REAL TIME IDENTIFICATION OF STAMPING DIES

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ABSTRACT

The work is concern with real time identification of stamping dies using RFID tags, reader and optical laser distance sensor. Dies are part of Press machine and made up of metal. Due to randomly placed large quantity of dies in certain area, identifying particular die is main problem. In this technology RFID technology used for identifying dies and optical laser distance sensor used for locating die position. Wire communication is not possible in this system so wireless communication (IEEE 803.11) standard used. For storing data MY SQL database used and for programming PHP language used. To make system more user-friendly android application also developed. RFID based asset tracking helps improve security as well as efficiency. The improved security and efficiency results in a significant return on investment in a very short duration.

KEYWORDS: RFID identification, optical laser sensor, low cost automation.

INTRODUCTION

An asset is an item, thing or entity that has actual value to an organization. In any organization, asset managers are challenged with managing extremely valuable assets, which are not fixed at all. In fact, these static assets move frequently, both within the organization and out of the organization. Asset Management traditional focus has been about collecting asset information, such as asset location, asset configuration, maintenance activities, production output, and so on. Asset Management involves the equalizationof costs, opportunities and risks against the required performance of assets, to achieve the organizational goal. RFID based Asset tracking & Management Software allow effective tracking & recording of all the fixed dispersed assets of an organization, leading to better accounting practices, maintenance and maintenance of the assets. At large businesses and industries, the requirement for an automated and hassle-free asset tracking system with an integrated access control systemis vital to make secure surroundings for all assets, folks and instrument. Asset ID, an RFID based asset management system, is an automated asset tracking system particularly designed for such businesses and industries. Asset ID is designed to create a seamless asset

management system at businesses with distributed network of warehouses and offices. It not only create a secure surroundings for assets however works as a multi-utility system providing access management, as well as asset tracking abilities.

Asset ID design employs the advanced passive radio frequency identification (RFID) technology. RFID technology helps overcome several of the shortcomings of a barcode based asset tracking system, including the critical line-of-sight requirement as well as excessive wear and tear problem. RFID systems conjointly offer protection against any duplication. Asset ID uses cost economical passive RFID technology to assist businesses secure and manage their assets unfold across multiple remote locations. Assets being tracked by this system include personnel as well as equipment. Asset ID is built on internet platform to produce a central interface to watch and manage inventory at various remote locations. The open architecture of Asset ID permits for simple and seamless integration as well as future expansion. Asset ID can be a very useful tool for accounts, finance, and asset managers. It provides them with simple way to search and track assets using their last known location and time.

PROBLEM IDENTIFICATION & OBJECTIVES OF CURRENT RESEARCH

PROBLEM IDENTIFICATION

Company manufacturing outside bodies of different vehicles using stamping machine for that they are using dies. Company has around 2000 die. After completing one type of product die is changed and old die placed in free space where free space is available because of that after some day worker face problem to identify die. In fig illustrate the how die placed in shop floor.
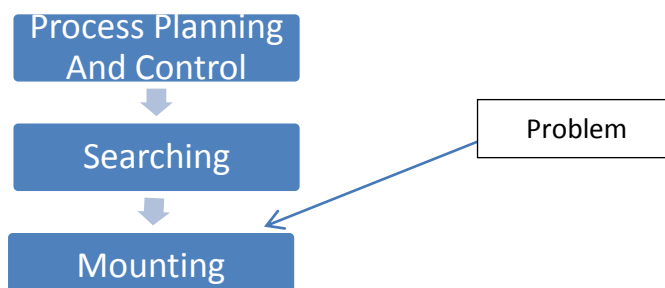

Figure 1: Die Storage Area

PRESENT METHOD

Figure 2: Present method

In the present system, following observations are noted:
- ➢ Due to randomly placed large quantity of dies in certain area, identifying particular die is main problem.
- ➢ Finding dies is very difficult and time consuming.
- ➢ Machine breakdown
- ➢ Production loss

OBJECTIVES

As discussed above the problems of searching dies due to randomly placed large quantity of dies in certain area, identifying particular die is main problem. This problem is dominantly due to randomly placed large quantity of dies in certain area.

