# A Break-through in Traditional Garment Industry

MSC to employ the latest RFID technology on its ERP solution in supply chain management.

A representative from the Commerce, Industry & Technology Bureau has once said that RFID application systems would become more and more popular in global supply-chain management. In the meantime, MSC is offering a solution on RFID technology in production management while enhancing the ERP system, so that an enterprise can benefit from automatic control, improved productivity and a shortened production cycle from management based on real time information
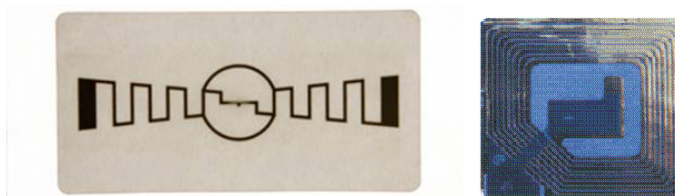
What is RFID？

The name RFID (Radio Frequency Identification) is being associated with a few Chinese names which usually highlight its different features. These include Electronic Sensor Chip, Short-Distance Card, Sensor Card, Non-Contact Card, etc. In fact, RFID does have a unique feature – the non-contact automatic identification technology. Generally speaking, an RFID system consists of 3 parts – tag, reader and antenna. After the tag has entered the magnetic zone, the reader receives the signal and re-delivers it out. And by sensing the radio wave obtained from the non-current tag or the so-called passive tag, it then delivers the product information, which has been stored in the chip. It can also do so by actively transmitting the signals of the frequencies regarding the current tag and the so-called active tag. After the information is received by the reader and gets decoded, it will then be transmitted to the Central Processing Unit for data processing.

Why does Apparel Industry need ERP + RFID?

As the manufacturing industry becomes more globalized, the multi-factory supply-chain model has emerged. When several production lines are producing different products on one supply chain, it could generate loads of information and data to be exchanged, supplied and received.

The garment-manufacturing industry always aims for new product development and efficiency improvement in production. In past years, advanced computer technologies already facilitate new manufacturing operation and build up management tools. Today's manufacturers are looking towards more advances and benefits with their focuses shifted to many different types of networking tools. These tools do enable them to seek better opportunities on more complicated areas working with RFID like inventory control and supply-chain management, as well as the B2B e-commerce transactions. However, while employing this latest technology,

manufacturers are facing a long-standing problem – how the new technologies can bring better coverages and practicality to the running of the enterprise.

Some common on-site difficulties and problems faced by garment factories:
➢ Production workers at garment factories usually have a habit of keeping their job ticket (工票). This not only increases the factories' overtime expenses due to compliance requirement of extra compensation but also prohibits the factories from accurately estimating its workers' productivity.
➢ Low efficiency in production is mainly due to a lack of sense of quantification in the management's mind. It may also be the consequence of a lack of planning in production, a low utilization rate of equipment as well as a poor coordination of production departments.
➢ Loss of control in monitoring. For example, when there is bottleneck in certain production steps in the line, the system fails to issue a warning within a short period of time. In most factories, there are no measuring tools or standards which actually display the workers' performance. This finally causes serious production jam.
➢ There is no database built up for in-depth analysis. In reality, a lot of factories already have various types of computerized technology networks in place for monitoring their production. These computerized processes and models do support a lot of different settings. This will only significantly increase the factories' maintenance costs. Furthermore, the factories will also find it very difficult in obtaining the necessary data for enterprise planning (some real-time statistical data regarding the production).

Therefore, a complete enterprise-information management and planning system, like MSC's Apparel ERP Solution, coupled with MSC's new technology regarding the WIP production flows – a product by its R&D Department, looks set to be an enterprise's silver bullet.

