

# To RFID or Not to RFID?



RFID tags can store data relating to health and safety inspections

**C** caught between a rock and a hard place when it comes to off-selling budget crunches and aging assets, the role of today's maintenance and asset manager is becoming an increasing challenge. Now, more than ever, departments are under pressure to reduce costs and increase margins. But as well as going through the obvious cost-cutting exercises of reducing payroll and eliminating spending, the smart managers are taking a fresh approach and realising that by taking control of the assets they have, there are significant cost savings to be made, namely through improved asset reliability, efficient asset utilisation and reduced asset-related operating costs.

Using a combination of the latest technologies – RFID (Radio Frequency Identification), GPS, mobile computing and web-based applications – there is an opportunity to deploy maintenance resources more effectively by taking control of maintenance works orders and scheduling maintenance based on asset condition (not arbitrary dates). And in a highly competitive world where budgets can be tight, it could make all the difference. Let us explore in more detail how RFID-based asset and maintenance management can meet the needs of today's cost-conscious business.

## RFID – WHERE ARE WE NOW?

RFID technology has been around for many years with the automotive and defense industries quietly and successfully using RFID over the last decade to track and manage their assets.

However, the real buzz around the mainstream use of the technology began in 2003 when Wal-Mart, the world's largest retailer, mandated the use of RFID for their top 100 suppliers. This created intense media interest in RFID because it was Wal-Mart who had also pioneered the global use of

barcodes back in the early 1980s. Following the Wal-Mart mandate, much expectation was placed on the shoulders of RFID technology and subsequently a lot of money was spent, based largely on hype. Compounded by the fact that at this point the technology was unproven in most industries, it was bound to trip up.

The automotive industry took the right approach,

slowly introducing RFID technology to tag and track the expensive, reusable containers used in its supply chain. Seeing significant payback, the key players within the industry expanded the program to track automotive parts along the assembly line.

## SLOW TO ADOPT, BUT GAINING ACCEPTANCE

RFID was seen as expensive in the early days, which clearly hindered its acceptance. The technology has since come on in leaps and bounds; tags now work reliably around metal and the varying footprint and robustness of the latest RFID tags means they lend themselves to be hidden in and attached to equipment that was never possible before. Moreover, RFID is gaining acceptance and growth within new industries and in specific applications such as maintenance and asset management, because value-add resellers have built solutions around the technology, offering a complete solution or service rather than just a piece of technology.

## RFID ASSET MANAGEMENT – HOW IT WORKS

1. Assets are identified and tagged using a variety of RFID tags
2. Tagged assets can be instantly scanned and identified using handheld devices
3. Automated inspection screens take the user through each stage of the process and the results are captured there and then in the field
4. Handheld devices synchronise with a web-hosted database. The data, including Inspection Certificates generated directly from fieldwork, is immediately available to view online by authorised employees for Health and Safety checks

## BENEFITS OF AUTOMATION USING RFID

Automation of inspection schedules removes ambiguity as jobs can be allocated to engineers in the field in real-time via handheld PCs. Overdue alerts can be automated, acting as a further measure to ensure inspections and pre-planned maintenance takes place on time every time and costly errors are avoided.

Using handheld devices with integrated RFID readers and web-based applications, organisations can:

- Remove paperwork
- Obtain positive asset identification
- Prove attendance on-site
- Ensure 100% data validity by removing manual data entry
- Provide a full audit trail and traceability

## RFID VS BARCODE

Asset management is compatible with both RFID and barcode technology. However, careful thought and consideration should be applied when deciding on the correct tagging option for your environment and business application. In addition to being more durable, RFID tags are also reusable, making them a reliable and cost-effective solution. For higher value, critical assets that require



Types of RFID tags, clockwise from top left: coin tag with hole, keyfob tags, intrinsically safe tags, glass tags, plastic credit card tags and stick-on tags

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tracking, tracing, authentication and security, RFID tagging is a far more robust and reliable option.

