

RFID



DEAR READERS,

We have just another few days to go: on November 2, 2004, we will open a new chapter in the relationship between industry and the trading sector. Together with our partners, we will implement Radio Frequency Identification along the entire process chain for the first time ever. Initially, a select circle of the METRO Group's industry partners will gradually begin to equip pallets with Smart Chips. RFID reading devices have been installed at the gates for incoming and outgoing merchandize in various warehouses, hypermarkets, supermarkets and stores of the Metro Cash & Carry, Real and Kaufhof sales divisions. These reading devices will register the information on the Smart Chips and transmit it to the METRO Group's merchandize management system.



We have prepared ourselves intensively over the past months for this special day so that we can move smoothly into the future of retailing. I would like to expressly thank our partners in industry and IT and, of course, our employees for their dedication. Naturally, we will continue to provide active support to all parties involved in all aspects of the RFID roll-out – because the age of RFID has just begun. We are already planning to expand the use of RFID technology to our business units in the coming year.

But first, we are looking towards our target date of November 2. This edition of the RFID Newsletter will tell you exactly what will happen on this day and how the roll-out of RFID technology in the METRO Group will proceed. You will also find an interview with Professor Elgar Fleisch from the University of St. Gallen.

I hope you will enjoy your reading.

Yours truly,

A handwritten signature in black ink, appearing to read 'Zygmunt Mierdorf'.

Zygmunt Mierdorf

Member of the Management Board of METRO Group

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METRO Group
Future Store Initiative



METRO GROUP HERALDS NEW AGE OF RETAILING

STARTING SIGNAL FOR THE IMPLEMENTATION OF RFID IN THE METRO GROUP. In just a few days, the METRO Group and its partners will begin their journey into the future of retailing. Starting November 2, 2004, the first industry partners will fix Smart Chips to their shipments destined for selected stores, outlets and warehouses of the sales divisions and cross-divisional service companies participating in the RFID roll-out. This will make many logistics and warehouse management processes much more efficient.

"In a joint show of strength, we have achieved truly pioneering work. New questions arose every day, but our groups of experts answered them pragmatically and in record time," said Dr. Gerd Wolfram, Project Manager for the METRO Group Future Store Initiative. For months, the METRO Group and its partners worked feverishly to create an ideal solution. Now the time has finally come: for the first time, industry partners will be delivering pallets and shipments of hanger goods equipped with Smart Chips to the warehouses of Metro Cash & Carry, Real, Kaufhof and METRO Group Distribution Logistics (MDL). These pioneering partners include large international consumer goods corporations like Gillette, Henkel and Nestlé; brand-name clothing manufacturers such as Esprit, Gerry Weber and Triumph International; and small and medium-sized enterprises such as Papstar, a specialist for disposable tableware. In this first stage, not all of these companies will fix Smart Chips to their pallets or hanger goods themselves; some of them will work together with service providers like DHL. The logistics expert will handle the RFID labeling for Johnson & Johnson and Schwartauer Werke, for example. The sales divisions and cross-divisional service companies of the METRO Group have established the necessary conditions on their end: to coincide with the roll-out, the incoming merchandise gates in the stores, outlets and warehouses have been equipped with RFID technology.

Close cooperation between all participating partners is critical for ensuring the smooth flow of the RFID-based process chain. It is also essential to have well-prepared employees, uniform standards for Smart Chips and RFID reading devices, and a perfectly functioning system infrastructure. The METRO Group put together a special project team early on. The project leaders are making sure that employees and partners remain well-informed and receive support. They are exploring the extent to which RFID-based processes change, and they are finding ways of integrating the new technology into existing processes. They are also defining appropriate implementation guidelines for Smart Chips, reading devices and software. And finally, they have created the METRO Group RFID Innovation Center, which all participants can use as an information and development platform.

THE ACID TEST FOR HARDWARE AND SOFTWARE

Since the "EPC Class 1/Gen. 2" Smart Chips intended for the roll-out are not yet available, the METRO Group and its industry partners are initially falling back on transponders compliant with "ISO 18000/6b" (EPC 1.19). So far, these chips have been manufactured exclusively by Philips Semiconductors. On the basis of this specification, the industry partners were able to freely choose amongst the suppliers providing the labels in which these chips are integrated. The METRO Group expects these chips to achieve a 100 percent reading rate. In order to identify labels suitable for the roll-out, industry partners first sent experimental Smart Chips for their shipping containers to the METRO Group RFID Innovation Center.

