The Use of RFID transponders
By Klaus Nissen – kni@berendsen.dk
Agenda

- Berendsen Textile Service – who we are
- How do we use the transponders
- The future
You have most probably used our products, but we provide a service

About Berendsen

Mat service

Washroom service

Workwear service

Cleanroom service

Healthcare service

Hotel/restaurant service

In DK:
Levere ugentlig beklædning til +140.000 medarbejdere
Leverere service til +50.000 danske virksomheder.
About Berendsen

●Our business: Textile service
Berendsen in summary
(year-end 2006)

Revenue close to 700 mEUR

Trades in textile services in 12 countries in Northern Europe:
• Market leader in Scandinavia
• Strong sector positions in Germany/Austria and the Netherlands
• Fast growing business in Poland
• Entry in Finland end of 2005

Processes in +95 plants and employs about +7,000 people

Business Mix

Geographic Mix
Berendsen is owned by Davis Service Group Plc
Some of our important customers
in our different areas
Logistic Principle between laundry and customer
The supply chain includes also return of soiled garments
Differenciation is the key factor

One Key technology is RFID

This makes the Difference
The Laundry RFID Tag today:
LF – single read and
HF – single and multi read
UHF – only test installations

- Ø 16 mm
- No memory
- Just an ID#

Washed 150 times
Tough mechanical environment
Temperatures up to 150 deg.C
Chemicals - detergents
The set up today – LF single read

- Table antennas installed in all garment laundries
- Antennas integrated in tables.
- The laundries are divided into smaller specialized lines.
- All laundries “check out” garments individually during folding.
- Ordering of individual articles online.
- Mat laundries use the transponder for sorting and stocking.
Logistic layers – Berendsen are working on Item level

<table>
<thead>
<tr>
<th>Layer 0</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Layer 1</td>
<td>Packaging</td>
</tr>
<tr>
<td>Layer 2</td>
<td>Transport Unit</td>
</tr>
<tr>
<td>Layer 3</td>
<td>Unit load, RTI</td>
</tr>
<tr>
<td>Layer 4</td>
<td>Freight containers</td>
</tr>
<tr>
<td>Layer 5</td>
<td>Vehicle</td>
</tr>
</tbody>
</table>

- Garments
- Plastic bag
- Wash-sack
- Cages
- Movement Vehicle (truck, airplane, ship, ...)
- Unit Load (pallet, ...)
- Transp. Unit

Sophus Berendsen A/S
Berendsen Transponder usage today

Transponder deliveries per year

Year

Transponders

0 500000 1000000 1500000 2000000 2500000 3000000 3500000 4000000


LF – single read
Modtagelse
- RFID gate eller RFID truck sikrer hurtig og korrekt modtagelse af varer

Lagerstyring
- Validering af korrekt lagerposition
- Dato, holdbarhed og genbestilling

Afsendelse
- RFID gate for validering af korrekt ordre og at varer lastes i den rigtige lastbil

Produktion
- Applikering af emne med RFID og/eller strejkode
- Genbestilling af delkomponent ved defekt
- Validering af emner i produkt
- Korrekt samling

Proces-styring
- RFID registrerer strategiske hændelser/steder i produktionen
- Registreringer overføres automatisk og i real tid
- Herved kan produktionsdata analyseres for optimering
Logistic Principle between laundry and customer
With RFID

= Scanning and reading
Logistic Principle in laundry
With RFID

= Scanning and reading
Logistic Principle in laundry detailed scanning stations
With RFID

Each Scan document a service made, and can be charged
Logistic Principle in laundry – production use
With RFID

= Scanning and reading
Mulit inscan

In-Scan

Before wash sorting

After wash sorting

Prepare distribution

Loop Sorter
Logistic Principle at customer
With RFID

= Scanning and reading
Logistic Principles

Unimat™

Check In

Lockers

= Scanning and reading
Forretningsmæssigt behov:
SAS ønsker at et kunde depot kan styre tøj OG EGNE artikler, til udlevering og tøj aflevering til kundens medarbejdere uden brug af UNIMAT, hvor depotet kan være opdelt i skabe og bokse.

Forretningsprocessen og BOS Depot

Vaskeri (ABS)  Kundens depot (BOS)  Kundens medarbejder

Nyt tøj fra leverandør
- Opmærkes og udcannes
- Lægges i servicepose

Udlevering til medarbejder
- Udcannes
- Tøj klar til udlevering fra depot
- Tøj er udleveret

Beskidt tøj afleveres
- (Indscannes som modtaget)
- Tøj er aflveret
- Tøj aflveres

Medarbejder stopper
- Tøj slettes fra beholdning
- Medarbejder stopper og skab/boks frigives
Berendsen Unimat™
Unimat™ or Check In Customer Benefits and costs

- Reduced garment handling
- Reduced administration
- No loss of textiles
- Documentation of changes
- Hygiene control
- Access 24 hours
- Increased flexibility
- Reduced garment stock
- Hanging garments -> improved finish
- Improved image.

The UNIMAT system is a total logistics system which give complete control at all stages.
UHF multiread chips will change our business

- Reading speed, distance and accuracy
- All textile will be attached a chip
- Scannings will be done in the production, on stock, in the truck and at the customersite
- New service solutions will be developed
- Shrinkage control will be possible
- Reduced cost in production, transport and at the customer
Thank you for your attention

Klaus Nissen – IT manager