

# Yard Management Improves With RFID

RFID and RTLS (real-time location systems), along with new wireless technologies, boost inventory accuracy while reducing costs.

**Y**ard management solutions rely on up-to-the-minute data on cargo, asset, and vehicle locations. Companies have utilized RFID (radio frequency identification) and RTLS technology to track assets more effectively and enable cost-saving solutions like unmanned gate operations.

These solutions are being enhanced by integrating data about what inventory is available in each trailer and tying that inventory to a dock/scheduling or warehouse management receiving system. The addition of wireless sensors, wireless LAN, GPS, or Bluetooth can increase the amount of information available to guide yard operations. "The yard management solutions industry is trending towards a flexible application platform that offers plug and play connectivity and includes prebuilt functionalities relating to business-specific processes and workflows," says Leif Chastaine, vice president of sales and business development at InSync Software.

Advancements in passive RFID systems have enabled even more applications while reducing the cost of deployment and provided a more detailed view of item-level inventory. With this type of real-time visibility, companies can improve inventory control while reducing carrying costs and travel time in the yard. More "open" yard management solutions have also made it easier for companies to futureproof their solutions to keep pace with rapidly evolving location technology.

"Accuracy is key," says Andre Cote, CTO of Omni-ID. "If it doesn't work, why buy it? However, cost is inevitably part of the equation. The investment in time and capital will require real savings that can only be achieved if the system works and is accurate."

## New Wireless Technologies Increase Yard Visibility

While RFID/RTLS can provide location data,

the integration of additional technologies provides a greater level of visibility. Wireless sensors can provide information on security breaches, temperature, shock, and other factors that could indicate the status of an asset. Wireless mesh technology is used to boost the read range of these networks.

Mesh networks use each node to serve as an access point, so that multiple tagged assets can communicate with each other, even if out of range of the network. These types of solutions also solve the problem of high-density metal objects (like cargo containers or vehicles) blocking a wireless LAN signal.

"Mesh technology allows one shunt truck, for instance, to communicate to a wireless access point via another shunt truck, when the original truck is out of 'view' of an access point," says Michael Maris, senior director of transportation and logistics for Motorola's Global Industry Solutions Group. "You can think of this technology as a large spider web for wireless communication."

Hosted or Software-as-a-Service (SaaS) yard management solutions have also lowered the cost of deployment by eliminating an on-premise software solution. "The SaaS model means lower upfront investment costs, instant application commissioning, etc.," says Chastaine. "These enhancements save time and money associated with development and deployment, data storage, and infrastructure." A hosted application also makes it easier for managers to view asset location and status from any location, even when they are off-site.

GPS technology has an evolving role in yard management solutions. "GPS technology is a must and is much more common than it used to be," Maris says. "Yards are laid out using a grid; except rather than having a physical location, an XYZ coordinate is given to the location in the yard. Drivers can be directed to the location via the use of GPS. Having onboard

**Leif Chastaine**  
VP of sales and  
business development,  
InSync Software



**Andre Cote**  
CTO,  
Omni-ID



**Michael Maris**  
sr. dir. of transportation  
and logistics,  
Motorola Global  
Industry Solutions Group



**Kevin Payne**  
sr. dir. of marketing,  
Intellex

RFID readers enables the driver to verify they are hooking up to the correct trailer when it reads the tag on the trailer and the GPS system verifies the exact location.”

Cote suggests low-cost GPS may replace some RFID technology in these types of applications. “There will inevitably be some displacement; however, the migration of hybrid systems will continue to evolve to use the best of passive and active [RFID],” Cote says. “Inevitably, the economics of the solutions will drive the systems design and the use case for GPS. Passive tag solutions provide the ability to link items at a very low cost with powered systems. This will be true for some time to come.”

**Passive RFID Has Larger Role**

New battery-assisted passive (BAP) systems, in addition to improved traditional passive technology, have made it possible to deploy these lower-cost tags in the yard. In the past, active tags (which are larger and more expensive) were the only reliable way to track these types of assets.

“Passive tag solutions have become more robust and therefore more reliable in environments where passive RFID once never worked, such as in extreme temperatures and applications subject to high impact,” Cote says. “Tags can work inside of metal, with more than 100 feet of read distance, and can even power a sensor system.”

BAP RFID systems (which are now governed by the

ISO/IEC 18000-6:2010 standard) provide even more benefits. “This technology provides longer range and enhanced capabilities for reading/writing to tags in RFID-unfriendly environments involving metals and liquids — conditions that are commonly found at worksites and vehicle/equipment yards,” says Kevin Payne, senior director of marketing at Intellex. “While these capabilities have previously existed in some active RFID solutions, they were typically prohibitively expensive. BAP RFID provides similar capabilities to the more expensive active RFID but at a significantly lower price point.”

With an array of technology available, end users can deploy complex yard management solutions that provide data at whatever level of granularity needed. With the advent of more affordable passive RFID systems, companies can take advantage of real-time data, provided they keep their expectations realistic and clearly identify the operational problem they are trying to solve.

“Expect to see RFID adoption increase in markets where customers were hesitant to deploy due to cost and performance issues,” Payne says. “It’s like a light bulb is going on above customers’ heads when they realize the capabilities associated with BAP technologies. People are coming to us with new applications in worksite management, retail, supply chain, and healthcare — some of which we hadn’t considered ourselves.”

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