A team of specialists ran the Smart Chips through extensive tests at the so called Gate 11 of the Kaufhof warehouse in Neuss. Employees drove pallets with typical shipments of merchandise through the gate for incoming and outgoing goods, which was equipped with RFID technology. This way, the partners could determine the best place to fix the transponders to the pallets. This varies



The sales divisions and cross-divisional service companies of the METRO Group worked at full speed to make the necessary preparations. Dr. Gerd Wolfram is proud of the good cooperation with all participants: "We have truly performed a pioneering task."

depending on the characteristics of the products. The special features of product pallets containing high proportions of liquid or metal were also taken into account. Working in close cooperation with label manufacturers like Avery Dennison, Rafsec and X-ident, it was possible to find ideal solutions even for these apparently difficult product groups. Dr. Wolfram said, "It always comes down to the form of the antenna integrated in the RFID label and the correct placement of the label on the pallet." A high-performance infrastructure ensures that the product and process information gained through RFID technology is available in all the right locations.

PIONEERS IN THE COMPANY

One thing is certain: in the coming years, RFID will fundamentally change warehouse and inventory management processes. Employees working with incoming merchandise will be the first to come into contact with the technology. The Human Resources Team of the RFID project invited about 70 employees and works council members from the participating supermarkets, outlets and warehouses in North Rhine-Westphalia to the RFID Innovation Center to provide them with information on the technology and their specific role during the group-wide introduction of RFID. They were able to experience locally at which stations of the process chain RFID can be used and which benefits would result from the technology for their work, for industry partners and

HIGH-PERFORMANCE INFRASTRUCTURE IS IN PLACE

The METRO Group established its own RFID Solution Team. This working group brought together experts from the areas of Smart Chips, RFID reading devices and system integration. The RFID Solution Team was faced with the challenge of standardizing the hardware requirements within just half a year. It was necessary to develop components which could be used as consistently as possible in various phases of the roll-out. All of the reading device manufacturers involved in the project agreed to use these standards so that retail and industry could use devices from various



providers without expending a great deal of effort in switching from one provider to the other. The software also had to be modified to meet the new requirements. For this, the METRO Group formed the so-called RFID Middleware and Interfaces Team. This working group consists of experts from the METRO Group sales divisions and cross-divisional service companies, as well as external consultants. Its task was the integration of the RFID hardware and of the processes which had changed due to RFID into the METRO Group's own merchandise and warehouse management systems. Parallel to the development of the hardware and software, the conditions at the sites participating in the roll-out were also inspected. The responsible team then made the necessary adjustments. "Even though the logistical demands were disproportionately greater, the experience we gained from the Extra Future Store in Rheinberg helped us along," said Dr. Gerd Wolfram, Project Manager for the METRO Group Future Store Initiative.



Ursula Matthiessen-Kreuder provides information on the benefits of RFID in everyday operations.

customers and for the success of the company. "Our employees are an integral part of a large, group-wide project. As pioneers in the use of RFID technology, they are contributing decisively to the success of our project," said Ursula Matthiessen-Kreuder, Head of the Human Resources Team. How RFID technology will affect the concrete workflow of individual employees varies greatly from sales division to sales division. The responsible individuals at Metro Cash & Carry, Real, Kaufhof and MDL are therefore organizing special training sessions at the participating locations.

Dr. Gerd Wolfram is already planning the next steps. "This is just the beginning," he said. "Next, our industry partners involved in the RFID roll-out will fix Smart Chips to their cartons as well. We will also equip additional stores, outlets and warehouses in the group with RFID technology. Of course, we also want to get as many industry partners on board as possible. Most of them have already recognized the necessity for this, so I am confident that we will progress quickly."

MEDIUM-SIZED COMPANIES GET IN ON THE ACT



Papstar will be there when RFID is launched in the METRO Group. For years, Papstar has worked with wrapping machines and label printers for order picking. "We've seen RFID technology coming for years and we prepared ourselves for it early on," said Gregor Falke, Head of Logistics and Data Processing for Papstar. Since March 2004, Papstar has been able to send its customers DESADV despatch advice messages with integrated "Serial Shipping Container Codes (SSCC)" via EDI. It was easy for the medium-sized company to additionally integrate three RFID label printers in its processes. To do so, Papstar worked closely together with companies like X-ident, Sato and Tec. Falke said, "Together, we developed a solution which is tailored to our particular needs."

