

RFID LABELS



GENERAL PRESENTATION

PROTECTION- CONTROL- IDENTIFICATION- TRACKING

RFID LABELS

What they are 1/2



RFID labels are based on a Radio Frequency Identification technology.

This technology allows to uniquely identify any objects on which RFID labels have been attached.

Basically, RFID labels allow to have the information on a particular product, thanks to a radio frequency detector (reader).

Therefore, using RFID labels, several activities can be done:

- Researching
- Selecting
- Identifying
- Defining the spatial location
- Tracking

RFID LABELS

What they are 2/2



Thanks to this technology, several uses have been developed such as the identification or the control of the livestock living in animal preserves.



But also in the automation of the automobile industry, including the identification of car keys.



RFID labels have also been fully used as security tags in the clothing sector.

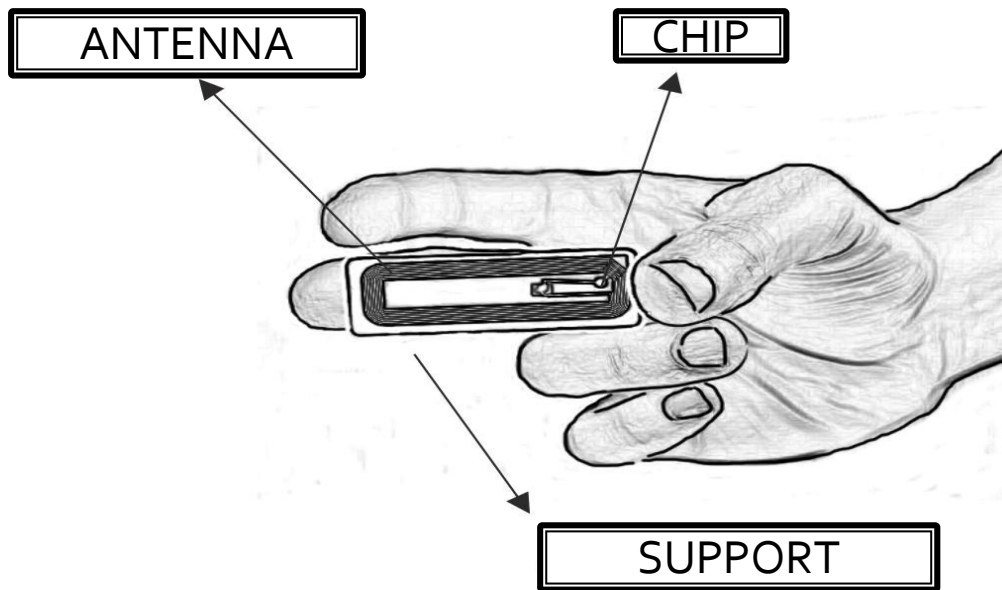
RFID labels offer the following advantages :

- Control of the goods from a safety point of view.
- Fast filling and inventory operations without errors.
- Management of the product information.
- Quick sorting of the products.

All this translates into a considerable saving of time and therefore of money.

RFID technology requires 3 components : a tag (for example: label), a reader and a management system.

WHAT DOES A RFID PASSIVE LABEL LOOK LIKE?(or tag)



The main elements of a RFID label are:

- Circuit.**
- Antenna.**
- Support.**

The circuit (or chip) includes the data storage on which the following data are registered :

- The product information.
- Its unique ID.
- The information that allow to communicate with the antenna.

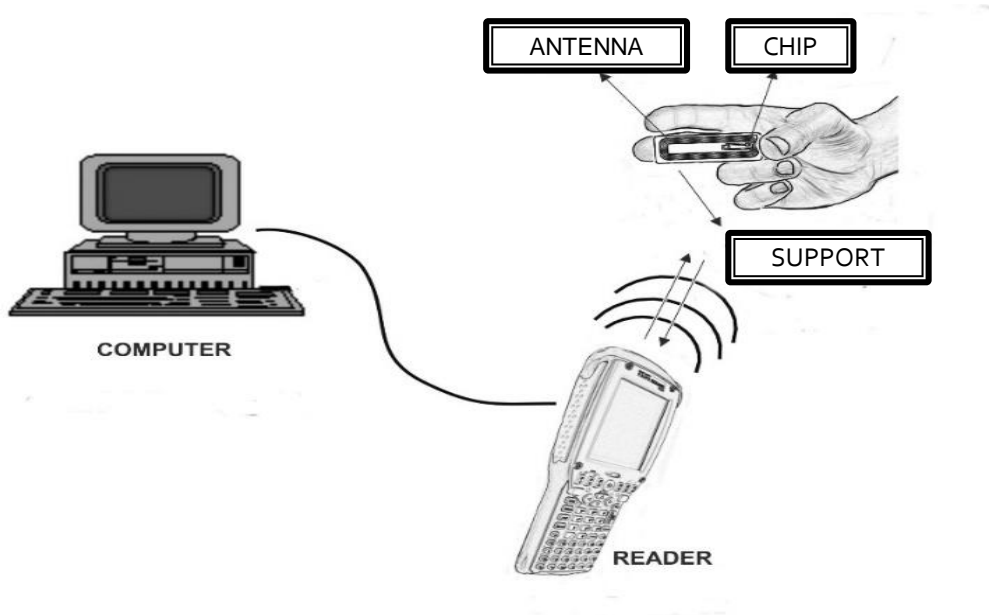
The antenna receives the radio communication from the Reader and launch the tagged electromagnetic signal, converted into electricity, to the chip, allowing its activation.

