PostNord

Keep track of letters and assets.
Northern Europe’s leading communication and logistics operator
This is PostNord

- PostNord is the merger between the national post operators in Denmark and Sweden

- Mail operator for all of Denmark and all of Sweden

- A leading provider of logistics services to, from and within the Nordic region

- Leading supplier of business communication in the Nordic countries
- One of the largest operators in the Nordic media market
- The strongest business partner for Nordic e-commerce
Agenda

- Measuring quality of service using RFID-technology
- RFID on roller-containers
- Considerations and next steps
Objectives of measuring quality using RFID-technology

- The Swedish and Danish Mail organizations have worked with RFID measurements of letters for +16 years.

1. Access to **Continuous** and **Independent** data registrations.
2. **Diagnostic** information about production and distribution processes.
4. **Quick Action** on actual problems in the End2End chain.
5. Focus on **Improvements** rather than on Measurements.
6. Generate facts about **Handling Mistakes** and **Delays**.
7. Monitoring and **Controlling** of production processes and **Lead Time**.
8. **Reduce Cost** in collecting of Quality data.
AMQM Hardware equipment

Additional Quality of Service measurement units

Complete AMQM™ Mobile System in roll cage

Letter trays under exciter

EDECS Site Server

EX21 Exciter

EX23 Exciter

RD21 Reader

Transponders
The collection and sorting set-up of the letter production (In-gates)

- **3 SORTING CENTRES.** Pick up and Dispatch Sorting
- **1 INTERNATIONAL CENTRE.** Import and Export
- **3 HUBS.** Transit handling

---

**Denmark**
* 43,094 km²
* 5.5 m inhabitants
The Distribution Set-up of letters (out-gates)

6 Distribution areas

63 Local Distribution areas

210 Distribution centres
Shell. All gates in and out of centre must be covered.
Processes. Relevant production areas can be covered.
## Service Standards FIRST CLASS LETTERS (J + 1)

<table>
<thead>
<tr>
<th>Sender</th>
<th>Collecting (Transport)</th>
<th>Sorting (Centre 1)</th>
<th>Transport</th>
<th>Sorting (Centre 2)</th>
<th>Sorting for Distribution</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mail Street Boxes</td>
<td>14.00 – 20.00 h</td>
<td>Pick up Sorting</td>
<td>17.00 – 23.30 h</td>
<td>Transport to Centre 2</td>
<td>20.00 – 02.30 h</td>
<td>Dispatch</td>
</tr>
<tr>
<td>Post Offices close</td>
<td>17.30 h</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sorting for Distribution</td>
</tr>
<tr>
<td>Pick up at Senders</td>
<td>18.00 h</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Local Sorting for Distribution</td>
</tr>
<tr>
<td>Induction at Centre</td>
<td>22.00 h</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>02.30 – 07.00 h</td>
</tr>
</tbody>
</table>

- Standard Letters Sorted in Order of delivery | 07.00 h |

### Delivery to Receivers
- P.O. Box | 08.00 h |
- Business | 10.00 h |
- Private | 14.30 h |

= AMQM-registration  = First/last mile registration
RFID - Status October 2011

- Yearly 100,000 Domestic test items
- 24/7 quality measuring used both in the central and decentral organization.
- Traceability of mistakes; errors being placed at responsible units
- RFID-installations upgraded at postcenters and distribution centers
- All centres have process-exciter installed (internal measuring points)
- AMQM Light installations at 75 largest distribution centers

<table>
<thead>
<tr>
<th>No.</th>
<th>Postal Sites</th>
<th>Readers</th>
<th>Exciters</th>
<th>Installation</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Sorting Centres and Hubs</td>
<td>146</td>
<td>256</td>
<td>Fixed</td>
</tr>
<tr>
<td>75</td>
<td>Distribution Centres</td>
<td>139</td>
<td>213</td>
<td>Fixed Light</td>
</tr>
<tr>
<td>33</td>
<td>Distribution Centres</td>
<td>69</td>
<td>69</td>
<td>Mobile Systems</td>
</tr>
<tr>
<td>115</td>
<td>Sites Total in Denmark</td>
<td>354</td>
<td>538</td>
<td>AMQM Gates</td>
</tr>
<tr>
<td></td>
<td><strong>Total AMQM – Gates</strong></td>
<td><strong>403</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Observations and hints

- Having run this system for year there is still a continuous demand for further breakdown of a given result; down to each production process or each production team. (more wants more)

- Focus need to be on handling mistakes and delays and on improvements for bad processes only, or for bad teams only; rather than for all processes and for all teams at the same time.

