Solution Brief

Advanced Yard Management enabled by Real-Time Location Systems



PINCSolutions

THE OPPORTUNITY FOR REAL-TIME LOCATION SYSTEMS IN YARD MANAGEMENT

Recent developments in Real Time Location Systems (RTLS) enable efficiencies in yard management that legacy yard management systems can never achieve. Current RTLS platforms have the capability to eliminate the inefficiencies and associated costs of dated practices. Existing yard management implementations rely heavily on error prone human information collection. They also frequently rely on time consuming, static (not real time) yard management software that requires manual input of collected data. Through automation, RTLS eliminates errors in information collection and, because it is a true real time system, RTLS eliminates the need for time-inefficient, static yard management software.

RTLS determines the location of assets on a constant and recurrent basis. RTLS is a system comprised of Radio Frequency Identification (RFID) tags attached to trailers and associated computing software which determines the position of an RFID device (tag) on a trailer. The system is capable of reporting the position of the RFID tag within seconds.

Not only does RTLS reduce costs by eliminating inefficiencies, it also substantially improves yard productivity by creating new efficiencies. Because it is a real time system and not a static one, RTLS can significantly increase moves per hour in the yard, reduce or eliminate yard checks, reduce demurrage and detention charges, and lower labor costs. The PINC RTLS yard management system pays for itself within 6 to 9 months.

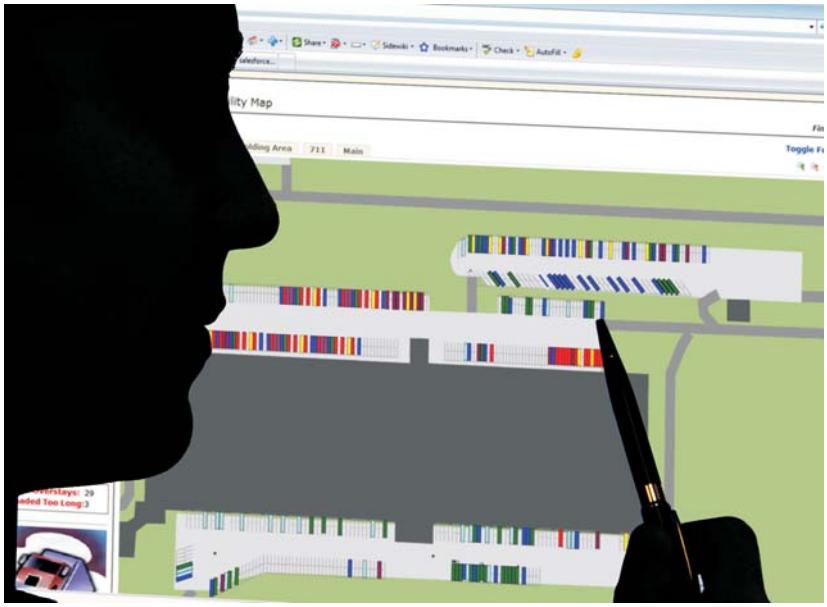
PINC Solutions developed the first passive RFID based RTLS for yard management. The solution is now widely deployed in yards across North America where the productivity gains and cost reductions enabled by PINC have been proven and confirmed. This solution brief explains how PINC RTLS platforms accomplish these efficiencies in yard management. This brief addresses the three cost centers in yard management: activities in the yard itself, yard administration, and yard gate activities.

PINC Solutions RTLS Description

Trailer Tracking in the Yard

PINC s RTLS enabled yard management system, called Yard Hound, uses passive Radio Frequency Identification (RFID) tags. These tags are applied to individual trailers in a yard. Since they do not require batteries to operate, passive RFID tags significantly lower overall system costs. GPS enabled RFID readers are attached to yard trucks. The reader on the yard truck detects the location of each RFID tagged trailer as the truck moves about the yard. This trailer location information is transmitted in real time to the Yard Hound asset visibility and management platform. The Yard Hound system automatically updates as new location information is acquired. Because it is a real time, automated system, Yard Hound is the most accurate trailer tracking system available today.





Yard Hound Asset Visibility and Management:
Screen showing parked trailers and yard trucks activities.

