



## RFID for Yard Management

*There are several established RFID real-time locating system (RTLS) applications that proved successful with a return of investment (ROI) in less than one year. One of most rewarding application is the RFID yard management system for trailers and containers.*

Managing The Yard effectively presents opportunities to solve some of the biggest issues in logistics intensive industries – managing inbound and outbound shipments, improving delivery efficiencies, and allowing you to track and adjust deliveries to make sure the product your customers want is on the shelves when they want it.

### Yards – The Weakest Link?

A Yard is the critical interchange point between manufacturing, distribution, and transportation. Failures in yard operations can have a costly ripple effect across the systems they support. Problems such as line shutdowns, theft, late deliveries, high demurrage costs, trailer shortages, and spoiled cargo are just a few of the problems that can result from yard failures.

Most businesses address these problems through manual methods such as performing routine yard checks, logging information about arriving and departing trailers at the gate, and recording each trailer move within the yard.

The purpose of these manual processes is to answer four basic questions:

- What equipment is currently in my yard?
- Where is the equipment within my yard?
- What is the status of the equipment?
- What is the status of each dock door and yard slot?
- Who was the last driver?

With RFID providing real-time visibility of all your yard activities, managing yard operations becomes an integral part of your supply chain management practice which enables you to:

- Speed up gate processing
- Centralize appointment booking



**GUARD:** Monitor which trailers are in the yard and the age of these trailers



**LOCATOR:** Locate and monitor trailers and yard trucks in the yard in real time

- Manage your docks more effectively
- Clear up choke points
- Link with ERP, WMS and TMS
- Optimize switcher moves



Because yard operations are fluid, having up-to-the minute location and status information about yard equipment and parking slots is essential to ensure smooth operations. This is easier said than done. Manual processes lend themselves to data entry errors and tend to be untimely. To compensate for unreliable information, companies typically keep a buffer stock of yard equipment on hand to prevent equipment shortages. This, in turn, leads to greater yard congestion, higher equipment expense, reduced equipment utilization, and higher labor expenses associated with managing more equipment. It's a vicious cycle.

The emergence of yard management software has had a direct and positive effect on reducing the severity of common yard problems, but even the most advanced software solutions are subject to error if they rely solely on manual data input. With real-time visibility of all your yard activities accessible through a web-based platform, managing yard operations becomes an integral part of your supply chain management practice. No longer is there a missing link between the warehouse and transportation logistics.

Yard management is about the integration and optimization of your logistics activities with the plan to:

- Speed up gate processing
- Centralize appointment booking
- Manage your docks more effectively
- Clear up choke points
- Link with ERP, WMS and TMS
- Optimize switcher moves



**Trailer Status Data**  
 Temperature: 75°  
 Fuel Level: 3/4  
 Door Status: Closed



RFID Reader transmits trailer status ALERT data to manager

FSN's solution involves ruggedized Gen2 RFID Active RTLS tags attached to a yard's movable and mobile assets such as trailers. The trucks that tow the trailers from one location in the yard to another are equipped with RFID readers which are able to calculate their own locations. As a truck is moving a trailer, its reader records the event and relays the activity and location data back to a central server via a standard wireless

LAN connection. That information is incorporated into the web-based graphical representation of the yard, allowing the yard manager to see in real-time the location of all trailers and trucks.

### **The Dock**

All of the operations that occur in the yard are designed to support shipping and receiving operations within a distribution, warehouse, or manufacturing facility. The dock facilitates the transfer of product and dunnage between the facility and the transportation system; therefore, it is imperative that dock operations are tightly integrated with the yard to ensure smooth and efficient transfer of goods. Questions that supervisors ask about the yard to manage their docks include:

- Which orders have arrived at the yard and have not been processed yet?
- Do I have enough trailers of the right type for shipping operations?
- What is the status of each trailer at the dock and how long have they been there?
- Am I effectively utilizing my dock resources?
- Are there any drop trailers in the yard that I can pull to an available door?

Dock systems and supervisors use information about the yard to schedule labor at the docks. Inaccurate or untimely yard data can result in inefficient use of labor at the docks, potentially costing a company millions of dollars a year in overtime expenses. RTLS enables accurate and timely information about the yard, effectively maximizing labor productivity. Because RTLS tags continuously broadcast their signals as they move about the yard, the yard software knows the exact location of tagged equipment all the time. In addition, RTLS tags can interface with various sensors and pass status data to a yard system for analysis. If the temperature of a trailer loaded with perishable goods is out of range, the yard software can send an alert to a loss prevention manager before the cargo spoils. Thus, real-time location information, combined with real-time status information, is a powerful tool for effective yard management.

### **The Switchers**

Yard switchers accept requests from receiving and shipping operations to move trailers to and from dock doors. Moving the right trailers to and from the right dock doors in a timely manner is important; therefore, an accurate yard inventory is imperative. Without an accurate yard inventory, switchers must sometimes search among hundreds of trailers to find the one they are looking for. With any luck, the trailer is located close to its expected location, but drivers often park trailers in yard locations other than their assigned spots. In addition, because switchers are human, it's not uncommon for them to accidentally move the wrong trailer, or move the right trailer to the wrong spot. The RTLS system from FSN provides an accurate inventory of the yard by continuously monitoring the location and status of tagged equipment, allowing switchers to quickly locate trailers that were not parked in their assigned spots. In addition, by tagging both the switch tractor and trailer, yard software can verify that the switcher is pulling the correct trailer according to the move request. RTLS can also verify that the switcher moved the trailer to the intended dock or yard spot.

### **FSN's RFID Solution**

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location in the yard to another are equipped with RFID readers which are able to calculate their own locations. As a truck is moving a trailer, its reader records the event and relays the activity and location data back to a central server via a standard wireless LAN connection. That information is incorporated into the web-based graphical representation of the yard, allowing the yard manager to see in real-time the location of all trailers and trucks. The solution also automates many of the manual data capture processes, which might otherwise be done with pen-and-clipboard. Yard check-in and check-out is made both more secure and efficient. Integrating a RFID tag with a GPS feature will further extend the managers visibility to trucks and trailers whether on the road or in remote yards continent-wide and add value throughout the supply chain.

### RFID at the Port



*Container yards with multiple containers stacked. Readers are placed at a height above the highest positions of the stacked containers(40-50 ft above ground). Special ruggedized tags are selected for attaching to containers which provide both durability and readability in a steel environment. These container tags may also include sensors for temperature, radioactivity, with WIFI or cellular connection capability to report any alerts to management.*

The coupling of real-time locating of personnel and assets along with the association of activities and operation provides real visibility and security management for more critical infrastructures such as port and container transport and management. Motion sensors may be installed and connected to a customer's video-surveillance system for added security



A transponder mounted in the cab of the truck relays information to the roadside electronic reader through antennae in the overhead structure. Source: FHWA

## 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](mailto:sales@falkensecurenetworks.com)



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