The METRO Group is the first German retailing company for which Papstar is equipping shipping containers with Smart Chips. Falke anticipates that his other customers will also switch to RFID soon. Based on the experience it has gathered, Papstar now offers to fix Smart Chips to shipments from other consumer goods manufacturers and send these to retail companies which use RFID technology in their warehouse and inventory management systems. Faber-Castell and 3M are two branded goods manufacturers for whom Papstar is providing this service.

HEAD START FOR EARLY ADOPTERS

> Interview with Professor Dr. Elgar Fleisch, Director of the Institute of Technology Management and of the Auto-ID Laboratory of the University of St. Gallen and Professor for Information Management at the Swiss Federal Institute of Technology, Zurich

The Auto-ID Laboratory at the University of St. Gallen is one of six research institutes worldwide that have emerged from the Auto-ID Center established in 1999. All six research laboratories are united by a joint vision: to create "an Internet of things." RFID is a technology that can turn this vision into reality. Professor Dr. Elgar Fleisch discussed current developments and trends with the editors of the METRO Group RFID Newsletter.

PROFESSOR FLEISCH, HOW DO YOU VIEW THE ROLE OF RESEARCH INSTITUTIONS IN THE INTRODUCTION OF RFID TECHNOLOGY?

It is the Auto-ID Labs that develop ideal types of transponders independently of the interests of individual manufacturers. Since we view ourselves as a neutral institution, we search for the most efficient and most cost-effective solution. Beyond playing an important role in the development of standards for the consumer goods industry, we would like to further develop RFID and make it usable for new applications and new industries.

FOR WHOM ELSE IS THIS TECHNOLOGY OF INTEREST?

RFID opens up new prospects for companies in the health care sector, the pharmaceutical and automotive industries, in international aviation and in the management of military facilities. In these industries, touchless data transmission and the clear identification of objects can lead to more efficient processes.

FOR A LARGE-SCALE APPLICATION, THE PRICES OF THE CHIPS ARE STILL CRITICAL. IS SOMETHING CHANGING IN THIS RESPECT?

Currently, a simple transponder costs about € 0.20. These days, the industry uses silicon to manufacture RFID transponders. This raw material determines the price for RFID tags. Researchers are currently investigating to which extent semiconductor materials are suitable for the production of transponders, for example polymers, i.e. plastics. They are discussed as an alternative to silicon, since they are comparatively cost-effective. In the medium to long term, the price for RFID transponders will decrease to about € 0.03.

WHAT DO YOU NEED TO FORCEFULLY ADVANCE THE TECHNOLOGY?

We primarily need the companies' support: managers such as Zygmunt Mierdorf of the METRO Group and Klaus Heinrich of SAP, who believe that RFID is important. In addition, we need standards developed in independent research laboratories. Finally, we will need politicians who recognize the significance of RFID for progress and create the prerequisites for its introduction on a Europe-wide scale.

IN THE MEANTIME, THE EU COMMISSION HAS RATED RFID AN IMPORTANT INITIATOR. DOES THIS BECOME APPARENT IN YOUR WORK?

The research funds for our projects are provided by the companies, not by the EU. However, we feel that we can implement the standards quickly and without any greater resistance.



MANY COMPANIES ARE STILL HESITANT AND LOOK WHAT THE KEY PLAYERS IN THE INDUSTRY ARE DOING BEFORE MAKING ANY INVESTMENT THEMSELVES. IS THIS A MISTAKE?

No, this is not a mistake per se. It depends in which market a company is active. There are two good reasons for adopting RFID early on. A well-known piece of management wisdom says: I can only manage what I can measure. With RFID, companies will be provided with much more information about the reality – from many different measuring points. This means that they will be better able to manage their process chain. This is a powerful argument for a head start. Therefore, companies like Wal-Mart and the METRO Group are already relying on RFID today.

AND THE SECOND REASON?

In the end, the technology alone is not the decisive factor, because you will be able to simply purchase it at some point. What's more important is how 10,000 or 250,000 employees will handle it. It always takes years before processes will have changed in people's minds. Companies who are already dealing with a technology today have secured a considerable competitive advantage for themselves, because they know how to handle the technology.

HOW DO YOU VIEW THE CURRENT DATA PRIVACY DISCUSSION IN CONNECTION WITH RFID?

This debate is currently emotionally overheated. Nevertheless, one needs to address the consumers' fears instead of patronizing or lecturing them. We have discussions with serious data privacy advocates whose interests we take very seriously. The Auto-ID Labs have dealt with this issue from the outset. Now we communicate it much more clearly.

