The Efficiency of RFID

Radio Frequency Identification or RFID is the wireless and contactless use of radio frequency waves to transmit information. An RFID system consists of four components: readers, antennas, tags, and cables. Readers transmit and receive radio waves to communicate with RFID tags. There are two different types of readers, which are fixed RFID readers and mobile RFID readers. Fixed RFID readers stay in one area with exterior antenna ports that can connect multiple antennas. There is also a subtype of fixed readers, which are integrated readers that contain an antenna that is built-in with an extra antenna port for the connection of an optional exterior antenna. Mobile RFID readers are handheld devices that allow RFID tags to be read while still allowing communication between a host computer or smart device. Readers work hand-in-hand with antennas. They transform the RFID reader’s signal into radio frequency waves that can be received by RFID tags. Likewise, an RFID tag is made up of two parts, that includes an antenna for transmitting and receiving signals, and an RFID chip or integrated circuit that contains the tag’s ID along with other valuable information. They receive energy from the radio waves generated by the reader, unless they are active, which would mean that they are battery powered. The generated energy then goes through the internal antenna which goes to the chip and activates it. This alters the energy with the wanted information, leading to the transmission of a signal back to the antenna and reader. Lastly, cables in the system are crucial to the communication between the RFID reader

and RFID antenna, without them the reader would not be able to power and transmit signals to the tags through the antenna.

The process might sound a little bit complex, but the benefits it has on its use in business are more than practical. Since RFDI technologies are cost efficient, starting from $0.20 per tag, many businesses are implementing it to outstand their competition. Amazon Go has used RFID to create a better shopping experience where you no longer have to check out or register in order to purchase a product, all you need to do is to enter the amazon go store with an RFID amazon app and take the product, with no wait time. RFID allows the app to identify the items you have selected, then it automatically charges you on your amazon account. Zara, the clothing brand, also uses RFID in order to track inventory and avoid counterfeit items. RFID allows for an effective restock of clothes as it notifies the stock room as soon as one item is sold. The French retailer Decathlon uses RFID technology as well to provide their customers with an improved shopping experience that includes a faster checkout and better item availability. BJC HealthCare operates with RFID for the tracking of surgery tools, medicinal supplies, and validity dates. RFID is also used to track patients and their health records, allowing doctors to know about patient’s conditions and whether they are chronically ill or not.

As we can see, RFID technology is used to improve business practices in terms of stocking inventory, shopping experiences, and to keep track of medical records. If we are futuristics, there is no limits on its use. We can even implement it in our real government IDs, which can contain all of our relevant information in just one card, instead of multiple (license, Social security card, government id, insurance card) making it easier for citizens.

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