Yard Gate Administration

The gate is equipped with an RFID reader. As a trailer with an RFID tag passes through the gate, the trailer's information is transmitted in real time to the Yard Hound asset visibility and management platform, eliminating the need for paper forms. This automatic process streamlines gate procedures and increases the speed of gate entries and exits. Alternatively, temporary RFID tags can be affixed to trailers as they enter the gate by the gate operator, providing location tracking of the trailer while it is in the yard.

Yard Administration

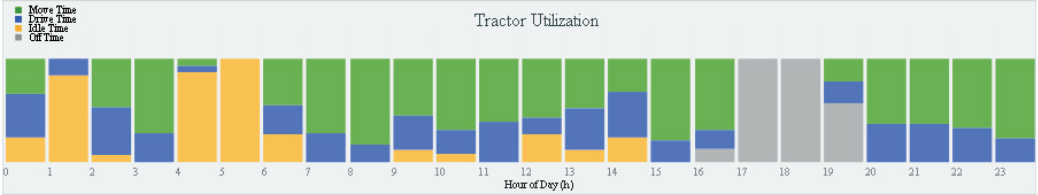
All real time truck and trailer information from the gate and the yard is collected by the Yard Hound platform where it is accessed online 24/7 by yard administrators and managers. With this information, administrators can manage assets throughout the yard. The system also allows administrators to communicate moves and other directions to yard truck drivers via a wireless-enabled data terminal, eliminating the need for radios or paper instructions. In place of paper, Yard Hound creates a permanent record for all communicated activities. Managers also have the ability to manage shipments and appointments, and automate yard move scheduling.

Reducing Costs and Increasing Productivity in the Yard

Reducing Driver and Truck Overhead

PINC Yard Hound provides managers with a level of data accuracy about yard activities that exceeds any static yard management software available. Accurate yard activity and trailer data is fundamental to increasing productivity and reducing costs in the yard. Yard Hound's extensive visibility into yard truck operations allows managers to improve operational efficiency by tracking move time, drive time, idle time, off time, and number of moves per hour. In addition, Yard Hound provides cumulative records of moves performed, as well as total distances and hours driven for each driver. By reducing drive and search times, and distances, managers can reduce yard truck and driver overhead.

Example: A distribution yard that processes 430 trailers per week with 2 trucks and drivers and that uses a non-real time, legacy yard management system, will typically operate with 50% more driver and truck overhead than is required. This is due to a lack of accurate visibility inherent in legacy yard management systems. Implementing an RTLS that provides real time visibility including accurate data enables yard managers to optimize distances, drive and search times, resulting in a 50% overhead reduction (the elimination of one truck and driver, and associated fuel costs), an approximate annual cost savings of $100,000.[1]



Tractor Hourly Utilization Report (contains 24 rows)

