

## Transponder use

# Chances and limitations for the international apparel industry

from diploma engineer Andreas Schneider

### The textile Supply Chain faces its biggest technological challenges of the last decades.

You don't have to be an insider to anticipate, how expensive identification, in particular the counting of clothes is in the textile Supply Chain. Today, in the absence of alternatives, every piece must be constantly unpacked and repacked and has to be identified again and again individually.

A joint identification of whole transport units will remain as long a dream of the future, until it is possible to identify also a group of apparel units without touching them. This is already technically possible in special areas for quite a while with so called Transponders.

Their use, in particular the joint identification of whole transport units in one step, is the biggest technological challenge of the near future.

### Transponders are an attractive technology for capturing data automatically.

Transponder is an artificial word that comes from "Transmitter" and "Responder". It means radio frequency systems for identification purposes, which can send and receive data in

one medium. This technology is also called RFID systems (Radio Frequency Identification).

#### Two RFID systems are on the market:

##### Active Transponder

Due to an own power supply (battery) they send rather strong signals to a low-performance antenna. Today already used, e.g., in apparel theft protection systems in retail.

##### Passive Transponder

Activates without own energy source solely by the signal of a strong antenna. Without this signal they show no activity and remain passive.

The use of this technology defines itself through the following features:

- no visual contact necessary
- high data storage capacity
- long life span
- almost no wear
- data alterations possible
- reusability of the device
- repeat data capturing possible
- reach of reading and writing from a few mms to several meters.

So called bulk reading of several apparel units in one transport unit,

e.g. a box with T-Shirts is now practically possible, but still leaves quite a few technical questions open.

### Today Transponders are already used in many different areas.

Today many consumers deal much more with RFID technology, than it is clearly visible on the first sight.

The big plastic buttons attached to clothes for theft protection, the opening and starting of the car without mechanical use of the key (called "Keyless Go" by Mercedes Benz) or closing the cloakroom cupboard in the fitness studio with the membership card are applications, where even a layman has a chance to recognize the use of Transponders. The fact though, that today already many cows get their everyday feeding by being identified by a Transponder, specially assigned to deliver our breakfast milk, is probably known just as little to non-farmers like the fact that hardly any production flow in the automobile production happens without component identification using RFID technology.

To sum up one can say that this technology has spread everywhere rapidly, where the individual capturing and identification of single units is very costs-intensive

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## The area of application in textile Supply Chain exceeds the concurrent identifying of single apparel pieces.

Even if bulk reading has the highest rationalization potential on the side of the apparel industry, Transponder use has much more potential to optimize the supply chain.

In times of increasing verticalization this is an essential argument on the cost side as well as on the aspect of lower lead times.

The application areas of the Transponder technology in detail:

- The storage capacity of Transponders allows manufacturers the storage of statistical product information. This would clearly optimize, without any additional expenses for retailers the flow of information about sales and with it the success basis for shop in shop- or concession-activities of apparel producers.
- Speeding up and simultaneous rationalization effects in the goods entrance of retailers and apparel producers
- The possibility to automate with smart shelves the price tagging of the products and to pursue this way easy inventorying and time-related price policies.
- Rationalization of the account processes at the cash register and substitution of the classical payment with a cashier person through efficient check out systems. This technology has already been tested by Metro group quite specifically in its technology pilot "Future store".
- Transponder would allow technologically without additional expen-

diture in with one technology the theft protection of merchandise in retail.

- Even if this area does not stand in the centre of consideration, the treatment of returns from retailers are costs not to be underestimated. Particularly the identification of the returns is often the biggest single expenditure in this process.
- The use of the RFID technology for the end user is also not to be underestimated. Transponder could complement not only the care label, contact data (consumer protection), important product information or control signals, e.g. to specially equipped washing machines could be also transmitted by the apparel manufacturer, so that a false treatment of a apparel piece results at least in a warning.

The before mentioned operational areas will lead to the fact, that very shortly the pressure from retailers will clearly increase to promote application of transponders.

### Despite these advantages use of Transponders couldn't succeed in the textile Supply Chain appropriately up to now.

The reasons, why despite so many advantages an approved technology couldn't find more acceptances in the apparel industry, are as complex as the technology itself. There exist three major reasons, which don't stand by themselves but are strongly correlated between each other:

1. **A missing supplier market of standardized systems and the lacking of a clearly defined buyers market.**

Today there are neither major system suppliers, offering standardized Transponder systems nor a clearly defined market. Who thinks about using transponder applications today, has to find with huge efforts right manufacturers for chips, reels, antennas and cases, as well as developing suitable application packages at own expenses and testing efforts. Most potential users lack not only the necessary expertises, but also the necessary resources. This means in real life, that all efforts of system developing lay clearly on the customer's side. This explains without any doubt, why potential clients from the apparel industry or textile retailers didn't gain the necessary passion to become a highly sophisticated electronic specialist. You can assume for a good reason, that without substantial changes of this supplier and market environment, there will be most likely never an appropriate market for this valuable technology.

### 2. Low chip volumes prevent attractive and feasible prices

Without a half way decent standardization in this market of individualized Transponder systems, it will be very hard to reach high volumes of the same chip and therefore attractive prices. As a result the technology is not used in textile Supply Chains up to now, because the high prices of today prevent effectively the necessary feasibility for the future.

### 3. The main advantages today are mostly on the retailer's side

Without a broad and severe benefit for all market players, there will be no economic use of RFID technology in the apparel industry with wide and therefore substantial use for all market participants. At the moment, most advantages are clearly on the re-

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tailer's side. This is one of the reasons, why especially bigger retailers from Wal Mart to Metro enforce this subject. On the apparel industry's side the biggest economic use lies in the already mentioned bulk reading. The only problem is that particularly this bulk reading only works securely within a laboratory environment yet. There are several reasons for this:

A) Currently, most Transponders in use need defined accompanying circumstances to work properly (e.g., a certain positioning of the Transponder to the antenna signal of the receipt devices) which do not correspond with the conditions of apparel transport.

