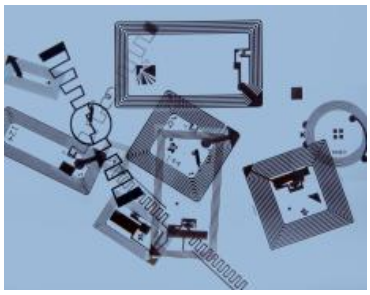
Anti-counterfeiting and anti-piracy technology guide

https://euipo.europa.eu/anti-counterfeiting-and-anti-piracy-technology-guide

Passive RFID Tags

Passive RFID tags are most commonly seen in the form of smart labels. They are usually made of adhesive paper or plastic and can be affixed to a variety of products for brand protection and anti-counterfeiting, among other purposes. They carry valuable information that is used to track goods from the warehouse to the point of sale, allow customers to leave a shop without having to queue to pay for a product and allow sales staff to check inventory without leaving the customer's side.



Used for

- Authentication
- Tracking/Tracing

Suitable for

- Very small products
- Small products
- Medium-sized products
- Large products

Goes on

- Product
- Packaging

Can be used for

- Physical products

Visibility

- Invisible

Reading device needed

- Yes

Connection to server

- Yes
- No

Description

Passive RFID tags consist only of an antenna and an integrated circuit (a microchip). They are called 'passive' because they do not have an internal power source; instead they are powered by the electromagnetic signals transmitted from an RFID reader. Once activated, the tags send identification data back to the reader, which in turn communicates the data to a computer where they are processed and verified. The identification data stored in the RFID tag memory usually include a unique code, for example an Electronic Product Code (which complements barcode information with such details as type of goods, manufacturer, etc.) or an owner code. Passive tags can be read-only or read-write, in which case, as the name suggests, the stored data can also be modified and/or rewritten.

This technology has limited power and a low read range. Depending on the operating frequency used, passive tags need to be within centimetres (low frequency) or a few metres (high and ultra-high frequency) of the reader in order to operate.

Uses

Passive RFID tags have many possible areas of application as they can be incorporated into a wide range of

products, from non-metallic small objects to adhesive labels. When they are embedded into labels they become ‘smart labels’ and are affixed to the exterior of a product. However, they can also be embedded into products directly. Some common uses are: credit cards, buttons, bottle caps, keys, sheets of paper, banknotes and entry tickets.

The authenticity of the product is verified by reading the data stored in the RFID tags. This is done by staff at retail outlets, through the use of the appropriate equipment; products cannot be authenticated independently by consumers.

Implementation

In view of the variety of possible forms, sizes and uses of passive tags, implementation requirements are highly context and case-specific.

If you want to use passive RFID tags in smart labels, then you do not need to make any changes to the production process; you just have to choose the most suitable type of label from the range available, and affix it to the product you want traced and authenticated.

If, however, you want to incorporate passive RFID tags directly into your products, you will need to make specific changes to the production chain.

Cost

Implementing a passive RFID tag system will require initial investments in equipment management systems, readers and (possible) changes to the production process. However, passive RFID tags themselves are generally small, inexpensive devices, with costs starting from a few euro cents per tag.

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