with the aim of recognizing the outstanding achievements of innovative enterprises and individuals in RFID technology implementation and leadership. I am delighted to know that due to its high significance to the industry, this undertaking is now an annual event to continuously serve as a prestigious platform in highlighting success obtained by local companies and innovators in applying RFID to business and daily lives.

Indeed, it is spot on that innovation is crucial to the success of any business, particularly in today's complex and highly competitive economic and business landscape. It further pushes the boundaries in product development and process, drives the economy and enables organizations to keep pace with intense market competition. The culture that allows innovation to flourish is largely based on nurturing good ideas and, in turn, innovation is dependent on the creative individuals who conceptualized these new ideas and transform them into reality. That is where the Hong Kong RFID Awards play a significant role.

As the local chapter of GS1, GS1 Hong Kong is dedicated to helping enterprises effectively communicate with their trading partners through the development of the Electronic Product Code™ (EPC) standards for RFID technology. Today, these standards play vital role to the success of RFID technology as a business enabler for the global supply chain.

Since the Hong Kong RFID awards were initiated in 2008, we have noticed the number of entries growing annually. This year alone, more than 35 entries have been submitted by various organizations and individuals, a remarkable feat for an event that has only been in existence over the last two years. Now on its 3rd consecutive year, the Awards mark the creative spirit of Hong Kong enterprises and individuals by recognizing and honoring the city's most innovative organizations and young talents who have demonstrated excellence in harnessing RFID technology to improve business operations and enhance people's lives.

On behalf of GS1 Hong Kong, we would like to extend our deepest gratitude to the Hong Kong SAR Government for their continuous support in making the Hong Kong RFID Awards a worthwhile endeavor. I would also like to express my heartfelt thanks to the distinguished members of the panel of judges for their invaluable help and the difficult task of selecting the 'cream of the crop' among this year's excellent candidates.

Last but not the least, I would like to convey my warmest congratulations to all the winners for their exceptional contributions and innovativeness in deploying RFID technology. I hope these Awards will further help encourage the local business community to push the technology forward and never cease in developing creative and innovative business concepts.

Ms. Anna Lin
Chief Executive
GS1 Hong Kong

Congratulatory Message

It is my great pleasure to see the Hong Kong RFID Awards in its third year. The event recognises the business success of enterprises adopting RFID and helps accelerate innovative RFID technology development in Hong Kong. The extension of the Awards from pioneering industry players to talented tertiary students – the U-21 RFID Awards since last year encourages and nurtures creativity and innovativeness in our younger generation.

From the Award winners this year, we see novel approaches, impressive implementation, innovative and effective deployment of technology in wide range of RFID applications: from production line monitoring system, medical appliance technology, logistics, to maintenance systems.

Hong Kong has established and demonstrated itself as a leader in the adoption of RFID technologies through participating in the Shanghai Expo 2010's Urban Best Practices Area. We showcased the highly interactive, creative and pervasive use of smart card technology in the city and how it has improved efficiency and the quality of city life.

The HKSAR Government strives to enhance Hong Kong's competitiveness and develop our city into an innovation and technology hub for the region. We will continue to provide an environment conducive to the development of high value added and high technology industries in Hong Kong through our funding and infrastructural support programmes.

I congratulate all winners and participants in the Awards and look forward to seeing more innovative products and services propelling RFID advancement in coming years.

Miss Janet Wong, JP
Commissioner for Innovation and Technology
HKSAR Government

About the Hong Kong RFID Awards and U-21 RFID Awards 2010

GS1 Hong Kong

The Organizer

GS1 Hong Kong is a not-for-profit industry-led organization established to promote global standards, best practices and enabling technologies in the field of global value and supply chain management. As the local chapter of GS1, we are the only organization in Hong Kong authorized to issue GS1 and EPC identification numbers.

The Objectives

The Hong Kong RFID Awards were first established in 2008. The awards program has been created to champion the use of EPC standards compliant RFID technology by enterprises. The mission Hong Kong RFID Awards mission can be summed as follows:

- Bring recognition to pioneering enterprises that have successfully brought EPC/RFID technologies into their business operations.
- Encourage the adoption of EPC/RFID technologies by businesses in Hong Kong and the Pearl River Delta region.
- Foster the development of new EPC/RFID products and services.

The Awards Categories

The Hong Kong RFID Awards has three categories. These are:

Best EPC/RFID Implementation

These honors will be awarded to enterprises that have successfully adopted EPC/RFID technologies in their business operation to deliver business value and proven return on investment through cost savings, operational efficiency gains, improved production and supply chain management, and better customer service.

Most Innovative Use of EPC/RFID

These honors will be awarded to enterprises that have employed a high degree of innovation and creativity in their application of EPC/RFID technologies to solve operational issues and meet business challenges.

Most Innovative EPC/RFID Products

These honors will be awarded to enterprises that have created RFID products which are highly innovative, easy to deploy, cost effective, addresses market needs and complies with global RFID standards, in particular EPC standards.

Hong Kong RFID Awards - U-21 RFID Awards 2010

In a bid to uplift the spirits of the Hong Kong RFID Awards, the first-ever Hong Kong RFID Awards U-21 RFID Awards was established in 2009 which is open to both full-time and part-time undergraduate and postgraduate students of any local tertiary institutions.

The Objectives

- Foster collaboration between industry and academia to develop new EPC/RFID applications and technological products with market potential
- Nurture a new generation of technical professionals with creativity and business acumen
- Stimulate market demand for innovative EPC/RFID applications and products
- Inspire new insights in the industry with the innovativeness and enthusiasm of tertiary students

Award Journey Accomplished

2008

First time in Hong Kong and received 17 nominations

2009

Introduced U-21 RFID Awards with 15 nominations received from 8 tertiary institutions and received a total of 17 nominations from the industry

2010

A new height : Received of total of 35 nominations

Branded under Hong Kong Smart City+ Awards Program 2010 to:

- Recognize and promote outstanding achievements of Hong Kong professionals and companies that have demonstrated excellence in innovating and deploying RFID and digital certificate based smart card technologies, and
- Encourage promising new developments in RFID and digital certificate based smart card technologies to sustain Hong Kong's competitiveness, bring about further business efficiencies and / or improvements in the quality of our daily lives.

Message from the Judging Panel

Given the quality of previous year's submissions I wondered this year if we could see something even better. But the RFID community in Hong Kong were not yet ready to disappoint us! This year's submissions pushed the boat out further in multiple directions. Patient safety and optimised inventory in healthcare together with the full integration of RFID into a complex manufacturing environment were some new areas of application. And on the technology side we saw success in attacking the traditionally difficult issues of tagging and identifying containers with liquid in them. It would have been easier for Hong Kong to stay within the boundaries of previous successes, perhaps refining what had gone before. But that is not Hong Kong's way, and the global RFID community benefits as a result.

Panel Chair
Mr. Ian ROBERTSON, MBCS, CITP
Director, Transport & Logistics and News Sectors
EPCglobal Inc.

We at GS1 Hong Kong are committed to promoting and encouraging the adoption of EPC/RFID technology to enable local businesses effectively compete in the global market. To this end, we earnestly believe that we need the active involvement of businesses and the audacity of young and talented innovators in transforming creative ideas into commercially viable solutions. The Hong Kong RFID Awards – now on its third year – is the foremost vehicle that recognizes the creativeness of our local enterprises and individuals. Since its launch in 2008, it has earned tremendous and positive feedback from various sectors. This proves that the concerted efforts among different parties in promoting RFID technology have paid off. The winners in this year's Awards demonstrated that business success can be achieved through constant creativeness in the effective application of RFID technology. This dovetails well with our aspiration to drive the innovative use of standardized technologies.

