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INDUSTRIAL DATA ACQUISTION SYSTEM USING IOT

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Abstract - Now a days automation industry can minimize human efforts. Data acquisition is the major component of any automation system. The robustness of the automation system mainly depends on the accuracy and speed of the data acquired from Data Acquisition System (DAS). IOT (Internet of Things) which is suddenly increasing technology. IOT is used to collect information and exchange data. In this project, we are developing a system which will automatically monitor the industrial applications Beacause there are thousands of operated by labour which cannot be monitor timely and also there is lack of production quantity so to overcome this our proposed project is design to check each machine operated by Individual works and machine status. All this system is connected with online web server for data updatation. Owner can monitor every machine status and production through web application. This an effective scope of this automation process.

The owner can monitor all industrial data via control unit webservser. There are no. of servers and RFID are interface with microcontroller to get real time data. This data is given to Wi-Fi module ESP8266 which is communication to web server. The data will be updated timely by control unit so that owner can monitor all machines status and production through online web.

Key Words: **Internet of Things, Sensor, WIFI module, industrial automation**

1. INTRODUCTION:

There are various types of processes which are controlled by different machines in any kind of manufacturing industries. Considering a small industry to a large industry everywhere in production scenario, it is required to keep a track of entire production line up and the daily targets as well as failures for effective production monitoring. In companies which employ mass production daily, the record of daily production is done manually by using a production line counter. And about monitoring of CNC machines, most recording of machine performance, the operation, the number of jobs produced/worked upon are entirely drafted on paper. The reports generated are also manual which are either written on paper or generated on computer by manually entering the data. This data can be like machine running for 8 hours, manufacturing 10 pieces and failing to do 5 pieces. Likewise the report generation if done manually is a time taking job and highly erroneous. This also leads sometimes to data manipulation as well as misinterpretation. In such cases some automation of CNC machine performance becomes very important for effective monitoring of the entire production. This automation should include as many parameters of machine as possible to be continuously recorded mostly on some sort of local storage as well as a remote storage. This remote storage can act as effective monitoring tool for the supervisory persons. If the remote storage is on internet, the data monitoring can even be done sitting almost anywhere in the world. The proposed work aims at providing solution to above mentioned issue by providing a solution using microcontroller Computer in the most cost effective way. Here the approach used is very simple and can be adapted to any kind of industries by little or no modifications at all. The Raspberry pi with digital opt coupled inputs and active internet connection can read all the values given by the machine easily and log them on the cloud server effectively. The cloud server can be custom created or any freely available open cloud server can also be used.

Now a days Automated Systems are widely adapted for most modern industries. Data acquisition is the major component of any automation system. The robustness of the automation system mainly depends on the accuracy and speed of the data acquired from Data Acquisition System (DAS). This project mainly focuses on the design of high accurate multi-channel Data Acquisition System for real time automation applications. Data acquisition is used to acquire data from sensors and other sources under computer control and bring the data from different channels together to store and manipulate it.The Internet of things (IOT) is the network of physical devices, vehicles, and other embedded with electronics, software, sensors, actuators, and network connectivity which enable these objects to collect and exchange data. Each thing is uniquely identifiable through its embedded computing system but is able to interoperate within the existing Internet infrastructure. Experts estimate that the IOT will consist of about 30 billion objects by

2020.The IOT allows objects to be sensed or controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit in addition to reduced human intervention. When IOT is augmented with sensors and actuators, the technology becomes an instance of the more general class of cyber-physical systems, which also encompasses technologies such as smart grids, virtual power plants, smart homes, intelligent transportation and smart cities.

The proposed system will operate with IOT and embedded system handled by microcontroller. The owner can monitor all industrial data via control unit web server. There are no of servers and RFID are interface with microcontroller to get real time data. This data is given to Wi-Fi module ESP8266 which is communication to web server .The data will be updated timely by control unit so that owner can monitor all machines status and other sensor parameter through online web.