VOICES FROM THE INDUSTRY



Markus Kaules



[Managing Director of Intermec Technologies GmbH]

AS A PARTNER IN THE METRO GROUP FUTURE STORE INITIATIVE, HOW ARE YOU SUPPORTING THE INTRODUCTION OF RFID STARTING IN NOVEMBER 2004?

We are developing technical solutions for using Radio Frequency Identification. Several of our applications can also be found in the METRO Group RFID Innovation Center, including a portal for incoming and outgoing merchandise and a forklift for sorting goods on high shelves. As a member of the METRO Group RFID Solution Team, we also share our expertise with METRO Group suppliers.

WHAT NEEDS TO BE TAKEN INTO ACCOUNT WHEN INTEGRATING RFID TECHNOLOGY IN AN EXISTING SYSTEM INFRASTRUCTURE?

The goal is to find a solution which provides the greatest benefit to the customer. The best approach is one which offers all solutions from a single source. This is why we work together with technology partners like Philips or IBM. With our wide spectrum of printers, reading devices and transponders, we can always offer an ideal solution for integrating RFID.

THE "EPC CLASS 1/VERSION 2" STANDARD SHOULD BE APPROVED AT THE END OF OCTOBER. WHAT DOES THIS MEAN SPECIFICALLY?

As a member of EPCglobal, we are firmly convinced that trading companies and consumer goods manufacturers are dependent upon standards. Transponders based on the "EPC Class 1/Version 2" standard and the new European standard "EN 302208" for radio frequency ranges and transmitting power can be read five times faster than the transponders compliant with "ISO 18000/6b" which are currently available. The reading range of these transponders has also been increased to up to four meters. This makes it possible for RFID technology to be used more effectively on shipping units.



Frank Freitag



[Head of the logistics department of Schwartauer Werke]

AS A MEDIUM-SIZED COMPANY, WHY DID YOU DECIDE AT AN EARLY STAGE TO USE RFID?

We assume that RFID will become more and more important over the next few years. As a result, it is important for us to gather experience with this technology from the outset. Only by doing so will we be able to truly tap into the potential of RFID for our customers and for the Schwartauer Werke. We take a strong interest in consumers being able to find our products on supermarket shelves at all times.

HOW DO YOU EQUIP YOUR CARTONS AND PALLETS WITH RFID TRANSPONDERS?

At first, we will only affix RFID transponders to pallets of outgoing merchandise at our warehouses. For the time being, we will not use RFID at the carton level. There are still some difficulties in connection with high shares of metal or liquids. For items such as jam, special transponders or packaging materials would be necessary to be able to read the data without any problems. In addition, the costs for the transponders are still too high. Therefore, it wouldn't be profitable for us to also use RFID on cartons at the present time. In this area, we would like to wait and see how the market develops.

HOW DID YOU PREPARE FOR THE RFID ROLL-OUT?

We are currently in negotiations with manufacturers of transponders, software companies and potential partners for RFID reading and writing devices. At the same time, we are creating the necessary technical prerequisites for electronic data exchange. Starting in January 2005, we will be able to transmit the information stored in the transponders to the METRO Group based on so-called despatch advice and the "Serial Shipping Container Code (SSCC)".

NEWS



>> Tesco introduces RFID technology

British retail group Tesco plans to establish an RFID network by the end of this year to track merchandise deliveries from the central warehouse in Milton Keynes to 98 supermarkets. As part of the so-called "Secure Supply Chain Initiative," Tesco will affix RFID transponders to wheeled containers and boxes used for the transport of high-quality merchandise. According to the company, this will help avoid inventory gaps for items such as cameras, razor blades or computer accessories. By 2006, Tesco will use RFID technology along the entire process chain – in more than 2,000 supermarkets or warehouses.

>> EPC – the next generation

At the start of October, EPCglobal has agreed upon specifications for the second-generation Electronic Product Code and presented them to the Board of Governors. As soon as the board approves sometime this fall, "EPC Generation 2" will be considered the new standard for RFID transponders. Members of the board include representatives from those companies that actually use the technology, e.g. Dick Cantwell, Vice President of Gillette; Linda Dillmann, Chief Information Officer (CIO) of Wal-Mart; Steve David, CIO of Procter & Gamble; and Zygmunt Mierdorf, Member of the Management Board of the METRO Group. After the final ratification of "Generation 2" by the board, hardware manufacturers will quickly be able to produce transponders and reading devices that meet this standard. Companies such as Texas Instruments and Philips Semiconductors have already developed microchips based on the existing drafts for this standard.