In tune with these issues the objectives of the current study are decided and enlisted herewith:
- ➢ Design system which automatically identifies position of dies.
- ➢ Time require for finding dies is very less.
- ➢ New person also find die position easily.

METHODOLOGY

As the problem is understood in order to find solution to this problem following methodology proposed.
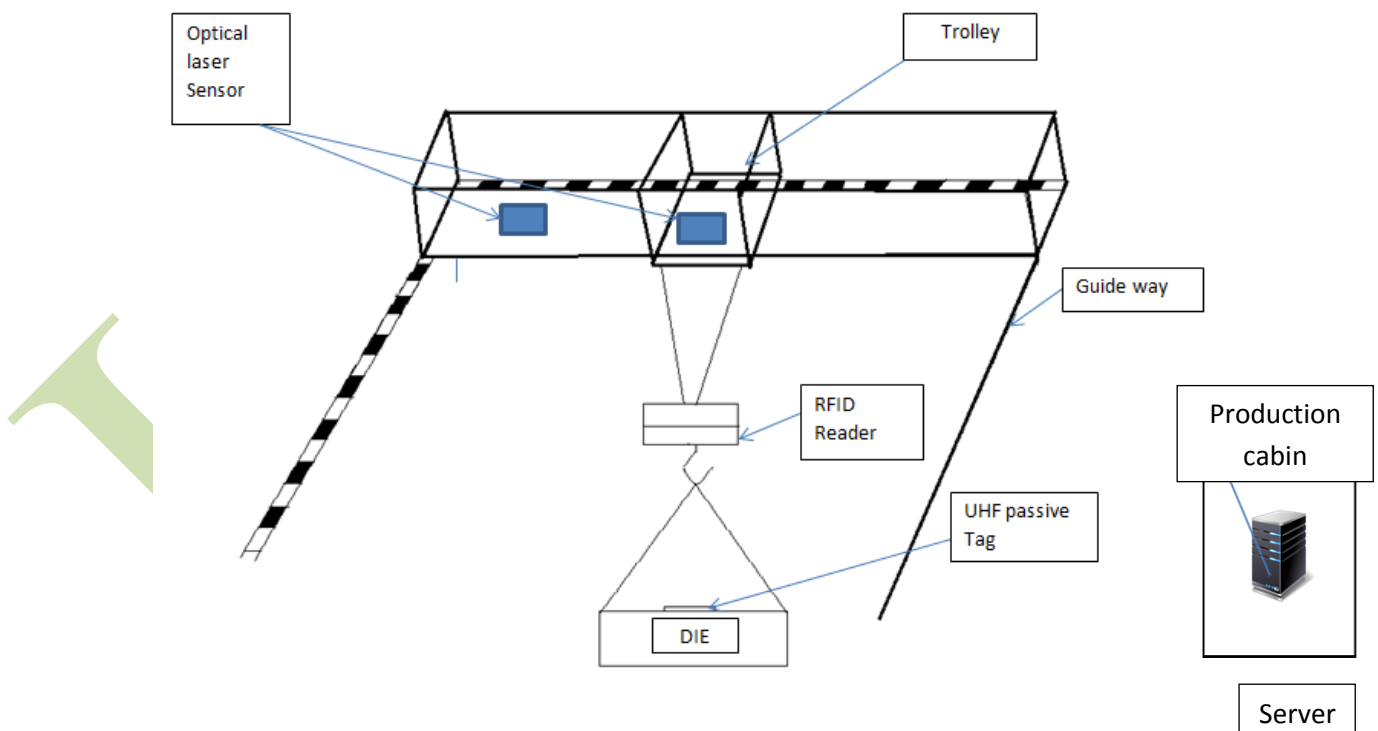
CONCEPT DIAGRAM