Ms Anna LIN
Chief Executive
GS1 Hong Kong

I would like to thank all the participants in the 2010 HK RFID Awards. It was extremely exciting to see all of the presentations demonstrating new innovations as well as real business implementations driving value. Due to your efforts I expect to see the use of this technology continue to become much more prolific as it uncovers more value. This is truly a testament to your endeavors. Many congratulations to the award Winners. Thank you for allowing me to participate and see your wonderful applications.

Mr. Wesley SWEET
Senior Manager, Information Systems Division
Wal-Mart Stores Inc.

I was pleased to see the many solutions and varied implementations presented. They were extremely impressive concerning the overall quality of the initiatives. I applaud all the participants in this competition; in either the development of solutions that are relevant to business end user needs, or in how RFID has been incorporated into business processes. I especially send my congratulations to the recipients of the awards. The diverse uses of the technology demonstrated really shows the power of RFID systems and shines a light on possibilities for future uses.

Dr. Samson TAM, JP.
Legislative Councilor (Information Technology)

I would like to extend my warmest congratulations to the winners of the Hong Kong RFID Awards 2010. Innovation and adoption of RFID technologies and practical applications for the improvements in productivity contribute to the sustainable development of Hong Kong's logistics and supply chain management industry. I strongly recommend this year's winning awards to the attention of logistics and supply chain industry practitioners and the community at large. I look forward to seeing more innovative uses and deployments of RFID technology.

Prof. Chung Jen TAN
Chief Executive Officer
Hong Kong R&D Centre for Logistics and Supply Chain Management Enabling Technologies

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I am deeply impressed by the exceptional standard presented by the participating companies and wish to congratulate them on their achievements - each and every project represents great creativity backed by solid expertise. It is exciting to witness the constant advancement and innovative applications of the technology. Drawing on the enthusiastic support from the industry, I am confident that this annual event will continue to act as an accelerator to stimulate development and adoption of RFID technology in the region.

Mr. E. Anthony TAN
Chief Executive Officer
Hong Kong Science and Technology Parks Corporation

Again it was a pleasure to be a part of this jury and to be able to get a close view on the innovative projects. I was impressed by the high professionalism and variety of the different approaches. I congratulate the winners for this great achievement. All participants have shown great dedication to the development of innovative RFID applications. The projects show how the use of EPC/RFID applications can increase efficiency and effectiveness in the most diverse operational processes.

Dr. Gerd WOLFRAM
Head of CIO Office
METRO AG

Congratulations to the recipients of the awards. I am very impressed by the overall quality of the initiatives. All the participants in this competition have demonstrated the diverse uses of the RFID technology and the power of RFID systems. They indicate a bright future for more innovative and new applications.

Prof. On Ching YUE
Science Advisor
Innovation and Technology Commission, HKSAR Government

List of Awardees

Best EPC / RFID Implementation

Gold Award: LEO Paper Group (Hong Kong) Limited - RFID Real time Production Line Monitoring System

Silver Award: Kerry Logistics - Kerrier RFID

Bronze Award: MTR Corporation Limited - Innovative RFID Application in MTR Train Maintenance

Most Innovative Use of EPC / RFID

Gold Award: Luxon Data Limited, Medtronic Medical Appliance Technology & Service (Shanghai) Limited & Zuellig Pharma (Shanghai) Pharmaceutical Co.,Ltd - ZL-100 Plus RFID Cabinet

Silver Award: Sik Sik Yuen - e-charm Management System

Bronze Award: Kerry Logistics - Kerrier RFID

Most Innovative EPC / RFID Products

Gold Award: Megabyte Limited - MegaTray

Silver Award: Schmidt & Co., (Hong Kong) Limited & Siemens Limited - Smart Cellar

Bronze Award: Luxon Data Limited - ZL-100 Plus RFID Cabinet

Certificate of Merits

1. Collezione Wine Cellars Limited & PCCW Solutions Limited - RFID-enabled Logistics Management System (LMS) Implenmentation on Collezione Wine Cellar
2. Convergence Systems Limited - CS333 Ruggedized Reader
3. DHL Global Forwarding (Hong Kong) Limited & Department of Computing, The Hong Kong Polytechnic University - An RFID-based Air Cargo Processing System
4. Hong Kong Communications Co., Ltd. - eDesk
5. Department of Fashion and Textiles, Hong Kong Design Institute & Megasoft Limited - RFID-based Management and Retrieval System
6. MTR Corporation Limited - Materials Testing System
7. RCG Holding Limited - RFID Document Management System
8. SecurePro Technology Security System Limited - e-Elderly System

Winning Case Sharing

LEO PAPER GROUP

RFID Real time Production Line Monitoring System

Best EPC/RFID Implementation — Gold Award

Background

LEO Paper Bags Manufacturing is a subsidiary of the Leo Paper Group, which is an original equipment manufacturer of paper products with headquarters in Hong Kong and production facilities in mainland China. The company specializes in the production of paper products and manufactures high quality litho printed paper gift bags for well-known gift companies around the world.

Business Challenges

LEO Paper Bags boasts one of the world's largest paper bag manufacturing capacities, with more than 50 production floors. Because of the scale of its operations, monitoring and tracking production processes to facilitate efficient management proved to be a huge drain on human resources. Additionally, the management's ability to make informed decisions about and respond quickly to production issues was hampered by a lack of real time operational data, including machinery status, product quality, production progress and human resources allocation. The tracking of key performance indictors and upkeep of manufacturing records were also time consuming tasks, as they required data to be reprocessed.

Solution

To address these issues, the company decided to develop a RFID-based production line monitoring system. The company began the project by reorganizing the production line on one shop floor. Instead of using long workbenches, the project team redesigned the production line in a U-shape and installed a conveyor belt along it to allow RFID-enabled bins carrying work in progress to be easily transferred to each workstation. An RFID antenna was installed at each workstation to facilitate the tracking and recording of work-in-progress bins. Thanks to the U-shaped production line, the RFID readers could be positioned in a way which allowed them to connect to more antennas on the shop floor, thus reducing the number of readers needed and project costs.

In addition to the production processes and quality control, the production monitoring system needed to control and monitor the packaging process. The project team identified four tasks that needed to be executed at this stage of the system: controlling employee access to the packaging machine, retrieving production information from the system for association, counting the number of boxes processed and transmitting real time data back to the system. As there was no single device on the market that could fulfill these functions, the project team developed a device in-house to perform the tasks, combining Ultra High Frequency (UHF) RFID, High Frequency (HF) RFID, Wi-Fi, and infra-red capabilities in one device.

Results

The RFID-based real time production line monitoring system significantly reduced the company's human resources needs, leading to substantial cost savings and eliminating human error. Over a period of 12 months, the company's manpower requirements were reduced by some 30%. These cost savings, in turn, allowed the cost of the project to be recouped within just 11 months. Moreover, with real time production monitoring, there was a significant increase in production efficiency estimated at more than 60%, which allowed the company to increase its capacity without having to increase manpower.

In addition, real time production line monitoring has allowed the company to improve customer service. As lead times are shrinking and customers are becoming more demanding, the printing industry is under increasing pressure to enhance its services. With real time monitoring of production processes, the company's facilities have been transformed into a just-in-time manufacturing outfit that is more capable of handling such demands and with improved overall product quality.

