RFID

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RFID is an acronym for Radio Frequency Identification. RFID is one member in the family of Automatic Identification and Data Capture (AIDC) technologies and is a fast and reliable means of identifying just about any material object.

Primarily, the two main components involved in a RFID system are the Transponder (Tags that are attached to the object) and the Interrogator (RFID reader). Communication between the RFID reader and tags occurs wirelessly and generally does not require a line of sight between the devices.

Transponder (RFID tag)

An RFID transponder, considered as a next generation barcode.

A microchip attached to an antenna that is packaged in a way that it can be applied to an object. The tag picks up signals from and sends signals to a reader. The tag contains a unique serial number, but may have other information, such as a customers' account number. Tags come in many forms, such smart labels that can have a barcode printed on it, or the tag can simply be mounted inside a carton or embedded in plastic. RFID tags can be Active, Passive, or semi-passive.

Passive tags are generally smaller, lighter and less expensive than those that are active and can be applied to objects in harsh environments, are maintenance free and will last for years. These transponders are only activated when within the response range of a reader. The RFID reader emits a low-power radio wave field which is used to power up the tag so as to pass on any information that is contained on the chip.

Active tags differ in that they incorporate their own power source, where as the tag is a transmitter rather than a reflector of radio frequency signals which enables a broader range of functionally like programmable and read/write capabilities.

Interrogator(Reader)

A device used to communicate with RFID tags. The reader has one or more antennas, which emit radio waves and receive signals back from the tag. The reader is also sometimes called an interrogator because it "interrogates" the tag.

An RFID reader typically contains a module (transmitter and receiver), a control unit and a coupling element (antenna). The reader has three main functions: energizing, demodulating and decoding. In addition, readers can be fitted with an additional interface that converts the radio waves returned from the RFID tag into a form that can then be passed on to another system, like a computer or any programmable logic controller. Anti-Collision algorithms permit the simultaneous reading of large numbers of tagged objects, while ensuring that each tag is read only once.

Printer:

RFID printer, or printer/encoder, is a device that prints a label with an embedded RFID transponder and encodes information in the chip within the transponder.