B) Particularly in the production process there are poor thermal conditions through washing and ironing – conditions which cause malfunctioning of today's Transponders.

C) Jurisdiction of the EU allows frequencies and signal strengths, which are technologically less ideal, than let's say in the USA. This result in the fact, that RFID applications, that work properly in the US are not realizable 1:1 in Europe solely due to legislative restrictions.

D) Without standardization this relatively expensive base technology cannot be implemented in mass markets. It is logic as well, that agreements on one standard technology can only be gained, when this technology is fully developed. Even if this could be reached and even European standardization succeeded, worldwide RFID use would still be blocked by the substantial difference on the field of alternative operating frequencies in the US and Europe.

As a result, no reasonable supplier of RFID Technology will invest big money in all the necessary research, standardization efforts and, in the end, also the system guidance by himself, before an adequate bigger market is nearby and clearly visible. This market and this is the problem, is huge, but exists so far only theoretically.

## **Retailers have recognized these advantages and push the industry to move forward**

At the moment there is a very foggy situation, because there is a wide range of individual RFID activities but nobody can clearly tell, in which direction the journey is going:

- Metro Group created a technological playground by installing it's so called "Future Store", where they make day to day experiences about chances and limitations of RFID technology. Their project manager expects demanding of RFID supply from the apparel industry within the next 3 years.
- OTTO Versand, the German mail order giant has founded an internal work group and evaluates imaginable options for mail ordered trading.
- Marks & Spencer does its RFID research with financial funding of the European Community within an EU project.
- In July, 2003 Wal Mart announced the use of Transponders by all American manufacturers in the close future. Its main focus rationalization however lays on the identification of individual merchandise. Further details of this initiative remain unknown at the current time, though.

**It is clearly visible, that without immediate action the pressure from retail will rise one-sided, before an economic use is possible for the apparel industry.**

From the perspective of GCS immediate action from the apparel industry is essential. Because the technology is recently still full of problems, the technological bases have to be built as soon as possible and solutions have to be found.

Despite all stones on the way it is still a matter of fact, that RFID offers huge rationalization potentials, which should be used as fast as possible. There are quite a few reasons for proactive action of the apparel industry:

A) There are the most varied activities in this field, often with the tenor, bulk reading wouldn't be any problem and all one had to do is starting the use of Transponders. Here the GCS particularly would like to inform and point out the facts. If the German apparel industry does not initiate immediately further testing of bulk reading, retailers will prescribe the supply of Transponders to them rather sooner than later. This will result in the best case in higher costs, without the slightest logistical benefits.

B) But there is not only bad news. The worldwide data standardization, without use of Transponders couldn't be implemented universally even after solving all technical problems, is developed by standardisation committees like the CCG already very far, so that this essential pre condition will be available in the very near future. All relevant chip producers have recognized the basic problems on supplier's side as well as the huge market

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potential of RFID in textile Supply Chains.

C) The market importance of vertical retail chains exploded within the last few years. These suppliers create their own Supply Chains for their very own needs and don't need to show any respect for different interests of „normal market participants". Therefore they have a considerably better starting position for developing their own, customized RFID – solution - rather than the conventional players in the European market for apparel. If you add to today's already higher speed of the verticals a technology with the rationalization force of RFID, the rest of the market would have substantial fun. The pure announcement of Benetton, to implement Transponders in their Sisley products struck, although a false rumour, the industry like a bomb and caused quite a few sleepless nights.

Therefore, it is necessary, especially for the apparel industry to promote the topic RFID actively now, to inform, prepare and to sensitize the industry for such an important subject.

**The momentary situation can be overcome only with a collaborative approach. Only if a calculable market originates there will be movement on the supplier's side.**

GCS was asked by big apparel manufacturers to initiate a work group to find collaborative solutions, first on the apparel industry side, later in cooperation with retailers.

Developing a basis technology, the key for industry-wide standardization and large amounts of one Transponder/Chip type, can be accomplished only as a team.

### **Study group with the big Player of the apparel industry:**

The work group will start its activities in March, 2004. The goal of this initiative is the development of a running basis technology by joint efforts.

This would lay the basis for high Transponder volumes with low prices, an absolute must for the vast spreading of this valuable rationalization tool.

This joint operation also allows a responsible lay out of the data contents and a coordinated information strategy, the only strategy possible, to lay a solid, fact oriented base for the necessary talks with consumer protectionists. Their concerns are mainly based on unprofessional information strategies and selective reports about the subject in the media and they deserve better.

This joint approach of the big players in the market will cause, virtually as a side effect, a technological standardization, that would be difficult to reach on a pure discussion base.

As another side effect we expect the formulation of joint positions towards retail, which will make future implementing of this technology much easier. One of the reasons for this industry report about such an important

technology is the fact that GCS wants to invite third parties from the industry to join our important and valuable initiative that started its activities in March 2004.

Martinsried in March 2004



Andreas Schneider worked many years for apparel corporations in Management positions.

Today as a Partner of GCS mbH, he accompanies corporations of all sizes, which face actively the structural changes of the Shoe, Apparel and Textile Industry and want to improve very actively their competitiveness.

GCS Gesellschaft für Consulting und Synergie mbH  
Lochhamer Str. 13  
D-82152 Martinsried (Munich)

Fon +49 (0)89 - 89 13 65 - 0  
Mail [schneider@gcs-consulting.de](mailto:schneider@gcs-consulting.de)

Internet [www.gcs-consulting.de](http://www.gcs-consulting.de)