THE HOLISTIC VIEW OF

RFID LOCATION TRACKING

How to Increase Efficiency and Maximize Savings

BY ANNE ROOS

Radio Frequency Identification (RFID) tags and integrated labels are barcode labels on steroids. They don't need to rely on a visual scan in line-of-sight to transmit data. Instead, data is transmitted via radio waves. The RFID tag is a "transponder", a device that automatically transmits a signal upon receiving an incoming signal. The information can then be transmitted to computers in real time.

As Mark Roberti, Founder and Editor of RFID Journal says, " RFID helps companies identify, monitor, and manage all the things in their business that they are not managing effectively today, which is just about everything that is mobile and not connected to the internet." RFID applications for government, military, aerospace, and industrial manufacturers are endless.

For supply chain control, location of parts in production on your facility floor, and monitoring items in distribution, RFID eliminates costs associated with manual data entry. Human errors are significantly reduced. Employees no longer waste time looking for misplaced parts and items needed during manufacturing and audits.

No wonder RFID technology is embraced across many business sectors as the proven method for saving time and money when tracking assets. RFID tags can be placed on assets that are frequently lost or stolen or are hard to locate when they are needed. Another successful application is to add tags to carts used on the manufacturing production floor to monitor efficiency.

In supply chain management, RFID asset tracking reduces shipping errors and cuts labor costs. Retailers improve supply chain efficiency by using RFID technology to ensure the correct products are available on their shelves. In the military sector, manufacturers use RFID tags embedded with motion sensors so that an alarm goes off when an object is moved without authorization. Government and aerospace contractors improve compliance and audits using RFID technology.

RFID tags carry many benefits. So, what's the problem?

Up until now, passive and active RFID systems each interface with a different software system. This provides dissimilar data, making it difficult to analyze assets within an entire operation. Operators are required to remember which tags are in use with which system and cannot review all tagged assets as a whole.

How can both active RFID and passive RFID be combined into a holistic approach?

As systems integrators, ID Integration is uniquely poised to select the best technologies (both hardware and software) to meet our clients' individual needs. To customize RFID systems for our clients, we turned our attention to the issue of disparate data between active and passive RFID sources and tackled it successfully.

What are the applications for active and passive RFID systems, and how does ID Integration successfully meld them into one cohesive method for locating assets?

PASSIVE RFID

A passive tag collects energy emitted by a reader antenna. With this energy, it can reflect back a signal to the reader. It cannot emit energy on its own. The read range of passive RFID tags is relatively short, due to weak transmission signals.

Advantages of Passive Tags

- Individual tags are inexpensive & disposable
- No batteries are necessary
- Real-time visibility of tools and parts
- Full control of inventory and assets, including production info
- Customizable and scalable
- Smaller RFID tag size that accommodates smaller parts

Best Uses for Passive Tags

- For lower cost assets
- For a high number of assets that need to be tagged
- For narrow movement patterns

Use passive RFID for item-specific (serial number/part number) tracking throughout a full lifecycle:

- Use where parts and products must be tracked from cradle to grave, including maintenance tracking

• Track at the individual level, down to the specific part number and serial number

• Track both consumables, and non-consumables.

Track where items such as lubricants and cleaners are received, stored, when/where they were last used, and where they are disposed and who disposed of them.

To accomplish a high level of efficient smart manufacturing, we rely on Entigral TraxWare® to produce total visibility of our clients' production process. From receiving to shipping, you'll know exactly where your raw materials and parts are, and your production lines will run without a hitch. A high level of production efficiency is achieved because fewer defects are discovered on the production floor. Learn more about smart manufacturing applications with TraxWare® advanced sensor automation.

ACTIVE RFID

Active RFID tags do not rely on antennas as their power source. Instead, each tag uses a battery to power up their internal transponder. Thus, active RFID tags can broadcast their own signals, much in the way a cell phone works. This gives the active tag a much longer read range than typical passive tags .

Advantages of Active Tags

• Real-time asset location
• Use your existing Wi-Fi network
• No need to build expensive infrastructure and antennas
• Batteries are replaceable and tags are reusable
• Long distance visibility for use throughout the facility and across warehouses

Best Uses for Passive Tags

• For highly-valued assets
• For items located across a large area
• For items that have widely variable or unpredictable movements

Active RFID tags are perfect for asset tracking and general workflow throughout a production process:

• Track the workflow of parts, assets, and tools in production—Especially practical for tools, fixtures, and jigs for production or maintenance

• Track the locations of a high-value assets in storage

ID Integration teamed up with InfinID technologies to provide the V-Tag™ active RFID system, the most reliable, cost-saving solution for real-time tracking and location of assets. After running several successful programs for tracking movements of work-in-process and tool location in the aerospace and government sectors, we launched the V-Tag™ active RFID system for all of our commercial customers. It's now also available for military and general manufacturing, including the MRO (maintenance repair operations) industries.

This V-Tag™ technology is available at about half the price of passive RFID solutions, because no additional hardware and wiring is required for installation, other than the gateway device.

The reusable tags are small—about the size of a box of Tic Tacs®, so they can accommodate small parts. It's the flexible solution that reduces time tracking down assets and tools during day-to-day operations and audits. For more information about how the V-Tag™ solution saves costs, read our report "Avoiding the Expense of RFID Asset Tracking Infrastructures".

V-Tag™ active RFID tags actually "talk" to each other to communicate their locations through a mesh network, which are then displayed on a map of the facility with InfinID's AssetWorx! location software. When the assets are moved, the software map refreshes. Watch videos of how V-Tags™ work and how AssetWorx! software displays V-Tag™ locations.

Why do manufacturers use both Active and Passive RFID technologies?

