



RFID for the Textile Rental and Laundry Industries

In the textile identification market, fast and accurate identification has become a prerequisite for competitiveness. Whether its uniforms, mats, mops, linens or personal garments, and whether its the healthcare, nursing home or hospitality sector, RFID can offer a profound improvement in textile and laundry identification and sorting.

Applications:

- **Uniformed Staff,**
- **Industrial Laundries,**
- **Linen Rentals.**
- **Service organizations,**
- **Utilities,**
- **Hospitals, Nursing Homes, Casinos, Hotels, Sports and Golf Clubs**



Workwear - Uniforms

In today's world, many companies expect their employees to elevate the corporate image through their appearance. Furthermore, in the restaurant, industrial food and healthcare industries strong sanitary regulations must be fulfilled. Uniforms have become personalized and mixed customer/laundry garment ownership models have emerged. Major players in the professional textile laundry industry have implemented RFID, bringing greater efficiency in manual plants as well as fast ROI through the use of semi-automated or fully automated sorting systems.

Flatware - Linens, Tablecloths, Napkins

While non-personalized flatware is often of low relative value compared to the RFID Laundry Tag, however, this typical price-focused approach does not take into account the costs associated with the cleaning processes, which can be greatly streamlined using RFID. With the bulk reading capabilities made possible by multi-reading technology, both at the soiled end and at the clean end, many possible services can be provided in addition to traditional inventory management. FSN has architected specific long-range RFID solutions for flatware applications including a specific mini-RFID Tag with an optimized shape to sustain tunnel finishing and ironing processes. Its special design makes it almost undetectable

and prevents any damage to the textile.

Dust Control - Mats & Mops

Thanks to its flatness and small size, the RFID Mat Tag can be installed in any mat or fitted to any mops and is undetectable. FSN has developed specific integrated solutions to read mats in the rolling machines of several major manufacturers and for bulk reading of mops in bags.



HF RFID Laundry Tags

Healthcare

With the development of resistant bacteria and epidemic diseases, sanitary regulations become increasingly rigorous and costly to fulfill. The specialized RFID Tag together with automated sorting equipment driven by RFID technology drastically reduces the number of exposed operators, or even eliminates them altogether. Using the mini RFID Laundry Tag, standard healthcare laundry and garments from elderly homes can be mixed and processed together. The RFID Laundry Tag is sterilization certified and is a passive electromagnetic device. Such specialized laundry tags can be reused for more than 1,000 times.

Personal Wear - Nursing Homes

In the industrialized world, people are living longer. The aging population has spawned the need for more nursing homes and growing the demand for industrial launderers. Because nursing home residents bring their own garments, accurately identifying and tracking the numerous and varied garments presents a challenge for nursing home staff and their outside laundry partners. The current method of simple nametags, stickers and barcodes often becomes ineffective after a few wash cycles because the labels become unreadable, making garment sorting and tracking a costly and labor-intensive process - one that is prone to errors.

A recently introduced ID solution, from FSN, caters to the specific needs of nursing homes. The system includes small-sized RFID tags, ideal for the tagging of personal garments of nursing home residents, plus specialty antennas (e.g. the Bin Antenna or Chute Antenna) and readers for easy data collection. The system is designed to significantly reduce labor costs by automating the identification and sorting processes.

Identify to Sort

Today, textile identification and sorting in industrial laundry processes can be greatly enhanced through RFID technology. By attaching tiny transponders to garments, uniforms, linens, mats and mops, ownership of the items is always accurate. Textiles are easily identified as they pass by an antenna in any position, with amazing advantages for industrial laundries. Benefits include faster garment identification, automatic sorting, error-free processing, reduced manual labor and long lasting solutions. Payback periods of less than one year are typical. In many cases, the linens have to be quickly turned around. To minimize loss, linen counts must be instantaneous because venues constantly hold events, and it's imperative that clients are notified of missing items



quickly. The client has a much better chance of locating them if he or she can check the premises before another event is held in the same space.

Mix-ups on returned linens are inevitable and can often involve many search hours over several days—especially among clients holding multiple events simultaneously.

