

MIELOO & ALEXANDER

RFID enabled inline crate
registration system for the
Delhaize New Fresh operation at
Euro Pool System

Euro Pool System

With 123 million crates and 45 depots, Euro Pool System is one of the largest pool operators in Europe. Euro pool's crates are mostly used for the transport of fresh (packed) products, like fruit and vegetables, meat, bread, dairy products, fish and prepared meals. Euro Pool provides the crates to growers and producers, who ship their product to retail, who in turn send the empty crates back to a Euro pool depot for washing, upon which the process starts again. In 2008 Euro Pool's crates rotated approximately 560 million times.

Business Case for Auto-Id technology

As the users of the crates pay a deposit and a rental fee for the use of each crate, accurate registration of each transfer of each crate between the partners in the supply chain is of the highest importance. If this is not the case, at the volumes mentioned above, any party in the supply chain could incur significant losses. Reliable automatic identification solutions like RFID are therefore a high priority for pool operators in general and Euro Pool Systems in particular.

Crate Registration System for Delhaize "NEW FRESH"

Therefore, Euro Pool System commissioned Mieloo & Alexander to deliver turnkey the fully automated crate registration system based on UHF RFID and 1D barcode technology for the "New Fresh" project of Delhaize, one of the largest retailers in Belgium. The crate registration was deployed on the new conveyor based washing installation that Euro pool installed at the Delhaize site in Brussels, which will process 2 million crates approximately 10 times per year.

The target registration performance of the system is 99,5% on unique id's and 99,9% on counted crates, and the system must have an availability of 99,5%.

The Process

Each crate in the pool is equipped with one UHF EPC/gen2 tag and two inmould 1D barcodes that are programmed with the unique id of the crate. Used crates are received from Delhaize stores on dollies in two stacks of max. 40 folded crates. The dollies also have an RFID tag and two 1D barcodes.

Each dolly is placed on the washing line, where several crate-id's of each stack and the dolly id are scanned and married. Then, de-stacking units on the conveyor take the stacks from the dollies and unstuck the crates. Here, the id of each crate is scanned again and linked to the stack from which it is taken. Through this relation, each crate is ultimately linked to the dolly-id, which completes the "inbound registration", as the dollies are associated with the Delhaize order system in the Euro Pool's Pool Management Database.

After de-stacking, the crates are unfolded and industrially washed, to be folded again, and stacked in stacks of 40 crates each. Then, four stacks of 40 pallets are placed on a pallet and wrapped. At this point the crate-id's of all 160 crates on the pallet are read on the conveyor, upon which a SSCC label is generated and applied to the pallet.



Redundancy

Each registration point on the conveyor system is redundant, in that the reads performed by the RFID readers and barcode scanners are de-duplicated.

Additionally, photocells count each crate adding an additional layer of redundancy.

Two high volume portals provide additional process redundancy: if the conveyors are not available, the registration process can continue manually. And inline reject stations measure the read performance of barcodes and RFID tags of crates after they have been cleaned; the conveyor ejects crates of which either the barcodes or the RFID tag doesn't perform according to specification, thus ensuring that the overall registration process performance remains on target.

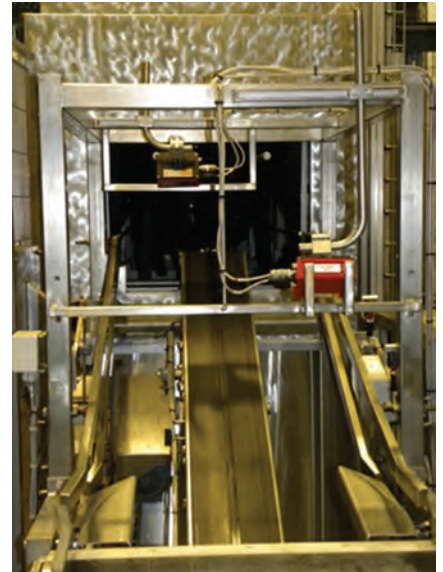
Key challenges

- Sensitive Auto-Id technology implemented in a harsh industrial environment, with temperatures below zero and up to 70 degrees Celsius, steam and humidity, combined with the need for an availability of 99,5% in a three shift operation.
- UHF technology deployed in environment with steel plated machineries, causing reflection and cross reads.
- Extremely high volumes of tagged crates close to each readpoint, resulting in very high processing capacity utilisation, the need for a significant number of measures to mitigate cross reads, and undisputed tag quality.
- Tight integration with the conveyor systems, the entire registration system realized within the same timeframe during which the conveyors were being built up.

Results and Benefits to Euro Pool System and Delhaize

Euro Pool's inline crate registration system performs on target and fully automates the in and outbound transfer of crates to growers and from retail operations at the level of the unique id, enabling the following benefits:

- Increased reliability of registration, resulting in less disputes with clients and less financial losses.
- Improved data quality and improved accuracy of customer information and service.
- Increased insight in crate pool circulation.
- Improved operations by minimizing the possibility of human errors or fraud.
- Labour savings due to fully automated registration of in- and outgoing crates.
- Secured registration system, with backup registration options.



Mieloo & Alexander

Mieloo & Alexander Business Integrators is a consulting firm specialised in technology enabled business improvement. Mieloo & Alexander is a leading Supply Chain and RFID solutions provider that successfully designs, plans and deploys solutions that transform your organisation to achieve sustainable competitive advantage. Mieloo & Alexander has years of experience, in-depth knowledge of business processes and technology and a true hands-on, get it done mentality that has resulted in strong and lasting client relationships. Mieloo & Alexander is headquartered in Amsterdam (Hoofddorp) and works for clients and projects across Europe.

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