Passive RFID tags are perfect for tracking specific parts, but they are not the best choice for non-serialized items (for example, tags that are read repeatedly as instructed). They have a limited read range and often rely on "last seen" knowledge.

Active RFID tags are perfect for simple tool and asset tracking, but they may not be the best fit for tracking down to the individual serial number level (for instance locating a box or pallet of goods in shipping or receiving).

> Combining the benefits of both Passive and Active RFID systems covers smart manufacturing and real-time asset location. But there's still the problem of disparate data...

ENTER THE HYBRID RFID SOLUTION

As experienced system integrators, ID Integration RFID experts looked for viable options to present to clients to help them save time reviewing dissimilar data. The solution came with our partners at InfinID.

Applications of the V-Tag™ AssetWorx! Software can manage assets using both active and passive RFID tags. It's a unique software solution that provides the backend software to address active RFID (using V-Tags™), passive RFID, and barcoding (with the most popular symbologies and scanners). This software ensures that there are no issues with disparate data and it provides a unique platform for more hybrid solutions.

The AssetWorx! Hybrid RFID Tracking Solution Brings the Best of Active/Passive RFID & Barcoding Together

• Enables a quick big-picture of the location of assets and tools (using V-Tag™ active RFID) for faster audits and tracking

• Provides the means for serialized asset tracking (passive RFID), where individual labeled assets are passing through check points in a process or environment

• Uses individual, item-unique identification—pull everything together in one database as barcode labels are integrated with AssetWorx! backend software

• Takes into account applications that require tags to withstand high humidity, harsh environments, and metal/liquid substrates

The most common types of hybrid applications include:

• Maintenance and repair facilities

• Inventory tracking

• Consumables tracking (chemicals used in manufacturing and maintenance for MSDS compliance)

Here's an example of how this blended, hybrid RFID approach works:

For individual parts, the user scans a code with the barcode scanner, and the info from the barcode is transmitted to the database. The active tag locations of assets in a warehouse are displayed on a software screen. Passive RFID tracks full lifecycle of inventorying, maintenance, and disposal/retirement of individual parts. AssetWorx! Software tracks all three technologies and communicates data between them, removing any issues with disparate data.

Conclusion—Taking Steps to Save Time and Money by Integrating Your Asset Tracking Procedures

Our hybrid model of automated RFID tracking saves money by reducing the man-hours involved in tracking down items, recording production data, managing workflow, locating and correcting errors, and more. ID Integration's hybrid RFID solution helps military, aerospace, government, and industrial manufacturers retain lucrative contracts. It's holistic—we take our client's entire work-in-process, inventory, shipping, and receiving needs into account to create the optimum, customized integrated solution for asset tracking and recovery.

We encourage you to reach out to us to assess your current smart manufacturing and tracking solutions to improve your current systems or create a new system that save you time and money on your facility floor.

Source Links:
"Active RFID Tags Bring New Innovations to RFID Location Tracking": http://id-integration.com/active-rfid-tags-bring-new-innovations-rfid-location-tracking/

"Active RFID Tags: The Future to Cost-Saving Asset Tracking and Asset Location": http://id-integration.com/rfid-location-tracking/

Comparing AssetWorx! with other barcode and RFID tracking solutions: http://infinidtech.com/assetworx/compare.php

"How Many Hours Do You Lose Per Year Trying to Track Assets?": https://www.linkedin.com/pulse/how-many-hours-do-you-lose-per-year-trying-track-assets-gary-moe?trk=prof-post

"How to Use RFID Technology": http://www.inc.com/guides/2010/09/how-to-use-rfid-technology.html

"Hybrid RFID-Based System Using Active Two-Way Tags", by Girish N. Jadhav, Master Theses, San Jose State University, 2010: http://scholarworks.sjsu.edu/cgi/viewcontent.cgi?article=4867&context=etd_theses

"ID Integration And InfinID Team Up to Provide Low-Cost Location Tracking System", Scan Data Report, Vol. 38, No. 7, April 17, 2015, Edited by Rick Morgan: http://www.id-integration.com/rfid-asset-tracking

"ID Integration, InfinID Offer Active RFID System for Aerospace and Government", by Claire Swedberg, RFID Journal, April 13, 2015: http://www.id-integration.com/images/rfid-journal-article-ID-Integration-Offers-Active-RFID.pdf

ID Integration V-Tag Active RFID Solution Video: https://www.youtube.com/watch?t=3&v=SMeSMjlrH74

"Introducing Smart Manufacturing: Applying RFID Solutions for Your Business": http://id-integration.com/smart-manufacturing-rfid-solutions/

"Introducing Smart Manufacturing: RFID Solutions for the Business Market": http://id-integration.com/smart-manufacturing-solutions/

"Manage the Materials Supply to the Production Line": http://www.entigral.com/industries/manufacturing/

"RFID Tags: The Future to Cost-Saving Asset Tracking and Asset Location": http://www.id-integration.com/rfid-location-tracking

"Saving Costs With the V-Tag™ Active RFID Solution—No Antennas Necessary!": http://www.id-integration.com/v-tag-active-rfid-asset-tracking.htm

"Transform Your Production Efficiency with V-Tag™ Asset Tracking": http://www.id-integration.com/rfid-asset-tracking

"TraxWare for Work in Process": http://www.entigral.com/asset-tracking-solutions/traxware-for-work-in-process/

"TraxWare for Container Tracking": http://www.entigral.com/asset-tracking-solutions/traxware-for-tote-tracking/

"V-Tag Location and Tracking System": http://www.infinidtech.com/#!tracker-unit-news/g4tgq

and various articles from SupplyChainDigest at http://scdigest.com

ID Integration, Inc.

13024 Beverly Park Road, Suite 104
Mukilteo, Washington 98275

(425) 438-2533