The chip sends its response to the interrogation and sends it again to the Reader.

The support is basically the material on which the chip and the antenna are assembled and it can be made of several materials :

- Contact paper.
- Cloth.
- Plastic.

HOW DOES A RFID PASSIVE LABEL WORK? (or tag)



A RFID system is composed of a tag, whose chip includes the data, an antenna, to communicate with the tag and a reader (or controller) which, thanks to the communication signal, reads the ID of the tag and writes the data storage, sending the signal to the host (PC).

A RFID system can work at low frequency (LF), high frequency (HF) or very high/ultra high frequency (VHF e UHF).

This identification occurs through radio frequency, thanks to which a reader is able to communicate and/or update the information in the tag that is interrogating; Indeed, despite its name, not only is the reader able to read, but also to write information.

RFID devices can in a way be treated as wireless readers and writers with multiple applications. In the last few years also the NFC standard is emerging (Near Field Communication, 13,56 MHz up to 10 cm, but with a data rate up to 424 kbit/s) which extends the standards to allow the information exchange among readers.

COMMUNICATION BETWEEN RFID LABELS (TAG) AND READER.



RFID labels (tag) are associated to several objects through radio frequency systems.

The RFID label (tag) becomes active once the electromagnetic field of the Reader reaches it and sends, through its antenna, all the information in its data storage, according to the object to which it has been attached.

The data storage of RFID label has normally a unique identification of the object and other useful information such as the production date.



The Reader is a transceiver, which is connected to a management system and is able to read the information provided in the RFID labels.

Readers can be fixed or mobile.

Fixed Readers are for example those positioned at the entrance of a shop that read the security tags or the smart card readers, while those mobile look like bar code readers.





There are several advantages using RFID labels.

RFID labels (TAG) are easily able to recognise goods thanks to a non-contact communication, enabling a control of the goods from a safety point of view, a fast filling and inventory operations.



Moreover, information on the products are easily inserted and managed, which allows time savings in terms of reading the products and it avoids managements errors.

MAIN FIELDS OF APPLICATION OF RFID LABELS (1/3)

LOGISTIC FIELD



In the logistic sector they have a range of purposes such as the tracking of the product.



The goods control, shipping and delivery.

The identification of the single item and the inventory.



In the transport security, RFID labels may be supplemented by traditional seals, thus becoming a very effective control system against tampering.

MAIN FIELDS OF APPLICATION OF RFID LABELS (2/3)

RETAIL



In the retail sector, RFID labels allow a quick management of the item in the shop.

They make the inventory fast.



They simplify any goods relocation in the store.

They authorise discounts and price managements.



They also have a security tag function with suitable readers both at the exit of the shop and at the changing rooms.

MAIN FIELDS OF APPLICATION OF RFID LABELS (3/3) **WELL-BEING**



The RFID labels, used in the hospital sector, allow to manage patients without the risk of incurring in medication errors.

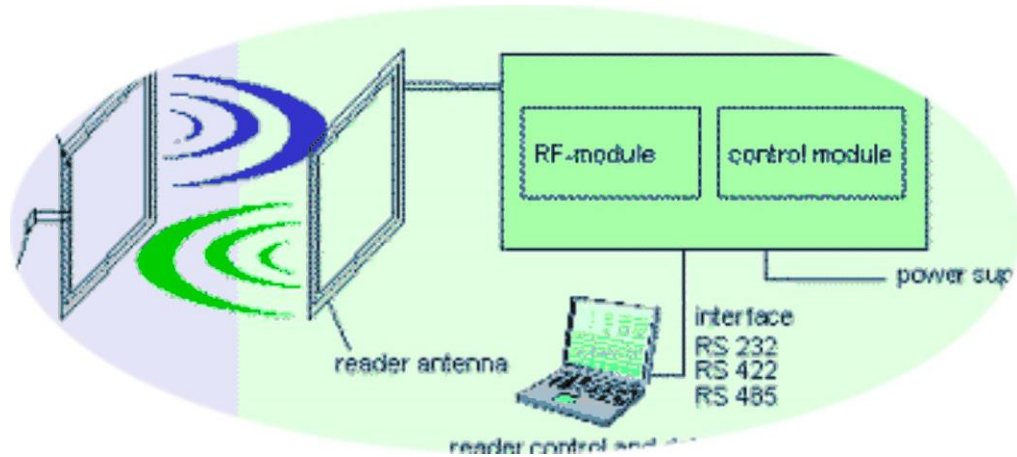


The RFID labels, used in the hospitality sector, allow to easily manage linens by reducing loss and theft.