2 .LITERATURE SURVEY

B.Jyothe Kritica1, Senthil Kumar , Raja , Sivaprasath K "Novel Industrial Data Acquisition System Using IOT" Vol. 6, Issue 10, October 2017 [1]Internet of Things (IOT) is rapidly increasing technology. IOT is the network of physical objects or things embedded with electronic software, sensors, and network connectivity which enables these objects to collect and exchange data. In this paper, we are developings a system which will automatically monitor the industrial applications and generate Alerts/Alarms or take intelligent decisions using concept of IOT. Safety from leaking of raw gas and fire are the most important requirements of home and industrial security system for people. A traditional security system gives the signals in terms of alarm. A. Muni Sankar1 T. Devaraju, M. Vijaya Kumar, P. Sudharshan4 "DESIGN OF HIGH ACCURATE DATA ACQUISITION SYSTEM FOR REAL TIME MONITORING OF POWER GRID" Volume 7, Issue 7, July 2017 [2]Data Acquisition Systems have an important role in the market today as many leading companies like National Instruments have specialized in the making of such devices. This paper deals with building a low cost system with components easily obtained in the market..It's more like a walk through tutorial of how to construct an advanced system with these components. The DAQ system itself is made up of a central processor unit connected to GUIs, memories, sensors and other I/O devices. Sini-Kaisu Kinnunen1, Antti Ylä-Kujala1, Salla Marttonen-Arola1, Timo Kärri1, David Baglee2 "Internet of Things Technologies to Rationalize the Data Acquisition in Industrial Asset Management Internet of Things Technologies to Rationalize the Data Acquisition in Industrial Asset Management" [3].To design multi parameter monitoring system using Microcontroller that measures and controls various global parameters and the system comprises with wireless mode of communication. These process were managed using Raspberry Pi. The parameters that can be tracked are current, voltage, temperature, light intensity and fire and PIR alert Ashwini Deshpande Prajakta Pitale Sangita Sanap Industrial Automation using Internet of Things (IOT) Volume 5 Issue 2, February 2016[4]. The main aim is to design a Data Acquisition System the acquire the data with high accuracy and speed. This paper illustrates the technical approaches adopted to achieve the speed and accuracy in the system.

3. METHODOLOGY

The Fig.1 represents the flowchart of the developed system.

The system consists of 3 main stages:

Stage1: RFID is tracking

RFID is tracking technology. Radio frequency identification and detection is general term used for technologies that make use of radio waves. RFID through we take login of every machines. RFID consists of an antenna, transceiver and transponder. Antenna emits the radio signal to activate tag or code and to read as well as write information to it. Reader emits the radio waves, ranging from 1 to 100 inches. On the basis of radio frequency and power output while passing through electronic magnetic zone. RFID tag detects activation signals of readers.

When RFID tag comes in this range the reader detects it and send a unique code to tag serially. This code is received by microcontroller. Purpose of Radio frequency Identification and Detection system is to facilitate data transmission through the portable device known as tag that is read with the help of RFID reader; and process it as per the needs of an application. Information transmitted with the help of tag offers location or identification along with other specifics of product tagged purchase date, color, and price. Typical RFID tag includes microchip with radio antenna, mounted on substrate

Stage 2: Wi-Fi (Wireless Fidelity)

Wi-Fi (Wireless Fidelity) module which is connected to microcontroller which is in bidirectional arrows because it takes acknowledgement signal from microcontroller and

sends acknowledgement signal to microcontroller.The status of machine i.e. on/off and also production count which is updated on server using Wi-Fi module. When the user is login and object is detected at that time microcontroller sends the acknowledgement signal to Wi-Fi module with the help of TxD pin. And these acknowledgement signal is receives Wi-Fi module and also sends acknowledgement signal to microcontroller which will receives acknowledgement signal using RxD pin .The information of machine on/off and production count is updated on server.