Figure 3: Concept diagram
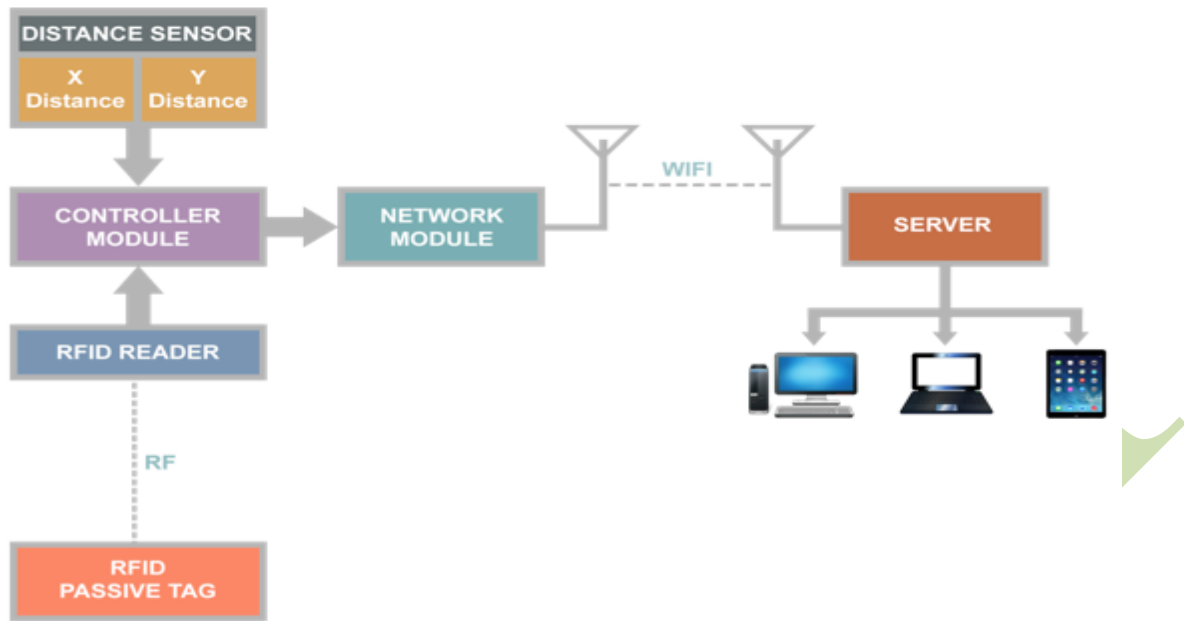
BLOCK DIAGRAM

Figure 4: block diagram

The system uses two components for saving the location of the entity. One is the Position of the entity on the shop floor and another is the Tag Id used for the unique identification.The distance sensor placed on the crane, which carries the die, acquires the position. Theposition contains the longitudinal and the transverse distance of the crane trolley from thereference planes. The Tag Id is obtained from the RFID reader placed on the crane-hookthat reads the RF tags placed on the die. These two components are combined by thecontroller module and sent to the server through the network module using Wi-Fi. Theserver stores the data in the form of Id-Position pair and other added information. The usercan retrieve the location of a particular die by querying it for an Id from the server. The server will return the information of the die's position in the form of grid marking along with other relevant information.

TECHNOLOGIES TO BE USED

Table 1: Technologies to Be Used

Requirement	Technology	specification
Crane location	Optical laser sensor	Accuracy up to 1 cm
Tag ID	RFID	Passive UHF RFID
Communication	WIFI	IEE 803.11 (2.4GHz)

COMPONENT SELECTION

Table 2: component selection

Component	Specification	Quantity
Tag	Class 1 Gen 2 Passive UHF Transponder	100
Reader	4 Port Enterprise UHF RFID Reader	1
Antenna	10 dBm Reception Gain	1
Cables	3 Core Co-axial Cable	1
Retractor Cable	4 sq –mm , 2 core , 30meter	1
Optical Distance Sensor	300 meter	2

Retractable cable is used for giving power supply to the reader which mounted on crane hook, crane hook move up and down so cable also require to moves up and down for this purpose retractable cable used. When hook moves down that time cable expand and when hook moves up then cable retract.

