10 Basic Questions Answered About RFID Tagging

What is RFID Tagging, 10 Answers to the Top 10 Questions

1. What is an RFID Tag?
2. What does RFID Tagging mean?
3. What does an RFID Tag Look Like?
4. What does an RFID Tag do?
5. Can you put an RFID Tag on Metal Items?
6. How Far Does an RFID Tag Signal Travel?
7. How Long Does an RFID Tag Last?
8. What Can RFID Tags Be Used For?
9. Show Me Some Real World Benefits of RFID?
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1. What Is An RFID TAG?

Basic description: an RFID Tag is an aerial with a small microchip.

The microchip can store a small amount of data, like a barcode, plus some other information related to the item or the owner of the item with the tag on.

When the Tag receives a radio wave signal that signal briefly powers the microchip. The initiating device then receives the data from the tag. This all happens extremely quickly.
2. WHAT DOES RFID TAGGING MEAN?

RFID Tagging is the placing of tags onto assets to enable those assets to be managed.

For RFID enabled items like access cards or an Oyster card for example, the RFID tagging process is part of the manufacturing process. It would not be classed as RFID tagging.

For items that are ‘tagged at source’, again this would not really be what the industry classes as RFID Tagging. When something is manufactured there are often many labels attached during the process, if that manufacturer puts an RFID tag on the item or packaging it is part of the overall process, classed as source tagging.

RFID Tagging really refers to the retrospective tagging of assets, many different types of assets.
Those assets could be library books, power tools, IT equipment, files, patient records, they are all classed as assets.

The process of RFID Tagging means that these assets have a tag placed on them, usually the tag has an adhesive back, then some reference to the item is programmed onto the RFID tags microchip.

Not all tags have adhesive on the back, it depends what they are meant to be attached to.

Once the asset has a tag attached it can be read by an ‘RFID Reader’. Usually there are some security features built in so only the desired RFID Reader can get data from the tags.
3. WHAT DOES AN RFID TAG LOOK LIKE?

The range of RFID Tags is very wide, we’ll give you a link to RFID Tag Images. But, all RFID Tags have one thing in common, they are built with pretty much the same technology.

To see a range of RFID Tag Images: [CLICK HERE]
To See RFID Tags Being Put in Library Books [CLICK HERE]
4 WHAT DOES AN RFID TAG DO?

An RFID tag is a way of transferring information from an item to a reader and then to a database of some kind.

Library books are an easy way to explain what the RFID Tag, and overall RFID system, do.

Think of a Library book with a barcode on. When you want to issue or return the book you need to scan the barcode. Simple, but if there are a lot to do it takes time. The same thing with checking the stock in a library. If you’re only using a barcode then each book needs individually checking.

RFID Tags take away a big part of the labour and time involved in checking items. If the Tag only had the items barcode number in that would be enough to be beneficial. Rather than scanning a single barcode at a time you can read a lot of items very quickly.

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Figure 1: Traditional Barcode Method

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5. **CAN YOU PUT AN RFID TAG ON METAL ITEMS?**

Over the last few years the technology has advanced, you are now able to RFID Tag metal items.

The tags are specifically designed to be placed on metal. They operate in the same way as other tags apart from the direction of the radio signal they give off. This is because the signal is pushed away from the metal item, metal and RFID signals don’t mix well.

6. **HOW FAR DOES AN RFID SIGNAL TRAVEL?**

First you need to know about different types of RFID Tags, not shapes and sizes but the different technology used within them.

The categories used widely are:
- HF Tags – High Frequency
- UHF Tags – Ultra High Frequency
Both types can be Passive or Active (Active has a battery passive does not)

High Frequency means that the radio wave used for these tags is on the High Frequency scale, Ultra High Frequency operates on a Higher Frequency scale.

UHF can travel further than HF. The most basic HF systems using passive tags and small aerials can only be read 30-40 cm away. Whereas UHF with large aerials and Active (powered) tags can be read up to 100 meters away.

The difference between passive and active tags is important. A passive tag does not have a battery in it, it is powered by the signal it receives from the RFID reader. An Active tag has a battery, which means it boosts the signal being sent out.

Think of the difference between an Oyster card, where you need to place it on a reader, this is HF Passive technology. Whereas a system which reads a tag in a car to confirm it has passed through a toll road is probably UHF Active. This is because that signal needs to travel further so UHF and Active are used to make this happen.
7. **HOW LONG DOES AN RFID TAG LAST?**

There is no definitive answer to this question. In theory a Passive Tag with no battery should, or could, last a lifetime. An Active Tag with a battery will last as long as the battery lasts. How long that is depends on how often the tag has to omit a signal.

The lifespan of an active tag depends on its uses and environment, somewhere between 1 year and 10 years.

A Passive Tag however is simpler and has no battery to reply on. In theory it could last a lifetime, but that would depend where is was and how it was treated.

Like any electronic device it will be effected by temperature, humidity, handling and wear and tear.

8. **WHAT CAN RFID TAGS BE USED FOR?**

Many Many Things, See Below:
9. REAL WORLD BENEFITS OF RFID?

1. If you know what you have you know what you need. Retail stores have shown an 8% sales growth (the figures vary, 8% is on the low side) from knowing what they have in real time. Customers are fickle, if it’s there today they’ll get it because that’s what they came for, they may not come back if it’s not there. Using RFID technology for real time stock analysis means popular items don’t run out of stock.

2. Using RFID to understand your equipment stock. We recently tagged equipment for a building firm, on completion the client had a quick look at the database. “Why the hell has Tony got 5 of those”. The immediate inference is that Tony, and possibly many more people within the company, liked to hog certain tools. By doing so they are not deployed correctly and replaced unnecessarily. The savings are difficult to assess so early in the process, but they are expected to be considerable.
3. Library books. Probably one of the simpler forms of RFID, replacing a barcode with an RFID tag that holds the barcode details in it. Quite apart from the fact that readers can issue and return multiple books in seconds, compared to queuing up at a counter or scanning each one separately. The technology allows a library of say 50,000 books, or a University with 350,000 books, to be stock checked in a tiny fraction of the time it would take with barcodes. It can also locate books which have been re-shelved incorrectly, or scan a shelf and check the books are in the correct order. It can even find books hidden in various weird and wonderful places around the library.

4. There are so many examples of real world benefits to RFID. These articles in the RFID Journal are excellent examples: Click Here

10. WHAT HAPPENS NEXT WITH RFID?

For a very interesting article on new and upcoming RFID developments from RFID Arena Click Here.

To receive our upcoming industry experts’ views on RFID advancements, Click Here