>> EU parliament members at the Extra Future Store

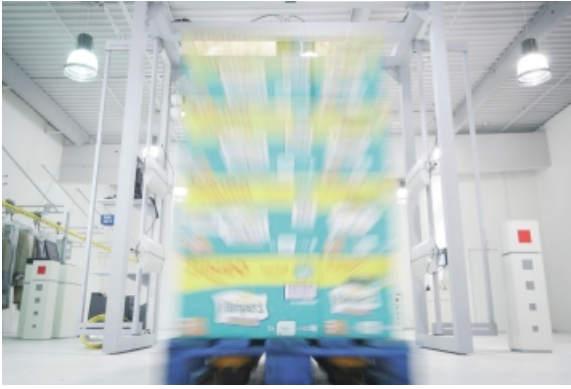
Karl-Heinz Florenz, Member of the European Parliament and Chairman of the Environment Committee of the European Commission, visited the METRO Group's Extra Future Store in Rheinberg. He informed himself of the benefits which trading companies can offer their customers thanks to new technologies such as RFID and discussed the opportunities for packaging recycling afforded by RFID with METRO Group representatives. More than 15,000 people from Germany and abroad have already visited the Extra Future Store.

>> Transponder bracelets allow faster treatment of hospital patients

A pilot project by Siemens Business Services in a New York City hospital has shown that RFID technology can support physicians in the quick and dependable treatment of their patients. More than 200 patients were given bracelets with RFID transponders that stored both the name of the bearer and a reference to the patient's electronic medical file. This way, the treating physician can use a special Personal Digital Assistant (PDA) to read the information from the bracelet and to transmit the medical file via the local wireless network to his monitor. The medical file is stored on the central computer and can only be accessed by authorized individuals. This system creates greater transparency for the overall therapy process and makes e.g. transfers to other hospital stations easier.

>> Reading devices for book lovers

Several systems were presented at the Frankfurt Book Fair that can be used by libraries to convert their check-out process to RFID. Each book is tagged with a Smart Chip that can be read by RFID reading devices at the entry and exit points. If they wish, customers will then be able to do a self-check-out procedure for their books. This will make the check-out process much more convenient and the employees can provide better service for library customers. The conversion for a library with about one million titles would cost approx. € 400,000. This amount also includes the installation of RFID reading devices on the shelves. As a result, the location of a misplaced book can be determined at any time. At the main library in Vienna, all books are already tagged with transponders. The library in Siegburg (Germany) and some libraries in the Netherlands also use RFID systems.



BACKGROUND

> Businesses bank on RFID

National representatives of EPCglobal provide companies access to the international RFID/EPC implementation network

By Dirk Masuhr

With the definition of a uniform standard for the structure of data on RFID transponders, the subject of Radio Frequency Identification is gaining even more momentum. The EPC Tag Data Specification "Version 1.1" provides the technological and economic security demanded by businesses. The EPC Tag Data Standard describes which data can be stored on an RFID transponder in which form and how this data should be encoded and decoded. The companies and organizations responsible for approving this standard have shown that they recognize the potential of RFID and are ready to use the technology.

PARTICIPATION IN AN INTERNATIONAL NETWORK

The worldwide implementation networks for RFID and the Electronic Product Code (EPC) have also been taking shape since the start of the year. Companies can gain access to the international network through the national representatives of EPCglobal, the international organization which defines standards for the Electronic Product Code and the use of RFID technology. This makes it possible for these companies to use the Electronic Product Code for their RFID transponders and thus trace the route of individual shipping containers along the entire process chain. Corresponding membership contracts have already been drawn up.

The Centrale für Coorganisation GmbH (CCG) is the national representative for EPCglobal in Germany. Jörg Pretzel, Managing Director of the CCG, said, "The Centrale für Coorganisation is the competence center for RFID and the Electronic Product Code. We are supporting the introduction of the technology to the German market together with representatives from the trading sector, industry, logistics and information technology."

THE SERVICES OF THE CCG

The CCG not only provides access to the international EPCglobal network. Through this German representative, member companies can also participate in development and standardization committees. Additionally, the Centrale für Coorganisation distributes a newsletter with information on current developments in Radio Frequency Identification and on the EPC. Company representatives can access more in-depth information in a protected area of the www.epcglobal.de Web site. The CCG regularly brings out publications to educate both nonmembers and the general public about the potential of RFID. It also organizes professional conferences and holds seminars which cover the basics of the technology.