DATA MANAGEMENT AND PROGRAMMING

Generally, the word databaseis associated with computer term for a group of data regarding a certainbusiness application. Data management is very important term because if data is arranged systematically then retrieval of data is very easy. In this proposed system large number of data requires for programming therefore data management is very important. For data management MY SQL database used. The flow diagram of data storage and flow of data is given below
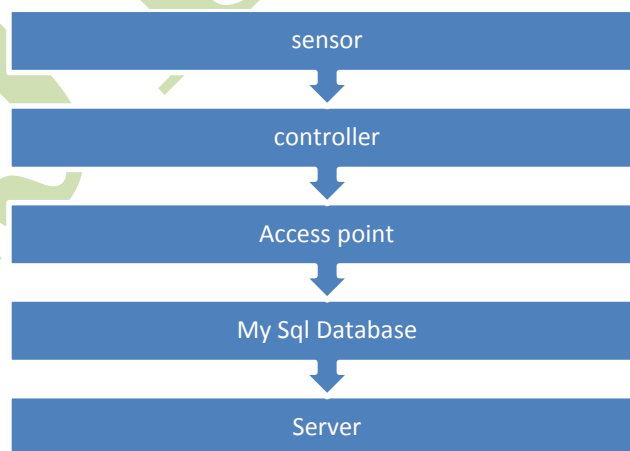

Figure 5: Data flow

PROGRAMMING

For programming PHP language used. PHP language used for both website development and android application. Programming based on signal strength, time base and die placing area.

GRAPHICAL DESIGN OF SHOP FLOOR

To identify die on large shop floor area without any guideline is difficult, to overcome this difficulty shop floor graphical design has drawn in bootstrap software and on shop floor check board type structure marked so that when anybody search the die location on software, software will give row and column number, so identifying die on shop floor is very easy.
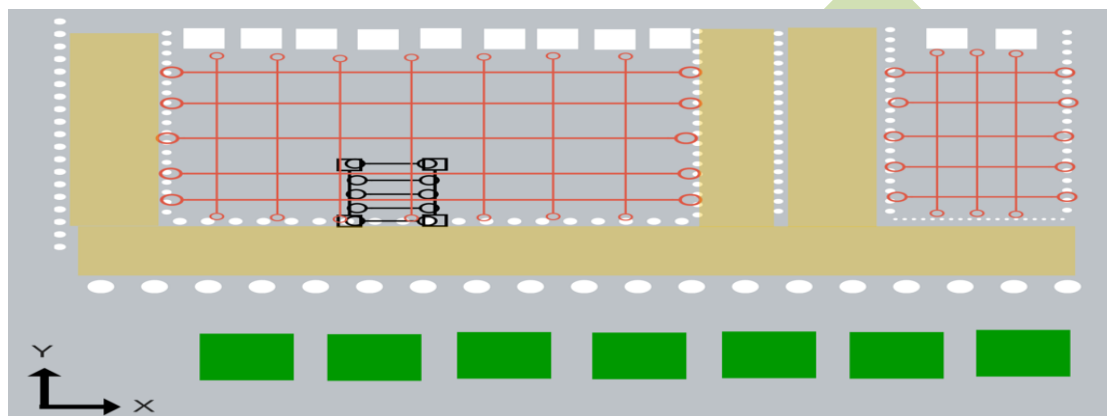

Figure 6: Graphical Design of Shop Floor

RESULTS & DISCUSSION

Proposed system successfully implemented and testing of system has been carried out successfully. Benefits of system are listed below

1. In overall working time around 40% time is waste in finding dies, but because of this system we can find die location immediately.
2. New person also can find die position immediately.
3. Reduction in production loss.
4. No special person require for finding dies.
5. Simple and user-friendly system.

CONCLUSION

Localization is a very important issue for indoor positioning. In this system, proposed a new localization method using RFID tags and Optical laser distance sensor. RFID tags are used for identifying die and optical laser distance sensor used for finding the position of die. For communication WIFI (IEE 803.11) standard used. For making system more user friendly android Application of system developed. Future work will be focused on fully automatic storage and retrieval system where crane will reach die placing area automatically. One added advantage is that the current approach is very cost efficient.

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