Looking ahead, the company plans to make adjustments to the RFID production line monitoring system to achieve EPC compliance. This will pave the way for the company to develop a web based platform, which will allow its clients to track the progress of production remotely. The company also plans extend the system's capabilities from the pallet level to the carton level. Lastly, the company has acquired two subsidiaries to explore the development of retail and industrial RFID applications

Winning Case Sharing

Kerrier RFID

Best EPC/RFID Implementation — Silver Award

Most Innovative Use of EPC/RFID — Bronze Award

Background

Kerry Logistics is Asia's premier logistics service provider with a strong focus on China. Based in Hong Kong, Kerry Logistics has offices in 24 countries with over 10,000 employees and a transportation fleet of 5,600 vehicles. Its core business encompasses integrated logistics, international freight forwarding and supply chain solutions. Its integrated logistics services include warehousing, distribution and a wide range of value added services (VAS), such as kitting, packaging and light assembly.

Currently, Kerry Logistics is serving a leading manufacturer of imaging products in Hong Kong, handling more than 2,700 stock keeping units (SKUs) and delivering around 450 orders on a daily basis for the client. The company also provides VAS, such as labeling, serial number capturing and kitting for specific products, for the client, with a total volume of more than 100,000 items per month.

Business Challenges

In view of the strong growth of retail sales in the Hong Kong market, the demand for VAS has increased dramatically. As VAS is a labor intensive process, this has led to a number of challenges for Kerry Logistics. Firstly, the company was experiencing issues with serial number verification, including long processing times and high risk of human error. Secondly, duplicate scanning of serial numbers was causing bottlenecks in the outbound processes. Thirdly, the operational team was devoting a significant amount of time to resource planning during busy periods, such as product launches and seasonal demand peaks.

Meanwhile, for the client, long VAS processing times meant longer lead times for launching new products and incorrect serial numbers on warranty cards was placing an additional burden on customer services staff.

Solution

To address these problems, Kerry Logistics developed an RFID-based VAS monitoring system, Kerrier RFID. The company kicked off the project by meeting with internal users to discuss issues and conduct an onsite study of the kitting and outbound processes. It decided to trial the system for projects which involved processing high value goods. After identifying a suitable project for the trial, the company consolidated and aligned the requirements of the various stakeholders.

The project team worked closely with internal users on the system workflow design to make sure that users' requirements were addressed. Then the team sourced and tested various RFID equipment over a two-month period, eventually settling on a configuration of two door gates, 12 antennas, four fixed readers (for association, warranty card printing, VAS checkout and outbound serial number capturing) and one handheld reader. Trials were conducted with small shipments on selected product lines. The system workflow was fine tuned to ensure that all user requirements were met. After internal users accepted and signed off the system, the project team moved onto a pilot run.

Results

Before implementing the Kerrier RFID, the company had to scan each item twice for warranty card printing during kitting and outbound serial number capturing prior to outbound delivery. With the RFID system in place, each item now only needs to be scanned once during the kitting process, while a bulk scan at the carton level could be performed for VAS checkout and outbound serial number capturing processes. As a result, the order lead time was shortened, allowing the company to handle urgent bulk shipments more easily.

In addition, the accuracy of serial number capturing and warranty card printing improved and the system allowed easy tracking and tracing of inventory movements within the warehouse. The system also facilitated reverse logistics processes and improved the efficiency of stock take procedures.

For the client, the RFID system enabled it to respond to market changes more quickly and shorten the order lead time. Moreover, the system lightened the burden on customer service staff resources and helped enhance post-sales customer service by reducing the risk of serial number mismatch.

In terms of future development, the company plans to enhance cycle counting using RFID handheld readers to improve operational efficiency and install RFID gates at the loading platform to facilitate the handover process between warehouse operators and delivery crews. The company is also conducting a feasibility study into using RFID-enabled warranty cards to help its client enhance post-sales services.

Innovative RFID Application in MTR Train Maintenance

Best EPC/RFID Implementation — Bronze Award

Background

The MTR Corporation (MTR) is a company that needs little introduction in Hong Kong. Globally renowned for its track record of safety and reliability performance, MTR operates a rapid transit and light rail service, which helps more than 4 million passengers get across Hong Kong each day. Other than its mass transit service, the company also provides consultancy services, operation and maintenance franchising, and construction services to the rail industry worldwide.

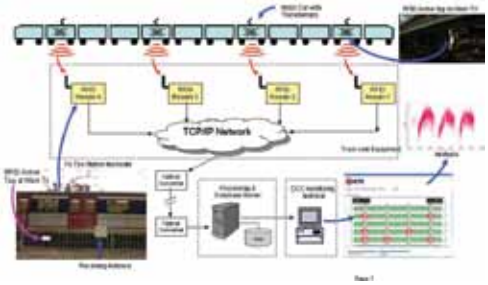
Business Challenges

With more than 1,900 cars in operations, maintaining the safety and reliability of trains requires considerable work at MTR. While the company is committed to keeping its service safe and reliable, it is constantly looking for ways to improve. For this reason, MTR decided to look at how it could leverage RFID technology to enhance safety and efficiency in its daily operations.

The company identified two feasible areas where RFID technology would be able to help. The first area is remote data monitoring of the thermal performance of train-borne equipment. Monitoring thermal performance of train-borne equipment can help engineers to anticipate and take action before equipment failures. Live operational data is also useful for performance monitoring in order to optimize maintenance resources for the equipment. Moreover, real time performance monitoring may sometimes be required on specific equipment of interest for case study. This cannot be done with civilian passengers on board, as the setup and wiring of test equipment may pose safety issues and cause inconvenience to passengers. But without passengers on board, the study would not reflect real world conditions, as the trains are not operating under load.

The second area was in the stabling of trains in maintenance depots. During non-peak hours, the depots are often crowded, with limited space to park trains. The company wanted to find a technology that could help it park trains more safely and tightly in front of signals.

Condition-based Monitoring – RFID Remote Temperature Monitoring System



Solution

In designing the Remote Data Monitoring System, the project team identified an active RFID tag with a temperature sensor that could transmit temperature data at short range. The purpose of this tag was to help monitor the thermal status of the four transformers on each trainset and transmit data to a trackside receiver. The tag used was chosen for its sturdy design, as it would be attached to the underframe of passenger trains, where it would be subjected to various forms of physical stress.

The second phase of system development involved building a software application to display monitoring results to engineers in the maintenance centre. After exhaustive research into the RFID data structure, user needs and communications requirements, the team decided to design custom software, which would automatically collect data, store it in a database, detect the trainset formation, and compare temperature data of the four transformers in real time. When any one of the four transformers had significant temperature variance, the software had to alert the maintenance centre engineers.

Meanwhile, to address the second challenge, the company designed Safe Parking System to ensure trains stopped correctly in maintenance depots. Several different technologies were tested including laser, infrared and ultrasound, but RFID was judged to be superior in all respects, including durability, robustness, stability and environmental impact. A 915MHz UHF RFID reader was installed at a trackside signal to detect approaching trains. If the train reached a certain distance, an alert would be sent via 2.4GHz RF system to the driver.

Results

The Remote Data Monitoring System provides the company's maintenance center engineers with constant monitoring of trainset transformers temperature, enabling them to detect possible failures before they can happen. From there, the possibilities for the real time monitoring are numerous, as it can be adapted to monitor axle bearings for seizure, traction motor temperature and brake jamming to name but a few examples. The Safe Parking System also opens up new possibilities for RFID-based train distance-to-go protection technology, enhancing train movement safety.