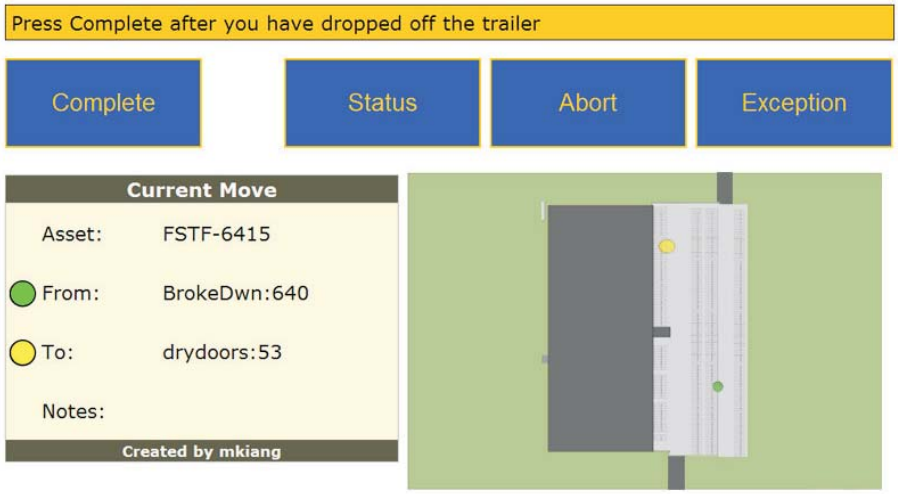
Hours	Off Time	Idle Time	Drive Time	Move Time	No. Detected Moves	Move Distance (miles)
07/22/2010 00:00	0.00	0.24	0.42	0.34	2	0.20
07/22/2010 01:00	0.00	0.84	0.16	0.00	0	0.00
07/22/2010 02:00	0.00	0.07	0.46	0.47	7	1.43
07/22/2010 03:00	0.00	0.00	0.28	0.72	10	1.60
07/22/2010 04:00	0.00	0.87	0.06	0.07	1	0.28
07/22/2010 05:00	0.00	1.00	0.00	0.00	0	0.00
07/22/2010 06:00	0.00	0.27	0.28	0.45	7	1.08
07/22/2010 07:00	0.00	0.00	0.28	0.72	7	1.67
07/22/2010 08:00	0.00	0.00	0.17	0.83	12	3.74
07/22/2010 09:00	0.00	0.12	0.33	0.55	7	1.81
07/22/2010 10:00	0.00	0.08	0.23	0.69	12	2.06
07/22/2010 11:00	0.00	0.00	0.39	0.61	11	2.06
07/22/2010 12:00	0.00	0.27	0.16	0.57	7	1.74
07/22/2010 13:00	0.00	0.12	0.40	0.48	8	1.63
07/22/2010 14:00	0.00	0.24	0.44	0.32	4	0.74
07/22/2010 15:00	0.00	0.00	0.21	0.79	12	3.20
07/22/2010 16:00	0.13	0.00	0.18	0.69	11	1.91
07/22/2010 17:00	1.00	0.00	0.00	0.00	0	0.00
07/22/2010 18:00	1.00	0.00	0.00	0.00	0	0.00
07/22/2010 19:00	0.57	0.00	0.21	0.22	4	0.62
07/22/2010 20:00	0.00	0.00	0.37	0.63	10	1.49
07/22/2010 21:00	0.00	0.00	0.37	0.63	9	1.65
07/22/2010 22:00	0.00	0.00	0.33	0.67	10	1.93
07/22/2010 23:00	0.00	0.00	0.23	0.77	9	1.52
Totals	2.70	4.12	5.96	11.22	160	32.38

Yard Truck Utilization Report: Report showing move time, drive time, idle time, off time, and number of moves/hour information.

[1] Source: Supply Chain Brain, December 29, 2009

Increasing Moves Per Hour

Trailer move capacity is the maximum number of trailer moves that can be completed in one hour in a yard (the average of all driver moves per hour). Increasing move capacity results in reduced demurrage and detention charges, reduction or elimination of overflow lots, reduction in driver and truck overhead, and improvement in the number of spot moves per paid hour.



Yard Truck Driver Tasking: Screen received in-cab by driver to complete a move.

Factors influencing move time include time spent communicating move tasks to drivers, search time for trailers, yard size, and driver skill. To increase moves per hour, time spent communicating moves to drivers and search time must be reduced. With its wireless-enabled data communication terminal in the truck, Yard Hound eliminates radios and driver paperwork. All move communications are electronically transmitted to the driver and confirmed upon completion with the touch of a finger. The driver is then immediately available for another move. Yard Hound can reduce communication time between driver and dispatcher by as much as 95 percent. Search time for trailers can also be reduced by as much as 80 percent. Because Yard Hound continually updates trailer location information, drivers do not have to search for trailers. They simply go to the spot communicated by the dispatcher.

Example 1: In a large distribution yard (500+ trailers) where a driver averages 4 moves per hour or 15 minutes per move, the driver's move actions against time are as follows:

1. Dispatcher radios driver with move and driver annotates log = 1 min
2. Driver searches for trailer = 7 min
3. Driver completes move = 6 min
4. Driver contacts dispatcher by radio and annotates log = 1 min

After Yard Hound is implemented, the driver averages 7.5 moves per hour with the following move actions against time:

1. Dispatcher radios driver with move and driver annotates log = 5 sec
2. Driver directed to trailer = 2 min
3. Driver completes move = 6 min

In this example the Yard Hound implementation results in an 87.5% increase in productivity.

Example 2: In a mid-size distribution yard (300+ trailers) where a driver averages 6 moves per hour or 10 minutes per move, the driver's move actions against time are as follows:

1. Dispatcher radios driver with move and driver annotates log = 30 sec
2. Driver searches for trailer = 4 min
3. Driver completes move = 5 min
4. Driver contacts dispatcher by radio and annotates log = 30 sec

After Yard Hound is implemented, the driver averages 8.6 moves per hour or 7 minutes per move with the following move actions against time:

1. Dispatcher radios driver with move and driver annotates log = 5 sec
2. Driver directed to trailer = 2 min
3. Driver completes move = 5 min

In this example the Yard Hound implementation results in a 43% increase in productivity.

