Efficient rail yard processes with GS1 EPC/RFID

Simplified, faster and more accurate management of rail transport in Finland

Replacement needed for inefficient manual processes

Finland's unique geography, its extremely northern location and its long, dark, cold winters can make it difficult to have efficient logistics that enable Finnish companies to successfully compete in global markets.

VR Transpoint, Finland's leading transport and logistic service company, has long been meeting that challenge. It operates in several European countries including Russia, and offers rail, groupage, bulk goods and international transport and logistics services.

A substantial portion of VR Transpoint's rail activity is devoted to shunting, the task of moving wagons from place to place in the yard as they are loaded and unloaded with goods. Until recently, the work was manual: yard workers with pens, paper and walkie-talkies walked through loading and unloading stations, radioing information about the contents and condition of each wagon they verified. An office worker on the other end of the radio would manually enter the data into an ERP system.

It was a time-consuming, inefficient and error-prone process.

VR Transpoint wanted to improve overall wagon shunting efficiency, optimise wagon maintenance and boost customer service by offering real-time wagon traceability information.

GS1 standards chosen to meet the objectives

After discussions with other railway organisations of European countries and a small-scale pilot project that demonstrated the many benefits, in the last quarter of 2009, VR Transpoint implemented a solution built upon GS1 standards.

RFID EPC Gen 2 tags specially designed to work on metal were affixed to each side of all 11,000 VR Transpoint rail-freight wagons, locomotives and passenger cars, creating the world's first full-scale EPC RFID system in the rail sector.

Each wagon is uniquely identified thanks to a GS1 Global Individual Asset Identifier (GIAI) Key encoded into an EPC RFID tag.

More than 350 handheld RFID readers are in use by shunting yard workers in 50 different Finnish stations, and 100 fixed RFID readers are scheduled to be installed at critical points across the Finnish railway network.

All data gathered by handheld and stationery RFID readers flow automatically through a mobile network connection to and from back-end planning systems.

The entire project was deployed with the support of solution provider Vilant Systems. Equipment and software comply with the technical specification regarding interoperability for telematic applications for freight (TAF/TSI), as regulated by the European Railway Agency (ERA).

Beyond the fact that other RFID systems not built on open GS1 standards were more expensive, the choice to use of GS1 standards was also made because they are more "future-proof." For example, it will be cheaper and easier to add applications to this open, standards-based system in future, and the company is not tied to one supplier if they wish to upgrade hardware in years to come.

A wide range of tangible business benefits

The EPC RFID solution has helped VR Transpoint improve yard management by automating work orders and ensuring the correct train composition.

VR Transpoint teams now simply walk alongside a train and use a handheld device to interrogate each rail car's EPC RFID tag. The information is automatically transferred to the company's logistics system, allowing employees in the field to remove cars slated to be shifted to another train, and arrange the remaining cars in an optimised order for their onward journey.

The information provided by the system is also invaluable for companies receiving goods. Because they now automatically receive data about incoming shipments, VR Transpoint's customers can know whether a particular rail car will arrive with the front end or back end facing forward, and be ready to unload it accordingly.

By removing unnecessary work steps, reducing delays and eliminating the errors that accompany pen-and-paper work, VR Transpoint has seen an average of 5M€ annual savings. In addition, the company's customer service performance improved measurably, in particular through increased wagon availability.

VR Transpoint has also developed a wagon maintenance process that is built upon this RFID system. Rail yard teams can report technical issues with wagons and alert their colleagues about breakdowns or defects.

These efforts have made wagon pool maintenance more efficient and quicker.

Next steps

Fixed RFID readers could be implemented at the private terminal rail stations of VR Transpoint customers, enabling true end-to-end services.

The Finnish Traffic Agency has plans to deploy RFID readers in connection with railway network sensors, which would make it possible to automatically collect useful information such as the condition of wagon wheels or the imminent overheating of wagon axles.

Train tracks in Finland have a different distance between their rails than those in neighboring Sweden or continental Europe; however, rail width is practically the same in Finland as in Russia. Extending VR Transpoint's wagon traffic tracing to Russian rail transport services is thus a logical next step as wel.

Contact information

Interested in learning more about this project? Contact Jaco Voorspuij, Senior Manager, Industry Engagement, GS1 at jaco.voorspuij@gs1.org

Contact your local GS1 Member Organisation at www.gs1.org/contact

About GS1 and EPCglobal

GS1 is a not-for-profit organization that develops open standards for unique identification, data capture and electronic communication, designed to increase the efficiency of trading partners across their global supply chains. Since its initial publication in 2004, GS1's EPC Gen2 air interface specification has established itself as the standard for UHF implementations across multiple sectors. Whether in support of fixed asset management, container and RTI tracking, livestock traceability, or item-level tagging for combined EAS and inventory management, to name just a few supply chain visibility applications, EPC Gen2 is at the heart of a growing number of RFID implementations. **www.gs1.org/epcglobal**

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