

OPERATION AND MAINTENANCE OF INDUSTRY USING RFID

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ABSTRACT:

Information technology applications have proven useful in the operation and maintenance to construct services. The objective of this study is to improve operation and maintenance using Radio Frequency Identification (RFID) and to reduce maintenance time and man power. This predefined rfid tag is used to identify the person, machine or any other maintenance schedule information. First we have to collect and update the data to rfid tag. Using this tag they will inform to maintain the service provider and automatically the message sent to the operator. For industrial applications the system performance is validated. In this paper , the RFID technology is used in web based system, database, and scheduling process. They can develop their facility and maintenance efficiency.

Key Words: Maintenance, facilities Radio Frequency Identification (RFID) Technology, Web-Based System, efficiency, Scheduling.

I INTRODUCTION

Operation and maintenance of industry is also required to enlarge the life and quality of output products. Radio Frequency Identification technologies (RFID) is one of the most important technologies developed in the last century. It must be characterize into different tasks such as read, write, and also the ability to access multiple tags simultaneously. This can also develop their useful method to

improve operation and maintenance efficiency.

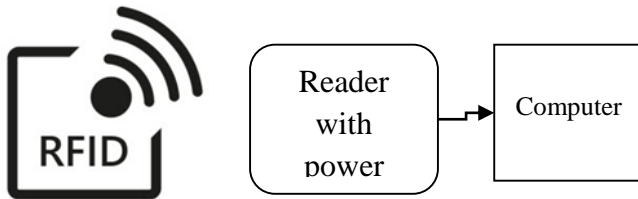
RFID has been used in various applications like education management system, library operations, industrial security systems, warehouse management, materials tracking, and navigational monitoring. A small number of studies can be found in facility and equipment management. RFID management system will reduce operational costs. This RFID technology is also used in various industrial management systems. In this paper we collected data using RFID tags and passed information via Internet.

The objective of this study is to develop a web-based RFID based operation and maintenances of industries to improve maintenance efficiency. First we have study this RFID technology so that we achieve the goal easily. In this ,two methods may be used such as data management and scheduling modules are established according to the O&M needs.

II RADIO-FREQUENCY IDENTIFICATION (RFID)

RFID uses electromagnetic fields to automatically identify and track tags attached to the objects. The tags contain digital stored data of the object of human identification information. Passive tags collect energy from a nearby RFID reader's by using wireless power technology achieving through radio waves. Active tags have a local power source (such as a battery) and may operate hundreds of meters from the RFID reader. Unlike a barcode, the tag need not be within the line of sight of the reader is the main feature leads to be embedded in the tracked object. RFID is one

method of automatic identification and data capture system.



Faraday's principle of magnetic induction is the basis of magnetic field coupling between RFID reader and RFID tag.[4] A reader passes a large energy of alternating current through a reading coil to produce magnetic field in its locality. If you place a tag that incorporates a smaller coil (Figure 1) in this field, an alternating voltage will appear across it. If this voltage is rectified to DC which you can use to power the tag chip. Tags that use send data back to the reader using wireless transmission. The reader coil and tag coil are magnetically coupled to transfer power from reader to tag. The tag transfer data through radio frequency wave which was stored in it. RFID writer also work in the same principle to write the data into the tag. However, as the magnetic field extends beyond the primary coil, a secondary coil can still acquire some of the energy at a distance, similar to a reader and a tag. A variety of modulation encodings are possible depending on the number of ID bits required, the data transfer rate, and additional redundancy bits placed in the code to remove errors resulting from noise in the communication channel. This is the approach for implementing a passive RFID system.

In active tags, it is used to be connected to a battery or power. In the next case, a tag's lifetime is incomplete by the battery, balanced against and also the number of read operations must go through the device.

III PROPOSED SYSTEM

In our paper the industrial equipment management is to be taken as a model. Any machine has to be maintained properly to avoid major shut down with schedule. This is done by regular protocol with paper work and needs numerous department co-operation for integrating the

machine. This needs a data base management process. In our paper we discussed there are two types of development module, one is the data management module and other is scheduling module.