Winning Case Sharing

LuxonDATA

Medtronic 美敦力

ZUELLIG PHARMA CHINA

ZL-100 Plus RFID Cabinet

Most Innovative Use of EPC/RFID — Gold Award

Most Innovative EPC/RFID Products — Bronze Award

Background

Last year, Zuellig Pharma China; whose parent company is the largest distributor of pharmaceutical, medical device and healthcare products in Asia-Pacific, and Medtronic; one of the world's largest independent medical device and appliance manufacturers and technology service providers, teamed up with Luxon Data to design and implement a custom solution for managing consignment inventory at hospitals. Luxon Data is a provider of customized auto-identification systems with a focus on building solutions for manufacturing, healthcare and pharmaceuticals industries.

Business Challenges

Hospitals and other healthcare providers are under constant pressure to improve service quality by enhancing patient safety, reducing waiting times and increasing general service levels, yet at the same time providers are expected to maintain stringent cost controls. One area which can have a significant impact on both service quality and cost to healthcare providers is inventory management. Managing medical supply inventory in hospitals requires a delicate balancing act. On the one hand, it is critical that supplies never run out and on the other hand, some specialty items can be very expensive to stock and required special care to maintain. Stocked items also need to be consumed before they pass their expiry dates. The solution adopted by many hospitals has been to source medical supplies on consignment, so they do not need to pay for any items until they are actually consumed. This solution, however poses its own challenges. Managing consignment inventory can prove to be slow and tedious, given the need to track lot codes and monitor expiration dates of many items manually. Inventory visibility is general poor and the flow of information can be inaccurate due to unforeseen or general human error in daily operational processes. In addition, for healthcare staff, paperwork can take up valuable time which can be spent more productively performing other duties.

Solution

The team solved this challenge by creating an RFID-enabled medical cabinet solution; The ZL-100 Plus RFID Cabinet. The ZL-100 Plus was designed to improve consignment visibility, item traceability and inventory management through real time tracking of the movement and handling of inventory by RFID tags encoded with product information; such as part number, serial number, expiry date and price. Each tag is attached to individual stock items during packing to enable real time consignment visibility and item traceability through centralized real time inventory management. The cabinet also acts as a highly secure device, with an RFID reader and is locked to manage access by authorized personnel using ID cards, fingerprint or facial recognition. In addition, the cabinet enables localized inventory reporting by displaying real time inventory information on a built-in LCD screen and is able to generate reports available online and in various formats, including Excel and PDF. In addition, there are no location limitations for the cabinet in a hospital, warehouse or retail environment as it can connect to a server through Ethernet, Wi-Fi or GPRS.

Results

The ZL-100 Plus RFID Cabinet can help distributors and healthcare providers to achieve greater operational efficiency, productivity gains and cost savings when compared to existing manual processes. The solution leads to more efficient inventory control with real time visibility of stocks and enables greater accuracy through an automated process. It also improves healthcare safety by ensuring items are replenished when stock is low and alerting staff when items are approaching their expiry dates. In addition, the ZL-100 Plus enhances security as only authorized users are able to log in with ID smartcards. Lastly, it also enables a supplier to manage product recalls efficiently and is less costly as each item carries a unique RFID tag.

e-charm Management System

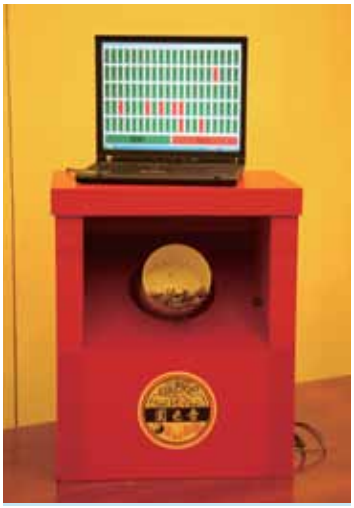
Most Innovative Use of EPC/RFID — Silver Award

Background

Sik Sik Yuen Wong Tai Sin Temple was founded in 1921 for the practice of Taoism, Buddhism and Confucianism and the worship of Master Wong Tai Sin. Managed by Sik Sik Yuen, the Yuen for short, the temple accepts millions of worshippers each year and many tourists, who are attracted by its Chinese cultural heritage.

Business Challenges

More than four million visitors come to the temple every year, with the Chinese Lunar New Year period being particularly busy as local worshippers visit in search of blessings and to practice fortune telling using Chinese fortune telling sticks. Most worshippers, who come to the temple for fortune telling, borrow one of the 150 sets of fortune telling sticks made available by the temple. Each set of fortune sticks consists of 100 numbered bamboo sticks held in a bamboo holder. The bamboo holder is shaken until one of the sticks falls out. The number on the stick corresponds with a prediction, which provides the worshipper with guidance.



In the past, to ensure each bamboo holder contained a complete set of sticks, 10 temple staff were assigned to manually check through the 150 sets of fortune telling sticks, with each inspection taking about five minutes to be completed. Since thousands of worshippers would borrow the fortune telling sticks each day during the Chinese Lunar New Year period, the temple wanted to find a new means to conduct inspections, which would be less time consuming and allow it to make more efficient use of its manpower.

Solution

After discussing project goals with senior executives and the religious affairs unit, and defining the project's scope, the Yuen decided to build an RFID-based system for checking the sets of fortune telling sticks quickly prior to being lent out to worshippers.

The e-Charm Management System used durable, waterproof and heatproof passive UHF RFID tags that were small enough to be implanted into each stick, and specially designed bamboo stick holders with built-in RFID readers and antennas. In addition, a device was developed to shake the sets of sticks while they were being scanned by the reader, in order to ensure an accurate count. Lastly, custom software was written to display the results of the scan, including any missing or duplicate sticks.

To ensure the system was respectful of tradition and religious needs, the RFID tags were implanted invisibly. Each stick was split to allow the insertion of the tag, then glued back together and polished. The bamboo stick holders were also carefully designed to maintain their traditional appearance with appropriate Chinese illustrations, and the RFID reader and antennas hidden in invisible partitions within each container.

Results

The e-Charm Management System proved a remarkable success, reducing the checking time for each set of fortune telling sticks from five minutes to five seconds. While staff would still need to manually sort through a set of sticks if the system identified duplicates, replacing missing sticks was a task that could be performed much more quickly under the new system. As a result, the temple reduced the manpower needed for checking fortune sticks from 10 workers to just three workers. This provided the temple with greater flexibility in managing its human resources, while enabling staff to check the fortune sticks with ease, speed and accuracy, and under no pressure.

Most importantly, the system improved worshippers' satisfaction with the temple without disrupting their experience of practicing fortune telling thanks to the unobtrusive design. As each set of fortune telling sticks could be checked immediately prior to each use, worshippers could now practice fortune telling with much greater confidence that they were using full sets of fortune sticks.

Looking ahead, there are plans to integrate the e-charm Management System with the temple's kiosk system. An RFID reader will be installed at the kiosk to identify the worshipper's chosen fortune stick and then provide an automatic print out of the corresponding prediction in Chinese or English.

Winning Case Sharing

megabyte

MegaTray

Most Innovative EPC/RFID Products

Gold Award

Background

Megabyte Ltd is a RFID solutions provider, which specializes in the development of UHF RFID devices and middleware software. The company's main business is to provide front-end state-of-the-art RFID devices, including scanners, handheld readers, antennas, and tags, for applications in the retail, healthcare, logistics and securities industries.

Business Challenges

Every year around the world merchandise theft costs businesses billions of US dollars. Whether it is shoplifters or a company's own employees committing the crime, theft of merchandise is believed to account for the majority of shrinkage in retail. The perpetrators often focus on items that are easily concealed, expensive and re-sellable. It is not surprising then that amongst the merchandise most often stolen are branded watches and fine jewelry, which can prove very costly to the victimized retailer.