- The RFID-system is not telling the whole truth about the End2End process but it is a good indicator.

- The RFID set-up produces huge amounts of data and Qualified manpower is needed in order to benefit from it.

- You can not Measure to get a Better Quality; you have to Work to improve.

- In Sweden we are using the same process monitoring to document quality in specific customer cases with huge success
RFID on roller-containers

The RFID on roller-containers project was initiated 5 years ago but has generated valid learning points

STATUS 5 YEARS AGO

- We had huge problems in having containers for our start-up of production; resulting in 5-7% loss of productivity on days where we had a lack of roller-containers.
- We spent huge amounts in repair and purchase of new roller-containers
- We were loosing containers domestically but even abroad.
The Objectives of RFID-Tagging roller containers

- **Production overview - Visible factory**
  - Monitor inventory available for production prior to start-up
  - Real-time production planning
  - Optimize transports

- **Effective management of containers**
  - Monitoring of empty containers
  - Tracking of empty and full containers
  - Reduce purchase of containers

- **Asset Management**
  - Data catch - further optimization
  - Measure the efficiency of the transports
  - The rate of turnover of the roll containers
  - Generate production profiles for Distribution etc.
Tags on 34.000 roller containers

- RFID-TAGs on roll approx. 34.000 containers
  - 28.000 original budget – our own counts only suggested that we had 24.000 roller-container, maybe even fewer!
  - Automatic registration of roller-containers leaving and arriving at terminals
Prior to the RFID Tag-project

The birth of a business case

- **RFID technology was not used in asset tracking in the postal sector yet**
  - We were in conflict with the current corporate policy “Rather a fast follower than a first mover”
  - Few documented asset management cases in the postal sector; therefore higher demand on the documentation and the business case
  - Everybody was then waiting for the breakthrough on the cost of the TAGS

- **Continuous discussions regarding active or passive technology**
  - Long research in the project before decisions could be taken
  - Need for clear and understandable arguments
  - What about scanning a barcode? Was it not cheaper?
The RFID-Tag system I

- The set-up was custom-made
- RFID-tags on all containers
- Active RFID-TAG (battery assisted)
- Full monitoring in KEP Terminals via antennas and readers on hubs and parcel centers (150 antennas and readers)
- Partly monitoring outside KEP terminals via upgrading of existing antennas/readers (for test letters)
- 180 handheld Wireless LAN barcode scanners
- Integration of Tag registration and PMT – Production Management Tool

Active RFID-tags are attached on every container and linked with a unique container barcode.
The container is automatically and manually registered.
The RFID-Tag system II

Both the barcode on the container and the barcode on label are scanned.

By linking the label and the barcode the content is linked to the TAG.
The tag on the container is automatically registered by antennas in the gateways. The TAG is unique and has been linked to a barcode situated on the container and the barcode on the label of the content.
The RFID-Tag system IV
Process of registration

Selected customers
Arrival profile + reg. of containers for hubs
Arrival at Distribution Centre (sample)

Collect Presorering Sorting MS Distribution

Customer Distributioncenter SH/Groupage Transit MS Transit MS

1000-4xxx MS Transit MS
5000-9xxx MS

Transit MS Transit MS

Arrival Hub Departure Hub Departure centre Arrival centre Arrival Hub

Status of stock Hub Status of stock Hub
Benefits and reflections

- Found 10,000 roll containers during implementation
  - The value of the pool has increased by ~ 4 million Euros.
  - We haven’t purchased new containers for years now. Savings of approx. 400,000/y
  - Customers were sure we could measure their use
  - We managed to identify and close some mom-closed loops out of the country
- Monitoring and control of the empty containers
- Data of the logistic flow and tracking of the containers further optimized transport routes.
- Saved transport cost with flows of empty roller-containers

- We were too early. The next installation of this solution in any other Postal organization will be in 2012.
- We took responsibility for development of the hand scanners in our own organisation
  - resulted in delays of implementation. We should have gone plug & play it would have been faster.
- Change in management ownership just before implementation had a huge impact.
Next steps

- Considering next step after the merger – looking for ONE corporate solution and a way to get there.

- We are looking into the further use of new Commotive technology, which we already have implemented in Denmark regarding tracking quality in emptying mail boxes and monitoring our car pool.

- Decide next steps; with or without current infrastructure and align with solutions used in Sweden.
Thank you!