(i) Database Management Module

In the data base management module it contains the maintenance area, time, parts and manpower requirements. This is designed to allow manipulating the data stored in the system database.[6] The different types of functions are type, item, name, safety degree, duration, frequency, cost of purchase, date, guarantee period, vendor, location, service time, manpower, technical support etc. Users can fill out the information by entering values. Every object is identified using RFID code that is a unique identification number written onto the RFID tag through the writer. This structure can be used for designing the maintenance in to four sections. The first section, item is used to store equipment or facility. The second one stores types of equipment or facility, i.e. some worldwide test machine and electron microscope. Third section is used to store serial number. The last section is used for future process. This type of code is automatically generated by the module and it also be written onto a tag using the RFID writer device.

(ii) Scheduling Module :

Scheduling module consists of taking decisions and also memory allocation such as tasks, jobs, or client over time. It must be defined by what is to be done and what are the equipments should be operated. The RFID tag build functions rely on periodic maintenance. The exhausting parts should be induced for creating some malfunctions. For normal maintenance the worn parts should be clearly known and replaced.[7] Operator should inform to the data base management and that module allocate the technical manpower and availability of parts in stores. Multiple schedule can be drawn over and scheduled to multiple maintenance team simultaneously. For each and every process appropriate maintenance schedule is needed in an effective manner. In this module, we

mainly focused the maintenance sequences. There are two methods to calculate the efficiency: one is the time allocation process to reduce the time and also and enhance the operation and maintenance. It also avoids the jobs and also process the activities such as daily, weekly, monthly basis as per the requirement in scheduling time.

In this method the mathematical program can arrange the sequences that are not solve the complex problems. In a single database this RFID operation and maintenance management software should be developed in a web-based system. Therefore at the same time, multiple users can enable to implement the job and thus this information is updated. Both top down and bottom up approach must be implemented to reduce the manpower. It also alter and reduce the cost and time in an effective manner. Extra technicians can divide the work for maintenance to implement their transitional positions.

(IV) APPLICATION

In this system, the industrial O&M team managers should identify the basic concepts of this RFID and web based system. The particular maintenance jobs should be carried out by two technicians at the test center. User name, password and authority were identified first in the system. It must automatically generated by the data management module. Technicians then enter all the details of the information and data with their corresponding RFID codes. When the technicians will have the entire form, the code will be generated and then pass on to the tag. Then the system will automatically display the message for further process. Once the data is confirmed, then the equipment and facility is available in the system. Finally the technicians can start to manipulate the data.

It will automatically arrange all the module in a sequential manner. Technicians insist to select the parts and fill in the maintenance records. The multiple technician mode was adopted when executing maintenance the

schedule can be arranged automatically and the RFID code was generated individually distributed to the relevant technicians with time and job details with web based information. This is useful to maintain the equipment sequentially. This system reduces the man power and time, hence cost of the maintenance will be dramatically reduced. For this case study, the technician can choose both the operation and maintenance direction. Incomplete works remained on the form for further scheduling. In real time applications the system can easily access the database and the client should have the proper data on to the form.

The recent practice that arranges maintenance sequences will be eliminated. Further it leads optimized effort. Therefore multiple users can easily maintain the work at the same time and it will also reduce the cost and man power.

V CONCLUSIONS

This paper presented the operation and maintenance of industry using RFID system. Data management module and scheduling module should be used. In this paper the client should implement the maintenance work and also it must be combined with portable RFID devices. It is also used in an industrial environment. Some important benefits used in this system are: (i) it must automatically identifying equipment and facility ID avoids intruders and non technical persons or non relevant technicians to the equipment and saves working time. (ii) It can easily modified the read/write devices (iii) they should be used for some proper conditions in a cleaning of dusts. (iv) it must cooperates with other information technologies like bio metric of bar code. This is also one of the most developed web-based RFID system and it also integrates RFID technology, database, IOT and scheduling theory in operation and maintenance of industry.

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