Upon return, bags containing hundreds of soiled linens pass through the Inbound Tunnel Antenna. In one customer application, a customized *To Clean* station was developed—an innovative one-step process which automatically takes returned linens from *cleaning* to *available* status. The tunnel antenna at the *To Clean* station, identifies, verifies against the original order and variances reported before moving on to the laundering cycle. This considerably reduces operational costs by eliminating the process of counting each linen—the system automatically records items returned and identifies those items not returned.



Outbound clean linens (“clean out”) are loaded onto the Outbound Z-Racks which pass through the **Outbound Z-Rack antenna**. The software assigns the scanned RFID tracking code to the order being shipped. This improves the quality of the shipping process by identifying when wrong items were picked or when the quantities picked do not match ordered quantities. Once cleaned, the linens are scanned and bagged in a seamless process.

The integrated software records the linen as available and produces an identification label to attach to the bagged linen, which helps warehouse staff accurately and efficiently store the item.

Casino Application: Here’s how it works

Soiled garments are deposited into the laundry chutes where they are read automatically—without human intervention. Instantly, management is notified which garments have been checked in and shipped for cleaning. Cleaned garments are returned and loaded onto automated conveyors. Again, there’s very little human intervention. The garments are loaded simply by passing the radio frequency (RF) antenna on the conveyor.

From there, the conveyor automatically routes the garment to the proper loading location and the software indicates receipt of the garment along with its location on the conveyor.

The use of multi-read RFID Laundry Tags enables faster processing speed and greater automation, especially with new inventory. The system reads ten times faster than typical barcode systems. Up to 12 items can be processed simultaneously within a second or two, and the integrated RFID software precisely tracks exactly what was processed.



The most dramatic improvement for the casino application was a 67% reduction in labor Hours. Within just one year, the labor savings alone have more than offset the initial equipment investment. And the savings continue to add up. The casino no longer needs to buy new barcodes when replacing worn uniforms.

Thanks to the high performance RFID Laundry Tags, they simply remove the chip and place it in the new garment, further extending their investment.



Hospital/Nursing Home Application:

Many hospitals and nursing homes are burdened with a labor intensive process wherein individual employees count and manually track the uniforms as they enter the laundry and storage facility. Hospitals use many thousands of work garments such as operating gowns, robes, trousers etc. in their medical and research operations. Managing such a large number of work garments can be a major problem and cost.

Traditionally, garments are supplied on hangers (which are bulky, difficult to handle and require lots of storage space). And a lack of real-time management data on stock levels means that stocks often run low or even run out completely, causing unnecessary disruption to operations while staff try to find the correct garment in the right size. Staff normally have to fill in paper-based forms to register for garments so that wards can be charged for laundry services etc., and this can waste valuable staff time and reduce overall efficiency.

A RFID system designed to meet the challenges in hospitals and nursing homes needs to provide real-time data on garment logistics as they move from laundry to storage cabinets in the hospital and out to the wards and individual users, and back to the laundry. The tracking system has to be easy to use by staff using their existing ID cards and robust enough to withstand the harsh conditions of laundry processing with its high temperatures and pressures and rough treatment.

Since the garments are stored in piles rather than on bulky hangers, the tags have to be readable even when garments are folded and stacked on top of each other. The system also had to provide automatic re-ordering of garments when stock levels in any size fall below set levels, plus automatic logging of each ward's garment usage so that wards can be accurately charged for their laundry services.

Finally, such a system has to deliver substantial overall cost savings to the hospital - in terms of both space savings and operational savings.

Early tag trials

At one of Norway's larger hospitals, St. Olavs, trials were conducted to determine which tags had the highest read accuracy under harsh laundry conditions over large numbers of cycles, and which tags could be read reliably when tagged garments are stacked closely in piles in the closets.

As a result of the trials, Texi (the selected System Integrator for the project) found that Texas Instruments' 13.56MHz UHF 'overmolded laundry tags' had highest read range, accuracy and reliability of any tags

tested, especially when subjected to the harsh environment of the laundry process. Their multi-read capability also allowed the multiple tags to be accurately read even when garments are stacked in piles.