Although the technology exists to deal with the problem of merchandise theft, no effective solutions have been created that have been widely adopted, be it comprehensive product protection strategies, state-of-the-art shrinkage management systems, or integrated shoplifting prevention solutions in the form of display cabinets or display trays. Megabyte thus saw an opportunity to create an RFID security system for tracking and monitoring small, luxury items, specifically designed for jewelry and branded watch retailers

Solution

The solution that Megabyte created to solve the problem was MegaTray, essentially a jewelry display tray with a discreetly integrated RFID reader and Wi-Fi transceiver to provide security and monitoring capabilities for items placed on it. Each item displayed on the tray is given a unique RFID tag, allowing the Megatray device to conduct an automated item count during the sales process to prevent employee theft and shoplifting.

MegaTray was designed with high reading sensitivity and reading distance is adjustable to ensure only items placed on it are counted. Antennas are strategically embedded inside the tray so that the detection range is limited to within the tray surface.

The company invested a lot of time into designing a device with high user acceptance among sales staff working in jewelry and watch shops. Indeed, the device was designed to mimic a traditional display tray in terms of weight and appearance, and is portable. With built-in Wi-Fi and Active RFID connectivity, the tray's location and item movements can be tracked at all times. If any item is removed from the tray, the monitoring system triggers an acknowledgement, effectively enhancing store security.

Results

The MegaTray RFID reader design is lightweight, fully portable and embedded with an RFID-based system which addresses some of the key daily operation challenges of the retail and security industries to keep track and monitor the valuable items moving in and out of the display cabinets and on the shop floor in real time. The tray identifies the RFID tagged items placed on it and an immediate alert will be triggered if any item is removed from the tray to enhance store security level.

In addition, tracking the items on the MegaTray enables the store to learn more about customer behavior and capture potentially valuable marketing data. For instance, the tray can help a store identify which items are attracting the most interest. It can also act as an electronic items counter for stocktaking purposes. By tracking stock closely, the device can contribute to operational efficiency.

MegaTray can also be used as a secure carrying unit in situations where a high-value item needs to be moved from one location to another within the premises. For instance, it can be used to track jewelry items in real time, when they are transferred in between different locations.

SCHMIDT®
MAKES LIFE SIMPLE

SIEMENS

Smart Cellar

Most Innovative EPC/RFID Products — Silver Award

Background

Asia's leading systems integrator Schmidt & Co., (Hong Kong), which specializes in integrated solutions for automatic identification and data capture, last year teamed up with Siemens, a leading global conglomerate in the industrial, energy and healthcare fields to explore more effective ways to manage wine inventory based on RFID technology. Both companies were quick to recognize that there was a strong and growing demand for inventory management and automation in the local wine trade, as Hong Kong has become a major wine hub in the region, with wine imports surging by 78% by volume and 215% by value year-on-year in 2009.

Business Challenges

Winemakers, cellars and collectors face a number of challenges when it comes to inventory management. They need to keep historical records for many years, as wine is less perishable than most other food and beverage products. They require detailed product information, including the country and region of origin, varietal information, vintage, alcoholic degree, volume, producer, bottler, importer and wine destination.

In addition, wine is often placed in wooden cases for storage and transportation, where they are difficult to access, and different wines may be packed into the same case by the winery. Lastly, when unboxed, wine bottles are often stacked horizontally one on top of the other to maximize storage space so the labels are obscured, which makes searching and stock-taking an arduous task.

Solution

Schmidt and Siemens wanted to develop an inventory management system employing RFID technology compliant with EPCglobal standards specifically for the wine trade. To do so, they purpose designed tags, which compensated for the possible attenuation of the transponder in the tag by the liquid in the bottles, and were both reliable and durable enough to perform in a low temperature environment over many years.

They deployed a web based stock management application, which enabled users to access inventory information on site or remotely, and supported multi-site operations. A lot of attention was also spent on ergonomics, with the handhelds designed to be light and the user interface simple and intuitive to allow reconciliation, stocktaking, or transferring to be done in seconds with a few clicks.

Results

In pilot testing, the Smart Cellar system made an immediate impact on stock management. With only 30 minutes of training, staffs were able to use the system to increase their productivity and had significantly greater visibility over the inventory. The system reduced manpower requirements dramatically in the back office, with one worker now able to handle the tasks of three.

Moreover, stock taking accuracy improved in two aspects. Firstly, with the data entry process automated through the use of handhelds, human error was avoided. Secondly, as the tags could be read through the wooden cases and with the bottles oriented in any direction, the bottles no longer needed to be disturbed, reducing risk of damage.

Schmidt and Siemens are considering a number of potential enhancements to the Smart Cellar system. For instance the system currently processes data in batch mode but can easily be upgraded to provide real time data processing without any hardware changes. The system's functionality can also be extended to allow users to locate individual bottles and recover missing bottles. The companies also believe the inventory management system can be adapted for use in a wide variety of other industries, which deal with high value merchandize, such as jewelry and fine art.

Certificate of Merit

RFID-enabled Logistics Management System Implementation on Collezione Wine Cellar

PCCW Solutions, the IT and business process outsourcing flagship of PCCW Group, was awarded a contract to design, build and implement a RFID-enabled Logistics Management System for Collezione Wine Cellars, a subsidiary of Hanison Construction Holding Ltd. Serving upper class individuals and businesses in Hong Kong and China, the wine cellar covers an area of 10,000 square feet and is fully furnished with dining and function rooms facilities. The wine cellar can store 80,000 bottles of fine wine for its members.

In order to enhance operational efficiency and customer experience, Collezione Wine Cellars appointed PCCW Solutions to design and build a total solution, which comprises of the Logistics Management System and RFID "Sense" middleware developed by PCCW Solutions. The solution was designed to streamline the warehouse management operations and enable Collezione Wine Cellars to deliver better customer service to its members. Employing the globally recognized open EPC standards, each RFID tagged bottle of fine wine can be uniquely identified, which will support a wide range of applications such as global supply chain collaboration, product tracking and and tracing, and product authentication.

CS333 Ruggedized Reader

Convergence Systems Limited (CSL) is a leading manufacturer of RFID readers, antennas, modules, and custom tags with customers in more than 30 countries. CSL identified a gap in the market for a high performance, ruggedized RFID reader that could be used in the logistics and supply chain industry by material handling equipment, such as forklift trucks and clamp trucks. While there were already UHF RFID readers for these purposes, they tended to be unreliable due to their short read range and slow read rate, offered no read zone control, and were generally quite expensive.

Convergence Systems Limited (CSL) addressed this issue by designing the high performance, ruggedized integrated reader CS333. The reader was designed to meet the needs of material handling equipment, with a sturdy, dustproof and waterproof design, which makes it suitable for both indoors and outdoors use, and capable of withstanding frequent shocks and vibration. The reader has an ultra long read range of 5-7 meters and high penetration power. Another of the reader's advantages is its ability to read passive RFID tags even under difficult conditions, such as when products are water or metal rich or are enclosed in several protective layers. This allows warehouse personnel to trace pallets and scan multiple items more efficiently.

An RFID-based Air Cargo Processing System

Supported by the Innovation and Technology Fund, DHL Global Forwarding (Hong Kong) & The Hong Kong Polytechnic University's Department of Computing joined forces to develop an RFID-based air cargo processing system for Hong Kong's air freight forwarding industry in collaboration with the Hong Kong R&D Centre for Logistics and Supply Chain Management Enabling Technologies and other industrial collaborators. The aim of the project was to harness RFID technology to automate and streamline air cargo operations. In addition, the team wanted to develop a system that could be easily deployed by both large freight forwarding companies and smal and medium sized enterprises, which meant developing a system with easy hardware installation, low investment cost, and a user friendly software interface.

