

Active RFID - A Comparative 'Heads Up' Description

Imagine

a bar code, no different than you see on goods everyday of the week, **EXCEPT** it has a small battery attached to it. You can talk to it and it can talk to you - continuously. **NO LONGER** do you have to search for it, find it and scan it manually to read the number on it! **INSTEAD** it can now tell you where it is all the time, in real time, up to several hundred metres away.

Active RFID Tags

are, in effect, intelligent bar codes that are constantly talking to you, communicating their location – they are living breathing things with their own battery installed to give them life, so to speak!

Intelligent?

Not only are Active Tags communicating continuously of their own accord, they can also be made “intelligent” by fitting them with sensors. For example, if fitted with a temperature sensor and the temperature drops below an acceptable level, the Tag will tell you. If a door opens that is not supposed to, again the Tag will tell you. There is no end to the amount of information that can be gathered through the use of a variety of sensors in the Tags, and its all done automatically and in real time.

Very intelligent?

Active Tags, with or without sensors, are controlled by centralised software – the smarter the software, the smarter the Active Tag appears to be. Say you have ten thousand Tags all attached to goods in a warehouse, **you don't** have to observe each and every one, the software does it for you; and, if something happens that shouldn't, the software will automatically notify you on a by exception basis, by email, SMS, text or other chosen means.

In practice,

say you are manufacturing a raw material like paper or film where the quality can vary from day to day and batch to batch RFTRAQ software systems, quite separate from Active RFID, can retrieve all the production information – length, weight, moisture content and so on, relating to that raw material from the machines that produce it. This production information is then written automatically via an Active RFID Tag to a central software database where it is stored under the identity of the relevant raw material batch number. You now have an intelligent Active Tag attached to the raw material that knows everything about it by reference to the information stored on the centralised software database. Lets say a client requires a minimum level of moisture content in a raw material and, for one reason or another, it is not there – well, you don't have to inspect it. The software will tell you via the Active RFID Tag that the batch is sub standard and why; the systems will then automatically reject it. There are no people involved in this process, it fully automated, real time Quality Control.

How does it work?

Every time you scan a bar code with a laser you read the serial number on it, but only in the instant the laser reads the bar code. An Active Tag with a battery 'pings' sending out an 'RF' or radio frequency signal, which is then picked up by a static RF reader attached to a wall. This reader can be located several inches away or several hundred metres away, and is continuously monitoring the 'pinging' Tags. The 'pinging' can be once a second or less frequently, or even just once a day, but no longer requires a person to manually scan the Tag, which you would have to do if it were a bar code. The RF reader then relays the 'ping' back to a software platform which has all the functionality programmed into it including reporting, alarms, controls and, a database which holds all the tagged products' identities, history, performance and so on, as well as the details of the Tag itself including its life history, battery strength and other QA/QC information relating to the Tag.

Active Tag identity:

RFTRAQ's Active Tags don't have serial numbers to identify them, they have an IP address. So you now have a Tag with its own identity which sits within the centralised software no different than your own company web site. Our Tags have, in effect, many of the characteristics of **a PC or personal computer**. The RF reader provides constant communication between the Tag or tagged asset and the software platform which manages the Tag. The software manages the Tags with any level of functionality you require to automate the collection and management of information, reporting against the defined the KPIs (Key Performance Indicators) of your business.

'Passive RFID' Tags

are typically found, for example, in shops on expensive clothes or attached to CDs. They share similarities with both bar codes and Active RFID Tags. They don't need to be scanned like a bar code and can be 'read' like an Active RF Tag, although only at very short distances, typically 1 to 3 metres. This is because Passive Tags require a remote power source to energise the Passive Tag in order to read them. This power source is emitted from the 'Passive' RF readers, examples of which include the large obtrusive devices found at the entry and exit to shops.

Active Tags versus Passive Tags and barcodes

Because Active Tags have very long read ranges and are powered themselves, they are seen continuously in real time - it's a fully automatic self managing system. Bar Codes and Passive Tags are only read at key points – when they pass through a narrow ingress/regress such as a shop checkout or exit door. They are also less reliable as the systems put in place at these key points can be bypassed or other physical obstacles that actually prevent them being read. In theory an Active RFID systems can be 100% reliable as it is real time, fully automated and self regulating. Passive systems and Bar Codes have a greater dependence on people and highly regimented business processes to ensure they work.

What do I choose?

So far as the tracking of goods and assets is concerned, there will always be applications for Bar Codes, Passive Tags and Active Tags. You would never, for example, put an Active Tag on a bar of chocolate in a supermarket. However, you might put an Active Tag or a Passive Tag on the box or pallet that delivers the boxes of chocolate bars to the supermarket. The real difference between Active RFID Tags and passive tags and bar codes is that Active Tags communicate in real time and work on a fully automated basis. They do not require 'operators' and are therefore able to provide fully accurate and reliable data continuously.

An Active RFID solution can demonstrate improvements in business KPIs and generate other savings and benefits which neither bar codes or Passive Tags are able achieve. The reason? Much greater functionality, sophistication and automation, the key to which lies in the ground-breaking technology: hardware and software that manages your business application.

And the good news

is that if you all wish to do is track something, then Active RFID systems provide an additional alternative to bar codes and passive tags. If however you wish to generate a whole new level of data, transparency and integration within your business then there is now a way of doing it for everyone who has a business. Whatever its nature or purpose – logistics management, production management, security/anti theft, quality control, health and safety applications, performance management and so on – one or more of these activities are common to every sort of business and our Active RFID solutions are ready for them.