LABOUR WORK MONITORING SYSTEM

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Abstract - *In past few years automation has reached to new revolution. Designing a system which easy owner of industry/foundry by sitting in front of a single monitor and monitor its whole system is very profitable and time saving. The title of project is "Labour work monitoring system". This system will record the operation time of the machine and also details of worker who is operation it. All the system is designed on basis of wed server, web module and microcontroller. This system is based on aurdino and web server designing.*

Key Words: **wi-fi module, RFID reader, IR sensor, aurdino, web server.**

1. INTRODUCTION

Industry has become the second largest employment generating sector in the world. Data interpretation system is an Automated Information System which gives better control over production monitoring and takes corrective steps immediately. It provides better control over working process of labours. Continuous performance of every single worker in a mill gives a high productivity. With its increasing growth and demand, textile industry faces many problems which have to be changed. One of the methods to solve those problems is the use of automation in the industries. Automation can be defined as the process of reducing human assistance in the process performed. In most sectors of manufacturing, automation is one of the major key to improvement and maintain working hours of labour. A process control or automation system is used to automatically control an industry. The Process Automation System uses a network to interconnect sensors, controllers, operator terminals and actuators.

During the past 15 years, the Internet revolution has redefined business to Consumer (B2C) industries such as media, retail and financial services.

In the next 10 years, the Internet of Things revolution will dramatically alter manufacturing, energy, agriculture, transportation and other industrial sectors of the economy which, together, account for nearly two-thirds of the global gross Domestic product (GDP). It will also fundamentally transform how people will work through new interaction between humans and machines.

1.1 LITERATURE SURVEY

Smart Data Monitoring System for Power Loom Using IOT paper published by SNS College of Technology, Coimbatore, Tamil Nadu, India. Which gave the basic concept of this project. According to this paper Textile industry has occupied the second position next to agriculture. Due to the increase in population growth, textile industry has been increasing a lot in today's world. Power loom is one of the key developments in the industrialization of weaving. It provides employment to over 35 million in the country. The use of man power in the industry can be reduced with the help of automation.[1,2]

Dubbed the Industrial Internet (of Things), this latest wave of technological change will bring unprecedented opportunities, along with new risks, to business and society. It will combine the global reach of the Internet with a new ability to directly control the physical world, including the machines, factories and infrastructure that define the modern landscape. However, like the Internet wasin the late 1990s, the Industrial Internet is currently in its early stages. Many important questions remain, including how it will impact existing industries, value chains, business models and workforces, and what actions business and government leaders need to take now to ensure long-term success.[3,4]

Internet of things platform for smart farming paper published by university of technology melborne gave concept of IOT technologies. An IoT-based platform that can automate the collection of environmental, soil, fertilisation, and irrigation data; automatically correlate such data and filter-out invalid data from the perspective of assessing crop performance; and compute crop forecasts and personalised crop recommendations for any particular farm.[5,6]
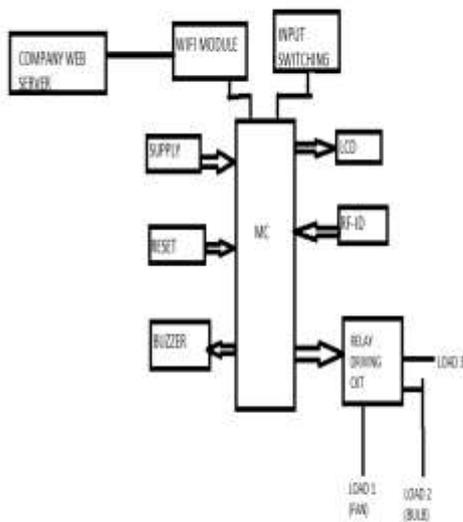