MSC utilizes RFID technology in the management of garment factories' production processes

Workers' attendance cards: When a worker goes to work, he/she will scan the RFID (Worker ID Card) instead of the attendance card. Then, the computer system will record the total working time and transfer the data to the company's wages and accounting systems. This way, the payroll department will be able to calculate his/her wages and finish the relevant human-resources management works in a shorter time. Upon requests from the clients compliance (code of conduct), workers' RFID cards can also be used by the factories for worker identification, work records, salary calculation, etc, giving extra edge to the factories.

Photos:The traditional use of paper-based work record, compared with MSC's RFID record card during the WIP process flows. The traditional method looks set to be replaced.

Typically, the management does find it difficult to monitor and understand the factory's production flows by using the traditional paper-based ticket records. The workers will accumulate the records until just before the pay day (or will they use those records for

manipulating their overtime works). This will present extra difficulty for the factory in calculating the salaries payment and related costs, hence further confusing the production progress. MSC ERP System records pre-defined order step information stored in the RFID Cards for production flows management. RFID Production Cards are registered through the readers at every machine or production equipment, so that the information for the start and end of each job can be transmitted to the main server for storage and processing. The application will calculate automatically and perform statistical analysis on the production progress and unit salary costs, further achieving "Real-Time Production Management Flow" and carrying out a complete monitoring processing in the shop floor. The system is designed to show alert on the line balancing of each production department as well as provide a large amount of data on staff production value and equipment utilization rate for analysis.

Photos: MSC's R&D Department will create the setup for running the RFID on the site. There will be a low-cost tag smart card and reader next to each of the sewing machines for recording the details of work by each staff.

To obtain information / data and trace it more accurately and real time: By employing wireless technologies, MSC ERP manages to transform the traditional paper-based information system in the production line into a fully-computerized system for data storing and processing. Industry can benefit less administrative costs and faster processes and feedback. Meanwhile, RFID and ERP systems are collaboratively used for management-control in areas of material control, monitoring the production WIP progress, order tracing, storage, logistics, recording sales data and related security to improve the entire efficiency of the business process. It is the world trend that the RFID technology is becoming more popular to replace the bar codes at a low cost.

Photos : MSC ERP (RFID) System instantaneously collects data and information regarding production (including production progress and staff performance) for further analysis and monitoring.

High technology at low cost: MSC's R&D Department is specialized in developing the RFID solution regarding WIP production flows. At the same time, it is dedicated in exploring some

low-cost investments, including those simple parts like the readers at each of the sewing machines and other related equipments. In consideration of the working environment amongst all the sewing machines, the wireless network technology is also adopted to facilitate cabling and infra-structure building. In fact, it is easy to upgrade the relevant equipments and parts. It is not only is a low-cost equipment but also an innovative application of technology.
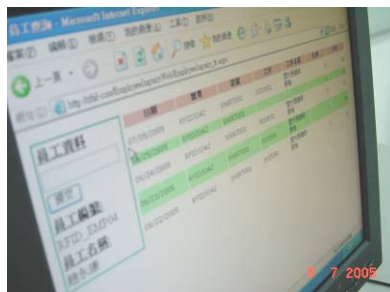
Photo: MSC System for examining real-time production information (something similar to the Octopus cards)

Graph: MSC's brief introduction to the RFID technology for better flows amongst the sewing machines in the WIP process.
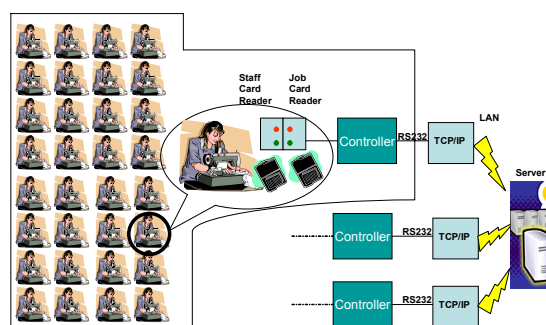
What level of efficiency can technologies bring to the industry?