The team had two key challenges. The first was to automate the manual, paper-based air cargo operations, which were slow, prone to human error, and lacked visibility. The second was to create an RFID-based air cargo processing system to facilitate the checking and updating of air cargo information. To meet these challenges, the team designed the Flexible RFID Encoder and Decoder (FRED), which is used to encode/decode RFID-enabled air waybills labels for air cargo identification and processing purposes. It also created an integrated RFID gateway with an advanced tag detection mechanism for check-in and check-out operations. Lastly, the project team developed from scratch an RFID tag updating mechanism for updating master air waybill label data during air cargo check-out. A Hong Kong - Taiwan pilot run was successfully conducted, proving its commercial viability.

This project is funded by the Innovation and Technology Fund. Any opinions, findings, conclusions or recommendations expressed in this material/event (or by members of the project team) do not reflect the views of the Government of the Hong Kong Special Administrative Region, the Innovation and Technology Commission or the Panel of Assessors for the Innovation and Technology Support Programme of the Innovation and Technology Fund.

eDesk

Hong Kong Communications is a telecommunications and networking equipment supplier based in Hong Kong with subsidiaries in Thailand, Malaysia, Singapore and Shanghai. Leveraging its experience in building enterprise class RFID, ERP, IP telephony and network security solutions, the company saw an opportunity to create a library security system that would enhance security and efficiency. The result was eDesk, a desktop device that combines an electromagnetic security strip sensitizer/desensitizer module with an RFID reader to facilitate the checking in and out of books implanted with passive RFID tags.

With the eDesk system in place, library users are able to handle loan and return transactions faster and more conveniently. The system halves the processing time required for the check out procedure from 60 seconds to less than 30 seconds. With its built-in sensitizer/desensitizer and RFID reader, books are not required to be swiped and can be checked out faster than with a conventional barcode system. Crucially, the device is compatible with the majority of electromagnetic security strips available commercially, so it works with library books already equipped with a strip. Additionally, the system frees up time for library staff, to do more high value work.

Certificate of Merit

HONG KONG DESIGN INSTITUTE
香港知專設計學院
Member of VTC Group VTC 機構成員

megasoft

MTR

RFID-based Management and Retrieval System

The concept of RFID-based Management and Retrieval System was initiated and evolved with a collaboration with Hong Kong Design Institute and Megasoft to manage the archives of fashion costumes, swatches and accessories to manage its archives of fashion costumes, swatches and accessories. With 1,400 full time and 1,000 part time students, it had become necessary for the department to develop a more secure, efficient and user friendly management and retrieval system to house its archives.

To meet this challenge, Megasoft's developed a RFID-enabled smart shelf solution for the Hong Kong Design Institute based on a retrieval and storing concept devised by the staff of the Fashion & Image Design department. The system used box containers with RFID tags designed to hold fabric sample hard cards. Costumes and other individual items, which could not be grouped and mounted on hard cards, were individually tagged. Two different shelving unit fixtures were designed: one was used to house 100 boxes containing fabric sample hard cards and the other unit was used to store various individually tagged fabric swatches, accessory and costumes, which could not fit into boxes. In addition, a self service kiosk was developed to allow students to check items in and out by themselves, and an integrated security system was installed at the entrance to prevent theft. The system provides the department with round the clock security monitoring and improved organization of archives, while allowing students to search and retrieve items from the archives much faster.

Materials Testing System

The Projects Division of the MTR Corporation is currently managing the design and construction of five new railway extension projects. It is estimated that the projects will require more than seven million cubic meters of concrete and one million tonnes of steel reinforcement over the next five years from 2010. These materials need to be sample tested to monitor their quality. Fast, accurate and reliable test results are crucial to ensure these projects can complete on time and to the company's high standards. The innovative Materials Testing System (MTS) was designed and developed jointly by the Project Division Materials Laboratory and Information Technology Service Department of MTR to help achieve these objectives.

Using RFID technology, MTS streamlines the operation of material testing, bringing radical changes to the process of testing. Each material sample is tagged with a "smart" label for activating RFID readers to capture data from testing equipment automatically. Materials test reports endorsed with digital signature are transmitted and published via the internet immediately after the completion of testing. With the new system in place, the productivity and efficiency of laboratory work has increased by more than 50%. The system also enhanced the accuracy and integrity of testing results as well as made report generation and dissemination more efficient.

RCG

安寶集團 SecurePro Group
ADVANCE IN TECHNOLOGY QUALITY IN SERVICE

RFID Document Management System

RCG is an international provider of integrated security products and solutions using RFID and biometrics technologies. The company's products and services include biometric access control devices, RFID enabled asset management systems, RFID anti-counterfeit solutions, facial recognition based intelligent surveillance systems and machine to machine applications.

Physical documents are still critical to the functioning of day-to-day operations in many industries, where they serve as documents of endorsement and proof, yet sometimes become a bottleneck in getting business done as they are difficult to track, and easily misplaced or left undelivered. RCG developed a physical document management solution to solve these issues.

The RFID Document Management System (DMS) offered by RCG provides companies with real time document tracking, a system of clear ownership and accountability, a traceable workflow, and user alerts for deadlines and reviews. The solution was successfully deployed by the MTR Corporation in 40 Hong Kong offices to track a variety of reports, including escalator maintenance reports, customer complaints, performance assessments, and panic alarm reports, resulting in improvements in back office operation efficiency. By making the workflow visible, supervisors were able to monitor work progress any time and staff were given greater accountability.

e-Elderly System

Hong Kong people have a strong commitment to care for the elderly and want loved ones in their golden years to be given the best possible service at retirement homes. With this in mind, SecurePro Technology Security Systems, a provider of RFID-based security, anti-theft and home automation solutions, decided to create an RFID-based solution to enhance safety and service quality at retirement homes, addressing a variety of challenges, including safe drug dispensing, security and tracking of clients, live-video monitoring for family members, and video conferencing services for clients. SecurePro developed e-Elderly System, which consisted of five discrete modules enabled by an active RFID tag worn by retirement home clients. The first module is i-Guard, a RFID tracking system installed on premises and at access points to prevent clients from getting lost. The second module is i-Care, a drugs management, which enables client's prescription information to be stored on an RFID tag for verification when drugs are dispensed. The third module is i-See, a video system, which allows family members to connect by a 3G smartphone to check on clients through a live feed. The fourth module is the i-Know system to allow staff to track a client's location in real time. Lastly, the i-Chat system allows clients to chat to family members through video conferencing. The e-Elderly system significantly enhances service quality at retirement homes by improving safety, eliminating the chance of clients going missing and enhancing clients' quality of life.

U-21 RFID Awards 2010 - Message from the Judging Panel

This year I am very pleased to see an increase in both quantity and quality of the submissions from our students in Hong Kong to the U-21 RFID Awards. It is an indication of the increased awareness and interest of our students in the application of the RFID technology. Amidst the submissions there is no lack of originality and innovation. Indeed many of the ideas and concepts presented by the students could readily be realized in actual applications. I congratulate GS1 Hong Kong for the success in hosting the HK RFID U-21 Awards and thank all the sponsoring and supporting organizations.