1.2 SYSTEM ARCHITECTURE

Fig .1

1.3 Hardware Specification:

a) ATmega328
b) ESP8255 WiFi module
c) RFID Reader
d) IR Sensor
e) LCD module
f) Relay board

a) ATmega328:

fig.2

ATMega328 is the ATMEL microcontroller on which Aurdino UNO is based. The Atmel 8-bit AVR RISC-based microcontroller combines 32 kB ISP flash memory with read-write capabilities, 1kB EEPROM, 2 kB SRAM, 23 general purpose I/O lines, 32 general purpose working registers, three flexible timer/counter with compare modes, internal and external interrupts, serial programmable USART, a byte-oriented 2-wire serial interface, SPI serial port, 6-channel 10 bit A/D converter.
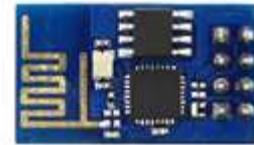
b) WIFI MODULE:

Fig .3

ESP8266 is an impressive, low cost WIFI module suitable for adding WIFI functionality to an existing microcontroller project via a UART serial connection. The module can even be reprogrammed to act as a standalone WIFI connected device just add power.

c) RFID Reader:-

fig.4

An RFID (Radio frequency Identification and detection) reader is a device which is used to communicate with RFID tags by receiving and transmitting signals. These signals use radio waves for wireless communication. RFID tag is applied to products, individuals or animals to identify and track them. The identification is done through a unique serial number.

d) IR Sensor:

fig.5

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 objects as well as detects the motion. These type of sensors measure only infrared radiation, rather than emitting it that is called as a passive IR sensor.

e)   LCD:-

fig.6

It is very important to keep a track of ting machhe working of almost all the automated devices, be it a washing machine, an autonomous robot or anything else. This is achieved by displaying their status on a small display module. LCD screen is such a display module and a 16x2 LCD module is very commonly used. These modules are replacing seven segments and other multi segment for these purpose.

f)   RELAY:-

Fig. 7

A relay is an electrical switch that uses an electromagnet to move the switch from the off to on position instead of a person moving the switch. It takes a relatively small amount of power to turn on a relay but the relay can control something that draws much more power.

1.4 Software Description:

The programming of this project topic consist of two sections first is Arduino based programming and second is web server design through HTML.

Arduino is a single-board microcontroller designed to make the process of using electronics in multidisciplinary projects more accessible. The hardware consists of a simple open-source hardware board designed around an 8-bit Atmel AVR microcontroller, though a new model has been designed around a 32-bit Atmel ARM. The software

consists of a standard programming language compiler and a boot loader that executes on the microcontroller.

The Arduino board is made up of an Atmel AVR microprocessor, a crystal or oscillator (a crude clock that sends time pulses at a specified frequency to enable it to operate at the correct speed) and a 5V voltage regulator.

To program the Arduino the Arduino IDE is used which is free software that enables programming in the language that the Arduino understands. In the case of the Arduino, the language is based on C/C++ and can even be extended through C++ libraries. The IDE enables writing a computer program, which is a set of step-by-step instructions that is then uploaded to the Arduino. Arduino will then carry out those instructions and interact with whatever it has been connected to it. In the Arduino world, programs are known as "sketches".
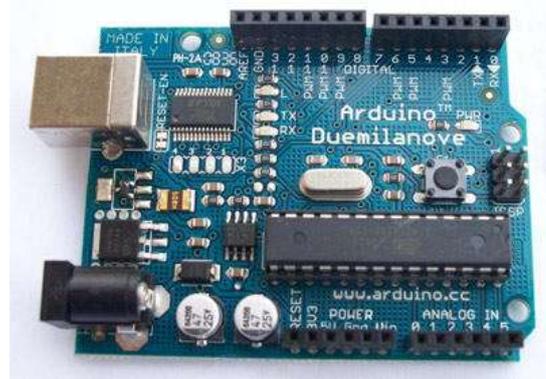

