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Implementation of High Performance UHF-RFID for Logistics Management System

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ABSTRACT
This Paper is planned for building up a work area based application named Logistics Management System for dealing with the stock arrangement of any association. The Logistics Management System (LMS) alludes to the framework and procedures to deal with the load of association with the inclusion of Technology framework. This framework can be utilized to store the details of the stock, update the stock dependent on the business, produce deals and stock report. This Work is carried out with a high performance UHF –RFID reader, Writer and supporting framework. The details of the goods are written in RFID tags and are stickered to the Goods.Complete information of all the goods will be read at once and is stored in database. At the destination where the stock is being received will be powered up with an UHF reader so that all the goods will be read at once and compared with the database. This reduces the time when compare to check the goods manually.
Keywords – Logistics Management System, RFID, Tag, Reader, Writer.

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I. INTRODUCTION

Radio-Frequency Identification (RFID) refers to the use of radio waves to read and capture information stored on a tag attached to an object. An RFID tag can be read from up to several feet away and does not need to be within direct line-of-sight of the reader to be tracked, so it may be embedded in the tracked object . Passive RFID Tags have an indefinite operational life and are small enough to fit into a practical adhesive label, but they do not require battery or maintenance because they use the electromagnetic energy transmitted by the reader. A typical far-field reader can successfully interrogate tags being even 3 meters away. RFID tags can be interrogated simultaneously when they are compliant with and operate on the Ultra-High Frequency (UHF) range (around 900 MHz). This means that one reading operation can retrieve information from all the RFID tags within the transmission range.

The significant benefit of the active tag is that it can provide longer read range which is more suitable for large scale operation. Another devise is a RFID reader. It is used to communicate with RFID tags, to send and receive radio frequency waves by generating an electromagnetic or interrogation zone to supply power to passive tags as they enters this zone and collect information by decoding the tags' transmitted signals. It can also send out different signals in order to write additional information onto a rewrite tag. The reader then conveys the data back to the host computer to process and update information in the computer data base. Most readers are handheld type however fixed-mount type is also being used by RFID system. To complete the system, a computer is needed to host IT system, process the tag's ID number, matches with the database records and transforms data into usable information .Therefore, the success of the data collection and management relies on the ability of the software system to effectively display the desired information accurately and timely.

II. RFID TECHNOLOGY

A. components

RFID frameworks [1] are fundamentally made out of three components: a tag, a per user and a product conveyed at a host PC. The RFID tag is an information bearer part of the RFID framework, which is put on the items to be particularly recognized. The RFID per user is a gadget that transmits and gets information through radio waves utilizing the associated receiving wires. Its capacities incorporate controlling the tag, and perusing/composing information to the tag.

One of a kind recognizable proof or electronic information put away in RFID labels can be comprising of sequential numbers, security codes, item codes and other explicit information identified with the labeled article. The accessible RFID labels in the present market could be grouped concerning various parameters. For instance as for driving, labels might be detached, semi-aloof, and dynamic.

As far as access to memory, the labels might be perused just, read-compose, Electrically Erasable Programmable Read-Only Memory, Static Random Access Memory, and Write-once read-many[6][7]. Labels have additionally different sizes, shapes, and might be characterized concerning these geometrical parameters. The RFID per user is a gadget that transmits and gets information through radio waves utilizing the associated reception apparatuses. RFID per user can peruse different labels at the same time without view prerequisite, in any event, when labeled items are inserted inside bundling, or in any event, when the tag is implanted inside an article itself. RFID per users might be either fixed or handheld, and are currently outfitted with label impact, per user crash counteraction and tag-per user verification systems .

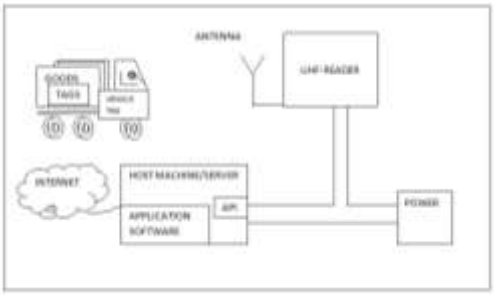
B. Frequency Characteristics

Frequency alludes to the size of the radio waves used to impart between RFID frameworks segments. RFID frameworks all through the world work in low frequency (LF), high frequency (HF) and ultra-high frequency (UHF) groups. Radio waves act distinctively at every one of these frequencies with focal points and impediments related with utilizing every frequency band. In the event that a RFID framework works at a lower frequency, it has a shorter understood range and more slow information read rate, yet expanded abilities for perusing close or on metal or fluid surfaces[2]. On the off chance that a framework works at a higher frequency, it by and large has quicker information move rates and longer read reaches than lower frequency frameworks, however greater affectability to radio wave impedance brought about by fluids and metals in the earth[3].

III. SYSTEM OVERVIEW

It is obvious that shipment following just as perceivability is particularly required for strategic and monetary interests of anybody remembered for the framework. That is the reason the significance of shipment following comes into picture as it empowers shippers to control the transportation framework and area of cargo additionally gets simpler anytime in its excursion. The fundamental point is to expand item deals to end client and decreasing both stock and working costs. This has helped for the exhibition of bearer, transportation expenses and market slants in order to deal with the logistics. It decreases costs as well as the procedure improves, picking up perceivability and upgrading the general execution. Likewise there is a superior client experience by limiting deferrals.

Every other essential module for our observe is RFID. Radio frequency identification (RFID) uses electromagnetic subject to automatically become aware of and track tags attached to items which contains electronically saved information[4][8]. Right here we've used passive tag, amassing energy from readers near to it. The tag information is saved in a non-risky reminiscence. RFID is vital to remedy many enterprise needs. For examples monitoring pallets, cases, indication of products [5].With RFID in vicinity which allow the company recognize at what time precisely wherein a product is positioned bodily within the logistic chain. here every tag permits communique that's touch much less with a valid reader device thru a radio link by way of sending its corresponding unique identification, RFID tags are established on locomotives to identify beginning, vacation spot of the commodities being carried. Consequently RFID gives benefit over guide device allowing greater efficient and dependable stock and tracking of gadgets.



F**igure1**:System Overview

IV.RESULTS

Figure2: Different forms for the Application

An Application is developed using Visual Studio to integrate with the System. User can open the application for writing data to tags at the Source and reading the data from the tags at the destination. The forms for writing the data and reading the data are shown in Figure2.

IV.CONCLUSION

This paper presents a working model of an efficient logistics management system integrated using UHF RFID, where the information of the assets will be written to tags at the source and are updated in database using Visual studio and at the destination side all the tags with vehicle information also is read at once and compared with the database quickly,which reduces the manual effort for reading and collecting the information of all goods.

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