Regarding the efficiency as well as the relevant cost and time savings RFID can bring about:

As the RFID technology becomes more economically feasible, many industries will be able to implement their solutions throughout the whole supply chain (from originating a product, then come the storage, selection and packaging, logistics, cross-border and container transportation, to inventory control and retail works), or part of it or a totally different one. The more the RFID tags are being applied, the more opportunities for obtaining the real-time information regarding the production flows, including the information concerning raw-material storage, staff performance (aimed at eliminating some unnecessary salary payments and reducing a large amount of human-resources and administrative expenses). Furthermore, production level at each stage can be accessed, so that the real-time inventory level will be captured and analyzed.

To enhance communication between the merchandisers and clients: The RFID technology can provide the whole manufacturing industry with the necessary information and novel technical skill-set, no matter the merchandisers or clients are working in regions of Mainland China, Hong Kong or even overseas. They may well be engaged in the manufacturing, IT, logistics or transportation sectors but all parties can be connected by the RFID "sense-and-respond" linkage and all of them can supply more information to each other, further improving their close relationship. At the end, the whole industry will be able to reap more benefits as a result of using the ERP management application system.

MSC understands very clearly how important an accurate set of data analysis is to enterprise management. RFID is a technology for identification which employs radio wave to transmitting information. A complete set of RFID system comprises an RFID tag and an RFID reader. The

RF signals are then used for the radio transmission of information before the ID technology is used for categorizing, tracing and managing the operations. This type of operation will reduce the human errors in data collection. Through the combined use of RFID tag and reader, the manufacturing industry can then promptly update the production-line information, monitor the production quantities as well as coordinate the equipment and staffs for better harmonization, so that the results will be aligned with what have been planned.

Interests from the manufacturing industry make the RFID technology a hot issue

US retail giant Wal-Mart, which generated US$253 billion of sales in 2003, has invested a total of US$3 billion in introducing RFID, hoping that this new technology can help it reduce costs and increase the flexibility in managing its inventory level. In fact, Wal-Mart has already asked its top 100 suppliers to adopt the use of RFID before the end of 2005 while hoping the others to do the same before the end of 2006. A recent study by AMR Research indicates that costs relating to the supply chain account for around 10% of total turnover. Should Wal-Mart succeed in promoting the use of RFID to the whole supplier level, a cost-saving of US$8.4 billion will be made. Back in 1984, it was indeed Wal-Mart which actively promoted the use of bar-codes and that had led to the popularity of this particular technology. In this sense, many have pointed out that Wal-Mart would also have a significant influence over the promotion of the RFID technology. Meanwhile, other retail giants such as Germany's Metro and the UK's Tesco have already made use of the RFID technology as well. This is likely to be a strong push for the other overseas and local manufacturers and suppliers to use the same system as soon as possible, so that they can be linked up with the new systems.

Conclusion

Besides offering enterprise-resources solutions to participants in the industry for a better insight into future development, MSC Limited is also engaged in the research and development of RFID. It currently has plans to extend the applications of RFID to other different areas and enhance the deemed advantages in production management, including accommodating the needs for higher speed in the management of products. This will then result in better effects brought about by improvements in production, storage, sales and logistics, so that an enterprise's needs will be satisfied with higher speed, better accuracy and improved quality. Using the RFID technology not only allows one to identify and trace the products, but also presents an opportunity for one to enhance the security and efficiency of the ERP system. The MSC ERP system makes use of this technology to add to the accuracy in information transfer. As a result, an error of a wrong match in materials or inventory is less likely; while there will also be better transparency and reliability regarding the progress in material or inventory tracing.

MSC reckons that the RFID technology will enable an enterprise to obtain more accurate data, thus reaping some bigger benefits from ERP system implementation. In fact, a lot of these critical data are originated from factories and storage houses. In the past, an enterprise would have employed human labour for data recording and collection. However, it now makes use of ERP + RFID, as this will give it access to the most updated and most accurate information in a minimal time.