TECHNICAL DATA

FREQUENCY OF DATA TRANSMISSION



There are different types of transponder frequency of Readers, according to the reference TAG.

LOW FREQUENCIES (LF) 120:145 kHz, is a low frequency band. It is worldwide.

HIGH FREQUENCIES (HF) 13,56 MHz, is a high frequency band, universally known as the most widespread band.

ULTRA HIGH FREQUENCIES (UHF) according to the different area, Europe, Asia and America, it has a different set of parameters.

It has a higher operational range compared to a HF and a LF.

Moreover, it allows the TAG miniaturisation. Indeed, the higher the frequency of transmission is, the faster the data transfer will be. Consequently, the antenna will be smaller and therefore also the tag.



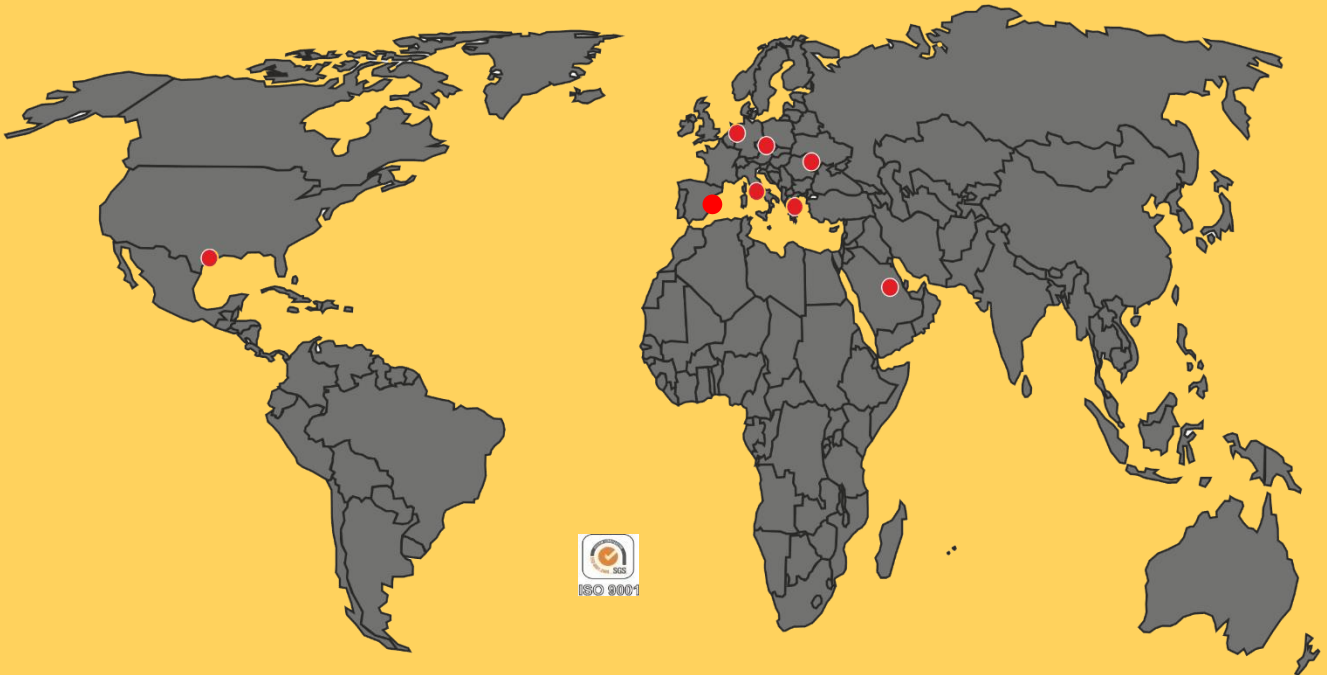
All the RFID labels of LeghornGroup allow the scanning of thousands of goods in a very short time thanks to the UHF frequency.

Moreover, we can provide different types of support, also upon customer request, in order to best manage their products and their shipments.

We boast a twenty years of experience in the use of RFID tags and we are absolutely able to solve tracking, identification and security problems.

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