STRATEGIC PARTNERSHIPS

In the context of the "RFID/EPC Know-how Transfer" initiative, the CCG will further expand its cooperation with research and development departments, associations and organizations, such as Chambers of Commerce and Industry. The CCG will also maintain and intensify its cooperation with institutes of higher learning, some of which have worked with the CCG for many years.

The author of this article is a project manager for Auto-ID/Identification at the Centrale für Coorganisation GmbH.

For additional information on the German RFID/EPC implementation network, please visit www.epcglobal.de or call +49 (0) 221.947 14-0



YOU ASK, WE ANSWER

WHICH TRANSPONDERS WILL THE METRO GROUP ALLOW AS LONG AS TRANSPONDERS COMPLIANT WITH THE "EPC CLASS 1/ GENERATION 2" STANDARD OF EPCGLOBAL REMAIN UNAVAILABLE?

EPCglobal has not yet approved the specifications for RFID transponders compliant with the "EPC Class 1/Generation 2" standard. The METRO Group therefore expects its partners to use transponders which support "ISO 18000/6b", the so-called EPC 1.19 standard. The changeover to "EPC Class 1/ Gen. 2" will probably take place in July 2005 when second-generation transponders are available. From this point on, the METRO Group will expect all participating partners to exclusively use transponders with this chip. The RFID Newsletter will keep you up to date on current developments in standardization. The brochure entitled "Guidelines for the METRO Group's RFID roll-out" will also inform you of the systems and process requirements necessary for the introduction of RFID. An updated version of this brochure is available as a PDF document which can be ordered from the METRO Group RFID Hotline or from rfid@metro.de.

ARE THE SIGNALS SENT BY RFID TRANSPONDERS AND READING DEVICES HARMFUL TO YOUR HEALTH?

There is no need to fear a health risk. RFID technology has existed for decades and has already been used extensively. It is now simply being introduced to a new area – the trading sector. There are explicit national and international rules governing the transmission of information through so-called "electromagnetic fields." People come into contact with these fields when they watch television or listen to the radio, for example.

The RFID transponders and reading devices used in the consumer goods industry operate in frequency ranges of 13.56 and between 860 and 900 megahertz (MHz). In the context of the RFID roll-out, the METRO Group is using a frequency band from 865 to 868 MHz (ISO 15693). The electromagnetic fields created here are within the defined limits and are, in any case, absolutely harmless to health.

WHAT DOES IT COST TO BECOME AN EPCGLOBAL MEMBER?

The German representative for EPCglobal is the Centrale für Coorganisation (CCG). It offers two possibilities for participating in the national implementation network. Through so-called informational membership, companies and organizations can receive access to the information offered by the CCG, such as its regular newsletter. They can also attend seminars and profes-

sional conferences and take advantage of consulting offers. Informational membership costs € 1,000 each year.

Only full members receive what is called an EPC Manager Number, which is part of the Electronic Product Code. This allows products to be clearly associated with companies. Full members can also participate in the EPCglobal working groups to help actively shape future EPC and RFID standards. The fees for this type of membership are oriented on a company's annual sales. For companies with annual sales of four to eight million euros, for example, there is a one-time entrance fee of € 2,800 and an annual membership fee of € 560. A detailed overview of the fees can be found at

www.epcglobal.de/download/Download/ccg/gebuehrenstruktur_einstufungsformular.pdf.

DO CARTONS WHICH HAVE BEEN FITTED WITH RFID TRANSPONDERS HAVE TO BE DISPOSED OF SEPARATELY?

Even if a growing number of outer cartons are equipped with RFID transponders, this will not pose a disposal problem according to the Duales System Deutschland (DSD). Retail and industry can dispose of cartons with transponders just as they would dispose of normal cartons. Waste management companies recycle the cartons. Non recyclable parts, such as the RFID transponders, are mechanically separated from the cartons and disposed of normally. It is somewhat more difficult to remove RFID transponders from plastic film. The DSD is already working on a solution to this problem.