fig.8

2. WORKING:

Designing web server and RFID card is prior thing in this system. RFID card when hold by an employee in front of RFID reader will detect the data that which worker is operating on that particular machine. After that the monitoring of on time of machine will start recording up to the machine is turn off this will monitor on and off time of that machine. LCD display will be connected to device which will display all the data. Relay driving circuit is used to switching between the loads applied to the machine. i.e. multiple applications. IR sensors are use to detect the quantity of work completed by machine in particular time interval .this will help owner to identify automatically as well as manually amount of work completed. Through wifi the time period of machine operating can be known and through IR sensors quantity of product can be known. By analyasing both the data's idea of how much work can be completed in a day can be known this will help to increase the rate of production. All this data will be transmitted to the host computer of the company through wifi module. Web server will be required to intake all the data from the unit. Web page screen will display data like worker

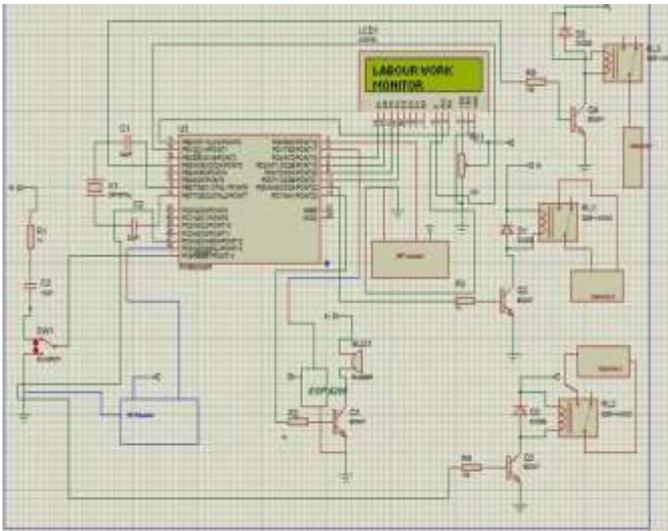identity, time slot, amount of work completed in single day.
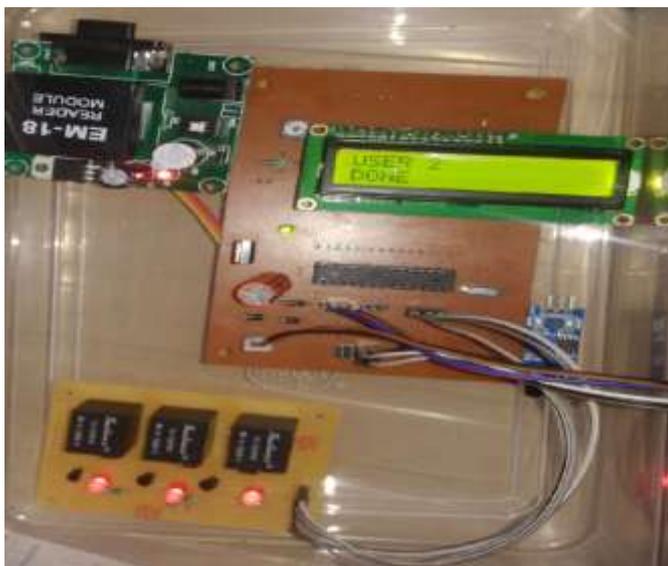

Fig .9

2.1 OUTPUT

Fig.10

Fig 10 shows the interfacing of RFID reader and display which shows the content fed to RFID card. LCD Display shows user information which is programmed in RFID card.

Fig.11

Relay board is also interfaced switch will act as a switch to machine on and off. Wi-fi board is also interfaced which store and transfer data to web server.

3. FUTURE SCOPE:

It can be implemented in any company which uses big machinery where rate of product is very prior thing. It is a real time applicable system.

4. CONCLUSION

In big industries where huge and multiple machines are used it is very difficult to monitor daily work manually. Hiring a person of supervising also will increase pay scale. Also it is not assuring of efficient work. This system also is applicable where workers attendance needs to monitor by changing in design. Productivity increases as analyzing time slot, quantity of products is possible through this system. Workers will me more caution. Leads to company development.

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