### ADVANTAGES OF RFID TAGS OVER BARCODES:

- **Robustness** – RFID tags are much more robust and can withstand harsher environments than barcodes, operating in temperatures ranging from -25°C to 70°C.
- **Size** – RFID tags range in size from a postage stamp to a book. The aspect ratio of an RFID tag's length versus width is very flexible and not a significant factor for the reader. Barcodes are larger than the smallest tag and very sensitive to the aspect ratio for scanning.
- **Readability** – RFID tags offer a range from centimeters to hundreds of metres and can be read through many materials including dirt, paint, grease, snow and even metals. In addition they do not require direct line of sight, unlike barcodes. Some RFID tags also have an anti-collision feature, meaning multiple tags can be read simultaneously in one area.
- **Resilience** – RFID tags can be embedded in protective material for an indestructible case (epoxy resin, weld-on) and are therefore much less prone to damage and tampering.
- **Reusability** – RFID tags can have a much longer shelf-life than barcodes and can be used over and over again. Barcodes are not reusable and are subject to degradation with handling and age.
- **Automatic updates** – certain RFID tags can have on-board memory that can store information, such as calibration history and preventive maintenance data, and updates can be made automatically without human intervention. Once a barcode is printed it remains static.
- **Traceability** – The combination of a unique identification code, user data, serial number and on-board memory makes it possible to track, recall, or document the lifecycle of a single item. Barcodes are limited to an entire class of products and unable to drill down to a unique item.

### IS RFID RIGHT FOR MY BUSINESS?

Maintenance budgets, along with everyone else's, are still suffering due to the current financial climate and any investment in IT will clearly be scrutinised very closely for payback potential and cost savings. It is no wonder that there is scepticism about investment in what is seen as 'new' technology at this time. When balancing the spend on RFID, companies with a manually maintained asset register need to be asking 'How can I be sure that:

- Plant or equipment that has not been inspected or certified is not being used?
- Items that have been disposed of are updated on the system and cannot reappear into circulation?
- An engineer has physically been on-site and not just ticked a box on a form in their office?
- Staff training is up-to-date?
- Only properly trained and authorised employees perform inspections and repairs?

If the answer to any of these questions is 'I cannot' then you could benefit from bringing a level of automation to your maintenance and asset management. What can be

complex processes and costly issues to resolve can be reduced or even eliminated through automation with RFID.

### HOW CAN I DECIDE IF RFID IS RIGHT FOR ME?

RFID must be applied in a balanced way that takes into consideration company objectives, without being carried away by the hype of RFID. Here are two key company-wide considerations that will determine success:

**Consider your key business indicators.** Look at the overall business, your industry sector at large and existing technology options. RFID offers significant potential benefits, but you must consider the entire picture of your organisation in order to see the greatest benefit.

**Consider your business processes.** RFID is not an IT issue. It is a company-wide opportunity. Business processes will and should shift. Automation will and should occur. People's responsibilities and knowledge must change. New methods of analysis may be employed and new data may even shift the way that your company measures success. Capitalising on RFID investment requires a shift in thinking, and making (albeit) simple changes to the way things are done today.

### RFID – WHO COULD BENEFIT THE MOST?

Anyone operating in harsh environments such as chemical, oil & gas, marine engineering or defence can reap the benefits of durability and robustness. Another huge advantage for maintenance engineers and managers is electronic documentation that is instantly available via the Internet. Furthermore, the health and safety benefits of a fully automated and transparent system can be significant to both the company and its customers, both internal and external.



Tagged assets can be instantly scanned and identified using handheld devices

### CONCLUSION

Start small – use RFID tags in one area first and start the culture change of using handhelds instead of paper. Track, measure and document benefits and roll out to other areas of your business step by step.

Depending on the size and requirement, different companies will reap different benefits from RFID. For some, making an immediate impact on budgets will be the key driver; for others, it will be Health and Safety. Ultimately, it all equates to significant savings, both tangible and intangible, and in a highly competitive and paranoid world it could make that all-important difference to your organisation.

Implementing RFID-based asset management is challenging and requires both creative vision and careful execution. But nothing worthwhile – in life or business – is without its challenges. And, when properly approached, that little RFID tag just might be the catalyst that takes your department and company into a state of profit and safety bliss. ✱