NEWS

**The CDU/CSU parliamentary group:
A round table discussion on RFID**

The CDU/CSU parliamentary group within the German Bundestag invited representatives from industry, retail, science and consumer advocacy groups to join a round table discussion in Berlin. Participants included Dr. Volker Lange



(Fraunhofer Institute for Material Flow and Logistics), Petra Rob (METRO Group), Kurt Rindle (IBM Germany) and Dr. Adolf Klauke (Volkswagen). The experts introduced several applications of Radio Frequency Identification to the members of parliament and demonstrated how various industries can benefit from this new technology. During the event, it became apparent that German companies hold a top position internationally when it comes to the introduction of RFID. "We must not flog this head start to death with excessive discussions or destroy it through exaggerated legal regulations. At the same time, this new technology will only prevail if the companies manage to win the trust of the consumer," said Dr. Martina Krogmann, Internet representative for the Christian Democrats.

EVENT INFORMATION

FUTURE RETAIL FORUM 2004

November 3 and 4, 2004 _ Düsseldorf

The Future Retail Forum deals with the impact of new technologies on the retail sector and the individual shopping experience. Among others, representatives from large retail companies will report on their experience with RFID.

Access Events International
www.futureretail.access-events.com

IST EVENT 2004

November 15 to 17, 2004 _ The Hague

The most important event of the European Commission - this year under the Dutch Council Presidency - on the topic of "Information Society Technologies." Apart from a conference with 30 different sessions, there will be an exhibition on new technologies. In addition, the IST Prize will be awarded for 20 innovations.

EU Commission
europa.eu.int/information_society/istevent/2004/index_en.htm

**RFID 2005 - A KNOWLEDGE FORUM FOR THE TECHNOLOGY OF
THE FUTURE**

November 22 to 24, 2004 _ Frankfurt am Main

This specialist conference is structured in two parts. A basic seminar provides an introduction into Radio Frequency Identification and teaches basic knowledge to individuals who have only been dealing with this technology for a short time. The seminar is followed by a strategic conference with five expert forums.

Euroforum
www.euroforum.de/DATA/pdf/P16720.pdf

94TH ANNUAL CONVENTION AND EXPO

January 16 to 19, 2005 _ New York City

The world's largest retail convention is fully geared toward the future. Under the motto "Redefining Retail," more than 400 international groups of companies will be present in the exhibit area. Representatives from the most important retail companies will discuss their visions on the future of the retail sector - including Zygmunt Mierdorf, Member of the Management Board of METRO Group. This will be the first time that Wal-Mart, Tesco and the METRO Group will give a joint presentation.

National Retail Federation, NRF
<http://nrfannual05.expoexchange.com/>

LITERATURE

> RFID makes sense

Retail sector and industry have high expectations for RFID

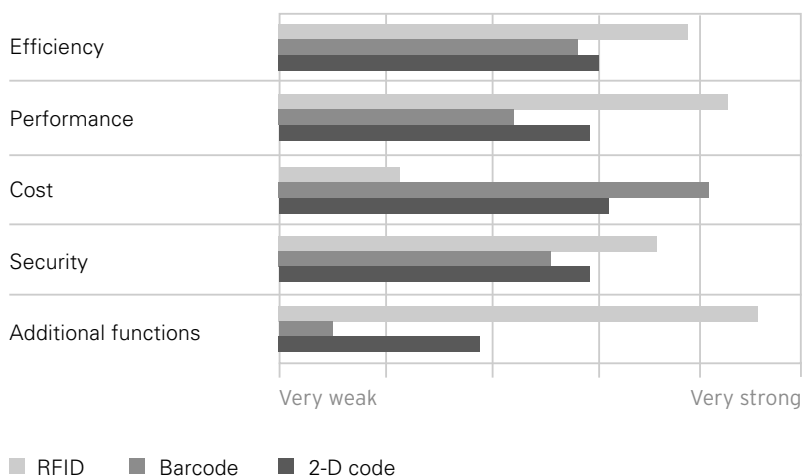
Nine out of ten companies believe that Radio Frequency Identification could be used in their industry in a meaningful fashion, according to a survey by the Fraunhofer Institute for Material Flow and Logistics (IML) with 91 managers from the consumer and capital goods industry as well as from the service provider and retail sectors. The managers were asked to assess the efficiency of various auto-ID technologies that allow product identification. Based on this survey, almost all of the companies polled would basically support the introduction of this key technology.

However, even though the majority gave a positive assessment of the technology, about two thirds of the companies still have reservations regarding the introduction of RFID. According to the Fraunhofer IML, this is due e.g. to high investment costs. Corporate representatives predominantly find fault with the lack of uniform standards. About 47 percent of the survey population indicated that it was due to this uncertainty factor that they hesitated to introduce RFID. "The companies are simply afraid of betting on the wrong horse," said Dr. Volker Lange, a member of the Fraunhofer IML and one of the coauthors of the survey.