Intelligent closets

The solution proposed was a complete garment logistics management system that uses intelligent RFID closets and special encapsulated RFID tags. In operation, an RFID laundry tag is attached to each garment. Each tag is pre-programmed with a unique identity linked to a database holding data on garment type, size etc. Clean garments from the laundry are placed in rows of specially designed garment closets each equipped with built-in RFID antennas. St Olavs Hospital has tagged over 130,000 staff garments and has already installed more than 100 intelligent closets in 10 different garment storage rooms around the site.

The intelligent closets automatically read the chips on each garment and so know exactly what they contain (i.e. 35 robes size M, 59 trousers size M etc). They also detect when garments are added or removed, and the inventory continuously updated on the main hospital database in real-time. If garment stocks fall below pre-set levels, orders are automatically sent over the network to refill them to ensure garments are always available in the correct types and sizes. To collect garments, staff access the closets using their ID cards and simply remove the required garments which are immediately and automatically registered to that employee and their ward. Each cabinet is clearly labelled with the type of garments it contains so staff can quickly find the required items. After use, staff simply return the garments to any garment bin in the hospital and the RFID tags are again automatically read and the returned garments correctly credited to the relevant ward - all without any paperwork or form filling.

Tag lifecycle

The ruggedised tags remain on the garments during the entire laundry process and can withstand the very high temperatures, pressures and rough treatment found in the laundry. A major feature is that the tags allow bulk reading of garments even though they are stored folded and in piles. This results in major space and cost savings compared to other competing solutions where garments have to be transported and stored individually on hangers.

Remote supervision

A supervisor with a PC connected to an Omnitrol Appliance with its built-in networking and middleware has a complete overview of garment stocks in the many garment closets and store rooms around the hospital at all times providing improved stock visibility and logistics management.

Cost savings

The hospital management authority expects savings of over 40 million Norwegian Kroner in space savings alone, plus further on-going savings of some 15-18 million Kroner in operational costs (due mainly to more efficient data collection for improved logistics management, automated ordering, and time-savings because garments are quicker to find). The 13.56 MHz HF RFID Tags have been tested to withstand at least 200 wash cycles and are re-usable for new garments.

RFID Tag Evolution

UHF vs HF Laundry Tags such as those used at St. Olavs, are increasing in popularity due to multi-vendor investment in product improvement and lower costs, longer up to 3 meters Read Range and increasing capabilities to withstand harsh environments. 902-928 MHz UHF flexible latex rubber encased UHF laundry tags are now being introduced. They are waterproof and temperature and chemical tolerant for use in any RFID linen or laundry management application.

All Laundry and Textile RFID Tags are designed and selected by FSN to withstand the harsh environments of wash, ironing and logistics cycles without being detected and without damaging the textile.

FALKEN Secure Networks(FSN)—Your partner for RFID automation

If you choose to pursue RFID implementation in your organization, here is the FALKEN Secure Networks commitment to you:

- FSN will provide solution architects to work with you to define system requirements for your particular installation. Multiple locations can be networked together for a central and real-time view and centralized management.
- FSN will do a RFID site survey to validate radio frequencies, tag types, system design and performance
- FSN will provide all necessary hardware and software to make the system work for you
- FSN will integrate the system with your existing enterprise management software
- FSN will provide documentation for the system, including operating procedures
- FSN will train your people
- FSN will provide warranty and continued system support

For RFID-enabled Document Tracking and Management, FALKEN Secure Networks (FSN) and partners bring together the right technologies to give you control over your files and make your office run more efficiently. Our automated and secure processes save time and labor, and prevent problems before they occur. With FSN ,you get the latest, non-proprietary secure RFID technology with the most powerful and flexible RFID file tracking software available.

Contact Us

FALKEN Secure Networks is a specialized System Integrator, RFID Solution Architect, and Value-Added Reseller with focused expertise in the RFID site survey, cost-effective design, and turn-key project implementation.

Contact FSN at sales@falkensecurenetworks.com



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