Panel Chair
Mr. Anthony S. K. WONG, S.B.S., J.P.
President, China and South East Asia
One Laptop Per Child (OLPC)

I was pleased to see the many solutions and varied implementations presented. They were extremely impressive concerning the overall quality of the initiatives. I applaud all the participants in this competition; in either the development of solutions that are relevant to end user needs, or in how RFID has been incorporated into business processes and enhanced our quality of lives. I especially send my congratulations to the recipients of the awards. The diverse uses of the technology demonstrated really shows the power of RFID systems and shines a light on possibilities for future use.

Dr. Hubert CHAN
Chairman
GS1 Hong Kong EPC Partners Advisory Board

I really enjoyed the interviews with the many contenders who have shown their efforts in implementing their innovative ideas and have made their best endeavours to achieve the best results. Through this contest, it has been shown that there are great potential for RFID applications to proliferate in our daily life for now and the future days to come. I sincerely wish to extend my appreciation to all of the contenders for their participation in this contest and to send my congratulations to the recipients of the awards. Your contribution has made this competition a success and the interviews a very vivid and enjoyable experience.

Mr. CHIANG Kam Siu
Head of Laboratory
Innovation and Technology Commission, HKSAR Government

I am honoured to be a Judge for the HK RFID 2010 Awards for the U-21 category and am impressed throughout the entire judging process with the quality, knowledge and enthusiasm of the participating students from our tertiary education sector.Not only does this Award encourage the overall and effective adoption of RFID technology and international standards in our community, it also provides a platform upon which our enlightened students in demonstrating their creativity, innovative application of IT and teamwork. I congratulate GS1 Hong Kong for this forward looking Award scheme and all the participating entries.

Ir. Stephen K. M. LAU, J.P.
President
Hong Kong Computer Society

I was well impressed by the various applications submitted in the competition. I was pleased to see the many solutions and varied implementations presented which illustrated how readily we incorporate RFID technology in our everyday life and business process to enhance our standard of living and business efficiency. I would like to commend all the participants in this competition and give my heartfelt congratulations to those who receive the awards. The diverse use of RFID technology has clearly demonstrated how advanced city life is in Hong Kong.

Mr. SIU Yu Bun, Alan, JP.
Deputy Secretary for Commerce & Economic Development (Communications & Technology)
HKSAR Government

I am very impressed by the quality and number of entries submitted this year. Indeed, our panel of judges had the mammoth task of fairly choosing the finalists. All the entries we received reflect the tremendous effort our young talents are contributing to help enhance business productivity, ensure product safety and improve quality of life via innovative use of RFID technology. This remarkable feat will go a long way in encouraging future RFID development – and here we see the need to continue nurturing more young and creative talents by giving them due recognitions through these Awards.

Mr. K. K. SUEN
Chief Architect and Principal Consultant
GS1 Hong Kong

List of Awardees

Best EPC / RFID Concept

Gold Award: Prisons RFID Management System Students: Cheng Ka Wai, Lam Ka Po, Li Wai Nga
Associate in Business, Hong Kong Community College, The Hong Kong Polytechnic University

Gold Award: RFID in Construction Site Safety Students: Au Yuen Ling, Chan Ho Yeung, Leung Chun Fung, Tam Kwok Hang
Department of Real Estate and Construction, The University of Hong Kong

Silver Award: Agent-enabled Flexible RFID Encoder and Decoder System Student: Ng Hung Lam
Department of Computing, The Hong Kong Polytechnic University

Most Innovative EPC / RFID Application

Gold Award: RF-MediSys Student: Ting Siu Lun
Department of Industrial and Systems Engineering, The Hong Kong Polytechnic University

Silver Award: Smart Network Connected Fashion Stores Student: Fung Yin Wai
Department of Electronic Engineering, The Chinese University of Hong Kong

Silver Award: RFID Enabled Ubiquitous Shared Warehouse Management System Students: Fang Ji, Ho Kin Wing, Pan Yu, Pang Lam Yu
Department of Industrial and Manufacturing Systems Engineering, The University of Hong Kong

Certificate of Merits

1. Leading the Car, Facilitating the Way Students: Chan Hon Sum, Chow Hiu Wai, Lam Chun Man Jacky, Ng Chun Mei
   Division of Commerce, Community College of the City University of Hong Kong
2. Automatic Virtual Docent Students: Chan Hong Ming, Chan Siu Lung, Chong Ko Sing, Chu Hoi Ying, Ma Chun Kan, So Kwok Wing
   Department of Business Administration, Hong Kong Institute of Vocational Education (Shatin)
3. RFID Enabling in Library System Management Students: Chui Yi Yin, Lo Tsz Fung, Tong Chit Yan
   Department of Information and Communications Technology, Hong Kong Institute of Vocational Education (Tsing Yi)
4. RFID Enabled Electronic Healthcare Information System Students: Au Tsz Wai, Lau Tsz Hing, Tsang Wai Kit, Wong Wai Kit
   Department of Information and Communications Technology, Hong Kong Institute of Vocational Education (Tuen Mun)
5. Design and Implementation of an RFID-based Logistics System with a POLY-DIO Gateway Student: Yu Ka Wai
   Department of Computing, The Hong Kong Polytechnic University
6. RFID-based Airport Travelers Management System Student: Wong Cho Tak
   Department of Computing, The Hong Kong Polytechnic University
7. SHOPlisted Students: Choi Hin Kwong, Li Kai Hang, Ng Ka Wo, Wong Cho Tak, Wong Ka Lok
   Department of Computing, The Hong Kong Polytechnic University
8. RFID-based Auto Car Parking System Students: Cheng Yuan, Fu Tong, Liu Xiaoming, Liu Yong, Qiu Jianfeng, Wang Pu
   Department of Computing, Department of Electronic and Information Engineering, Department of Industrial and Systems Engineering, and Department of Logistics and Maritime Studies, The Hong Kong Polytechnic University
9. RFID Enabled Mobile Smart Medication Solution in Hospital Wards Students: Chan Ka Ho, Fong Ka Ming, Lam Wing Wai, Lee Wai Yan, Qin Zhifeng
   Department of Industrial and Manufacturing Systems Engineering and Department of Logistics Engineering and Supply Chain Management, The University of Hong Kong

Winning Case Sharing

Prisons RFID Management System

Best EPC/RFID Concept — Gold Award

Students: Cheng Ka Wai, Lam Ka Po, Li Wai Nga (Currently undergraduate students at The City University of Hong Kong)
Associate in Business, Hong Kong Community College, The Hong Kong Polytechnic University

The Correctional Services Department in Hong Kong employs about 6,650 officers to oversee a population of around 12,000 inmates. Altogether, the department operates 23 correctional institutions and ten other facilities. Managing such a vast operation involves significant challenges in terms of maintaining security, safety and order. Correctional officers need to be vigilant at all times to the movement of inmates to prevent potential security breaches and violent confrontations among inmates. At the same time, it is important that officers minimize disputes with inmates, sometimes resulting from misunderstandings, which may compromise the safety of all stakeholders. In studying technological solutions to help address these issues, the Hong Kong Community College found an RFID-based tracking system to be the most viable. In comparing RFID and barcode technology, the students found RFID tracking technology to be superior in a number of key respects, including automation, range and flexibility of scanning, data storage, durability and long term cost effectiveness. The students proposed a tracking system using RFID-enabled wristbands, which would allow the real time monitoring of the location of inmates. This would improve security and reduce manpower requirements and human error when taking attendances during meal and leisure times by replacing manual counting with automated counting with readers placed at checkpoints. An additional benefit is that the technology allows monitoring without the physical presence of officers, providing inmates with more privacy. In sum, it would improve the efficiency, security, and performance of the correctional system.