Stage 3: IR sensor detects

IR transmitter contain which is LED and receiver contains photodiode. When the object is detected IR LED emits light and these light is reflected back from the object which will sense by photodiode and object is counted. An infrared sensor is an electronic device that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. This sensor is analogous to human's visionary senses, which can be used to detect obstacles and it is one of the common applications in real time.

These types of sensors measures only infrared radiation, rather than emitting it that is called as a passive IR sensor Usually in the infrared spectrum, all the objects radiate some form of thermal radiations. These types of radiations are invisible to our eyes, that can be detected by an infrared sensor.

System Flowchart :

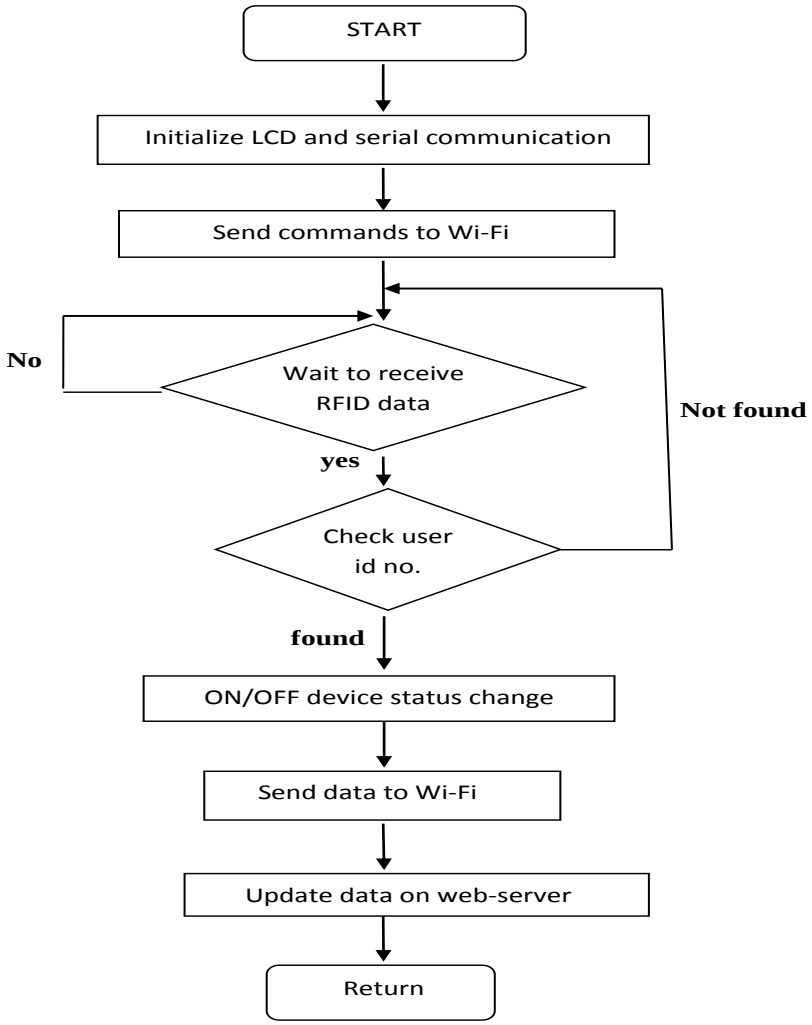


Fig.1 flowchart of the system

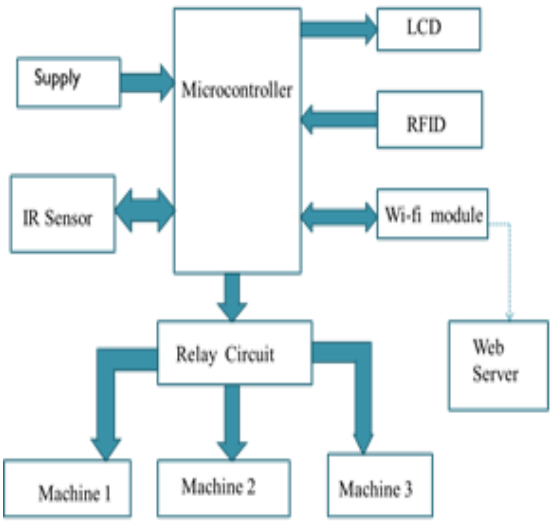