These two examples illustrate that a Yard Hound implementation can increase productivity for drivers at different skill levels or working in different yard types.[2]

Elimination of Manual Yard Checks and Associated Documentation

Depending on the size and activity of a yard, 1 to 6 manual yard checks may be conducted each day. This is a slow, labor intensive process requiring manual data entry, typically on paper. On average, a yard with 100 trailers that conducts 2 yard checks per day plus data entry and analysis will require 8-person hours per day at a cost of about $60,000 per year. Because of Yard Hound's real-time, continuous updating of vehicle location information, manual yard checks are no longer required and paper updating is eliminated.[3]



Asset Inventory Report: Screen showing the list of all the assets in the yard.(Electronic yard check)

[2] Examples based on actual Yard Hound customer data.
[3] Examples based on actual Yard Hound customer data.

Improved Productivity in Yard Administration

For several years Warehouse Management Systems (WMS) have improved operating practices for managing inventory, space, labor, and capital equipment in warehouses and distribution centers. These systems have enabled businesses to increase their competitive advantage by reducing labor costs, improving customer service, increasing inventory accuracy, and improving flexibility and responsiveness. In a similar way an advanced, real-time Yard Management System (YMS) increases the competiveness of supply chain operations by reducing labor costs, maintaining on-time performance, improving asset accuracy, optimizing asset utilization, and reducing loss.

Eliminating Gate Bottlenecks

Gates have the potential to be bottlenecks at yards. When trailers back up into overflow lots, the possibility of demurrage and detention charges increases. Eliminating paper log-ins and log-outs can reduce time spent at the gate by as much as 70%. With Yard Hound a paper process that takes two minutes can be reduced to approximately 30 seconds, eliminating backups at peak traffic periods. A temporary RFID tag is attached to the trailer at the gate entrance and the operator enters asset information into a four field electronic form. For trailers with permanently affixed RFID tags, no interaction with a gate operator is required. When the trailer passes an RFID reader attached to the gate through a fast track lane, all asset information is read and updated in the Yard Hound database.

Confirmed Presence

Once a trailer's RFID tag is read at the gate, its presence is confirmed as being in the yard. Because a trailer's presence is updated in Yard Hound in real time, dock schedules can be adjusted to accommodate actual trailer flow. Real time presence enables dock and warehouse managers to control live traffic, in addition to scheduled traffic, and thereby reduce idle time on docks and in warehouses. Productivity gains can be substantial as warehouse and dock workers near full capacity.

Appointment Scheduling and Management

As in the warehouse, on time performance is critical to avoiding losses. Yard Hound's appointment and scheduling tools allow a manager to avoid and/or manage detention and demurrage charges, reduce administrative overhead, and improve communications throughout the scheduling process.

Trailer Pool Reduction

Trailer utilization is often a function of the economic cycle. Carrying excess trailer inventory results in storage and maintenance costs that are not recovered. With Yard Hound, a yard manager has the ability to analyze which trailers are being utilized over time and which trailers are not. Trailer inventory can then be reduced and the associated costs eliminated.

Loss Prevention

Just as in a warehouse, lost loads in the yard can result in thousands of dollars of lost revenue or liability damages. The evidence is anecdotal, but it is estimated that companies lose track of up to 300 trailers in yards each year. The primary cause of these losses is the nature of non-automated yard management systems: they are prone to human error. With automated, real-time trailer tracking and reporting, the potential of a loss is greatly reduced because human error is largely absent from the system.

About PINC Solutions

PINC is a leading supplier of supply chain asset visibility and yard management solutions with Fortune-500 customers in the manufacturing, retail, logistics, and transportation sectors. PINC has pioneered the development of cost-effective RTLS using passive RFID technology that minimizes capital investment required in the infrastructure. PINC s award-winning products are designed with a scalable architecture for businesses of any size, and are expandable with modular components as customers needs grow. Available as turnkey solutions delivered through a Software-as-a-Service (SaaS) model, these systems have proven their value through immediate efficiency improvements in customers daily operations, typically generating positive ROIs in less than a year. To learn more about PINC visit www.pincsolitions.com or e-mail info@pincsolutions.com. Call (510) 845-4900 to speak a PINC sales consultant.