Construction Site Safety System

Best EPC/RFID Concept — Gold Award

Students: Au Yuen Ling, Chan Ho Yeung, Leung Chun Fung, Tam Kwok Hang
Department of Real Estate and Construction, The University of Hong Kong

As one of the most densely populated cities in the world with limited developable space, Hong Kong relies on the construction of large scale, high rise property projects to accommodate its citizens. However, the city continues to carry one of the highest accident rates in the world for construction workers, even after improvements in construction site safety have reduced the accident rate by around 75% from 1998 to 2007. Some of the major factors behind this poor safety record include inadequate worker safety awareness and training, working environment limitations, lack of commitment to safety from construction companies and tight completion schedules. One important safety regulation which can help minimize work injury is the use of proper safety wear, including a safety helmet and safety shoes, at all time on the construction site. Yet workers may neglect to observe these precautions by either entering the site without wearing protective work wear or removing it during work to cool down from Hong Kong's often hot climate. Another safety concern on construction sites is the use of heavy machinery by workers that have not received proper training. The students of the Department of Real Estate & Construction at The University of Hong Kong proposed a RFID-enabled safety helmet system to improve enforcement of use of safety wear on site. Pressure sensors installed in the helmet are linked to an active RFID tag. When the helmet is worn, the sensors activate the RFID tag, which is then read by a central computer safety management system to confirm all construction workers are protected. In addition to ensuring helmets are worn, the system can also be used to monitor worker status using a built-in accelerometer, check worker attendance and control access to heavy equipment. As such, the system can not only reduce worksite injuries, but also improve operational efficiency.

Winning Case Sharing

THE HONG KONG POLYTECHNIC UNIVERSITY 香港理工大學

DEPARTMENT OF COMPUTING 電子計算學系

Agent-enabled Flexible RFID Encoder and Decoder System

Best EPC/RFID Concept — Silver Award

Student: Ng Hung Lam

Department of Computing, The Hong Kong Polytechnic University

Use of RFID innovation in the supply chain management industry has proliferated as a means to streamline operations. These RFID applications require an online database on which detailed information about an item associated with an RFID tag can be stored and retrieved. However, the deployment of these applications depends on network access, which may not be conveniently available in airfreight forwarders' warehouses. Another major challenge in real world practice is the memory limitation of the RFID tags, which constrains the amount of information that can be stored on the tags. The above issues motivated the development of a Flexible RFID Encoder and Decoder (FRED) system, which aims to efficiently store customized information directly on the RFID tag.

To provide advanced logistics services, the student proposed an extension of the FRED framework by integrating software agents. Software agents are a type of software entity that acts as an agent for a user or other program to proactively automate complex tasks or facilitate advanced business processes in business applications. By delegating tasks to software agents via RFID technology, an Agent-enabled FRED (A-FRED) system can be applied in facilitating advanced air cargo processing operations, such as automatic cargo status updating and intelligent flight planning.

THE HONG KONG POLYTECHNIC UNIVERSITY 香港理工大學

DEPARTMENT OF INDUSTRIAL AND SYSTEMS ENGINEERING

RF-MediSys

Gold Award

Most Innovative EPC/RFID Application

Student: Ting Siu Lun

Department of Industrial and Systems Engineering, The Hong Kong Polytechnic University

The healthcare environment is ever changing and its complexity grows rapidly. To improve patient care, healthcare service providers have invested heavily into exploring ways to integrate information technology into day-to-day operations in recent years. Designed by a student at the Department of Industrial and Systems Engineering of the Hong Kong Polytechnic University, the RF-MediSys is an RFID-based electronic medical records system, which aims to advance the use of RFID technology in healthcare by improving medical information accessibility and visualizing the medical services that should be delivered to the patient at the point of care.

Healthcare providers are constantly under pressure to work faster and more efficiently. One problem they often face is in trying to reduce the time it takes to register patients using a conventional paper based records management system. In addition, such systems may require a large space to store physical files. Thus, the medical records and other information may be difficult to share across the organization, potentially to the detriment of the quality of healthcare services. RF-MediSys was created to address these problems using a system based on RFID tagged cards and medical targets. The system provides three major benefits. First, it enables automation of the patient registration process. Second, the system provides a collaborative and effective real time information sharing platform to assist healthcare professionals who practice in different departments in monitoring and retrieving patients' medical information. Third, the system reduces human errors in clinical operations by facilitating detection of potentially hazardous situations that may result in loss of life through visualization of real time information of medical processes. In so doing, the system can improve the speed, quality and safety of healthcare services.

香港中文大學
THE CHINESE UNIVERSITY OF HONG KONG

Smart Network Connected Fashion Stores

Most Innovative EPC/RFID Application — Silver Award

Student: Fung Yin Wai
Department of Electronic Engineering, The Chinese University of Hong Kong

In recent years, RFID solutions providers have brought out powerful, flexible software solutions to harness RFID technology. However, most of these technology platforms are designed for use in supply chain management operations, whereas solutions available for other industries are rare. In the Smart Network Connected Fashion Stores project, a student at the Chinese University of Hong Kong proposed to create an web based retail fashion management system, which would combine RFID technology with powerful open source client server middleware, called CUHK RFID Middleware 1.0, which was developed by the university over four years ago.

Smart Network Connected Fashion Stores was designed to provide multi-branch stores with enhanced visibility and control of stock from the shelves to fitting rooms and finally to the checkout over the Internet's network. The solution is a fully integrated system consisting of multiple RFID readers, tags, middleware, graphic user interface, server based database and client side web based control panel. The application contains six discrete RFID-enabled modules, which include the Smart Mirror, Smart Fitting Rooms equipped with Smart Mirrors, Intelligent Cashier System, Product Statistics System, Efficient Inventory Monitoring with Smart Alert, and Centralized RFID Reporting System. The system can help to reduce stock outs and collect valuable customer behavior data to be used for marketing purposes. In addition, the system may also enhance the shopping experience and is able to provide shoppers with information about the latest fashion trends, potentially enhancing sales, customer satisfaction and brand loyalty.

RFID Enabled Ubiquitous Shared Warehouse Management System

Most Innovative EPC/RFID Application — Silver Award

Student: Fang Ji, Ho Kin Wing, Pan Yu, Pang Lam Yu
Department of Industrial and Manufacturing Systems Engineering, The University of Hong Kong

An increasing number of companies are interested in using RFID solutions to solve common warehouse management challenges, including the availability of timely, accurate, and consistent information about stock status, and visibility along the supply chain. But while many companies have after conducting preliminary studies that demonstrate the benefits of the technology, few companies are willing to commit to implementing RFID solutions, citing reliability, cost, ease of deployment as key concerns. In addition, many companies do not have the in-house know-how to implement an RFID solution. Students at the University of Hong Kong's Department of Industrial and Manufacturing Systems Engineering decided to address this issue by developing a warehouse management system (WMS) to provide warehousing operations with full real time visibility and traceability of inventory quantities, locations and movement. The project has a suite of tools catering to various potential customers, including the warehouse manager and operators to manage and trace real time warehouse information, and to monitor and control operations during logistical transactions. The system designed by the department uses RFID-enabled WMS technology to improve the efficiency and quality of warehouse management, cut costs and improve online supervision. In addition, the system allowed companies to improve their responsiveness to custom orders and unexpected issues that may affect shop floor production. As the system was automatic and paperless, it also helped reduced error rates, cycle time, labor costs, while improving the utilization rate of warehouse and customer satisfaction.

Acknowledgement

Co-organizers:

LSCM Hong Kong R&D Centre for Logistics and Supply Chain Management Enabling Technologies 香港物流及供應鏈管理應用技術研發中心

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