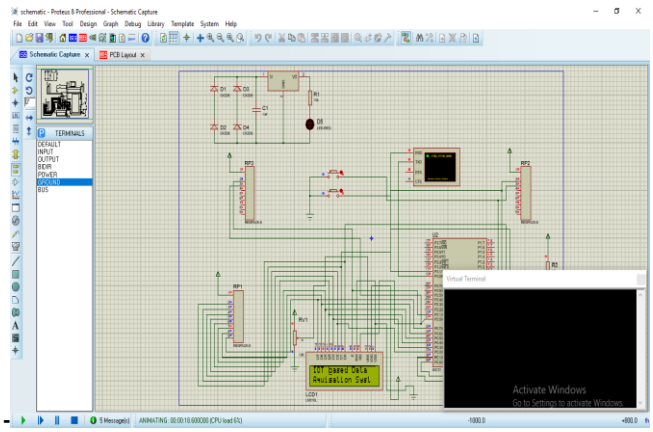


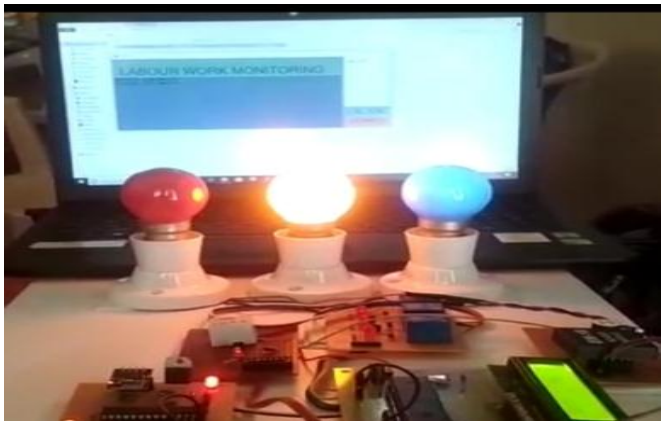
Fig a).Block diagram of proposed system

RESULT

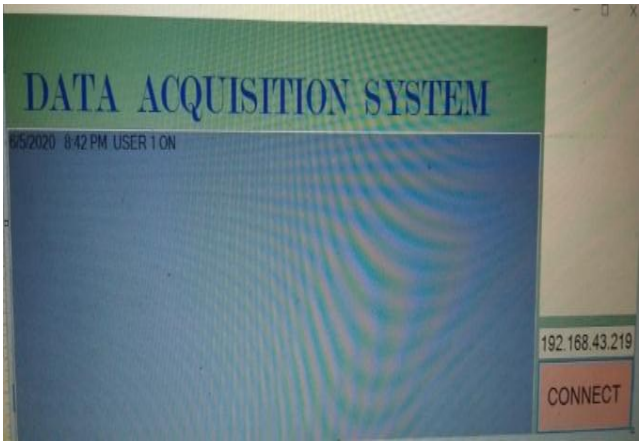
a) First Stage -



b) Second Stage -



c)Third Stage -



CONCLUSION

Now a days automation industry can minimize human efforts. There are no of automation problem can be solve by using embedded system and sensor interface. The data acquisition is nsecessary to get effective monitoring of real time data. There are thousands of operated by labour which cannot be monitor timely because of this there is lack of production quantity so to overcome this our proposed project is design to check each machine operated by Individual. All this system is connected with online webserver for data updatation. Owner can monitor every machine and labour status through web application. This an effective scope of this automation process.

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