DIFFERENT FIELDS OF APPLICATION

While industry and the retail and service sector have equally high expectations toward RFID as a key technology, they assess the specific benefits of its applications quite differently. For 75 percent of retailers, pure product identification is the most important application of RFID. One out of five companies from the consumer goods industry shares this assessment. Manufacturers of consumer and investment goods are particularly interested in the additional functions. For example, producers of perishable goods would be interested in transponders

STRENGTHS/WEAKNESSES OF THE VARIOUS AUTO-ID TECHNOLOGIES



Source: Fraunhofer Institute for Material Flow and Logistics



THE SURVEY CAN BE ORDERED THROUGH BOOKSTORES. FOR FURTHER INFORMATION, PLEASE CONTACT:

www.iml.fraunhofer.de

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with an integrated thermometer that could immediately issue a warning when the recommended maximum temperature is reached in a truck as this would ensure an uninterrupted cooling chain.

RFID – MANY STRENGTHS, FEW WEAKNESSES

In a direct comparison with the barcode and the 2-D code, RFID does extremely well. In contrast to the "one-dimensional" barcode, which is symbolized by vertical lines, the two-dimensional (2-D) barcode is defined by a matrix consisting of black and white cells. It reminds the viewer of an irregular checkerboard pattern. The polled companies were asked to assess the three auto-ID technologies based on the criteria of cost, performance, security, efficiency, and additional functions. Radio Frequency Identification was almost always in the lead. Only with regard to costs did the company representatives prefer the barcode to the 2-D code. As a result, the authors of the study predicted its future development prospects to be rather low. RFID technology is superior to the 2-D code in almost all respects and the companies did not believe the cost difference to be very large.

THEORY AND PRACTICE

Apart from the survey results, the study provides an introduction into the basics of Radio Frequency Identification and a market overview of the providers of this technology. Practice reports by companies with RFID experience round off the 170-page publication.

LITERATURE

> RFID: Benefits for Retailers and Suppliers through Effective Deployment and roll-out

Together with the METRO Group, Kurt Salmon Associates (KSA) has conducted a comprehensive analysis of the technologies tested at the Extra Future Store in Rheinberg. As a partner of the METRO Group Future Store Initiative, the consulting firm examined what benefits can be derived for the retail sector and the consumer goods industry from the use of Radio Frequency Identification. KSA identified a total of seven improvements that companies can realize by using RFID, including a more efficient process chain or reduced losses of merchandise. Even more than the retail sector, manufacturers of consumer goods can benefit from the fact that the technology can help avoid sellout situations in the market. After all, once a product is sold out, consumers frequently choose a product from a different manufacturer. As part of the survey, KSA also asked the most important industry partners of the METRO Group for their willingness to employ RFID. The 28-page brochure "RFID: Benefits for Retailers and Suppliers" summarizes the analysis by Kurt Salmon Associates. It is available in English and can also be ordered as a PDF file from the RFID Hotline.

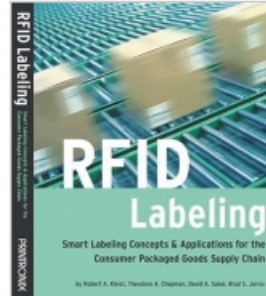


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> RFID Labeling: Smart Labeling Concepts & Applications for the Consumer Packaged Goods Supply Chain



Robert A. Kleist, Theodore A. Chapman,
 David A. Sakai und Brad S. Jarvis

RFID Labeling: Smart Labeling Concepts & Applications
 for the Consumer Packaged Goods Supply Chain
 Banta Book Group, August 2004

The 220 pages of RFID Labeling describe how companies can use Radio Frequency Identification in their process chains. The authors call upon their practical experience with the technology: as employees of an American provider of printing solutions for industry, they have helped several suppliers of the Wal-Mart retail chain to implement RFID. The first five chapters of the book introduce the reader to the topic by addressing such issues as what lies behind the Electronic Product Code and what advantages RFID can offer over barcodes. The book also discusses various initiatives by trading companies wanting to implement Radio Frequency Identification. In chapters six through nine, the authors explain what companies need to take into account when implementing RFID. Step by step, they trace the procedure leading to the complete integration of the technology in the process chain. The book, which is written in English, is aimed at newcomers to the technology and at decisionmakers who want to expand their knowledge of RFID.