

IOT BASED REAL TIME MONITORING SYSTEM FOR INDUCTION HEATING MACHINE

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ABSTRACT

Nowadays, machine breakdown creates a significant loss in industrial sector, however it is very necessary to resolve the issues occurred in machines to repair the machines. To detect and prevent failures, it is very convenient to have good monitoring tool that is why you need a monitoring system. To analyze and detect the errors occurred in machines as well as in systems, monitoring systems are designed using hardware and networking assets. A competent monitoring system is able to monitor devices, infrastructures, applications, services, and even business processes.

It works as protective as well as alarming module when these incidents happen, they are detected faster, imagine that your business is an electronic store and the website is not working well or it does not very slowly. If monitoring systems wasn't been deployed, it will probably take hours before you realize the problem (probably due to a user's complaint), which could cause significant loss of money. A competent and efficient monitoring system will raise alarms to the errors immediately when they occurred, however it protects or shut down the system immediately to protect further massive damage in the systems.

This prototype is a data monitoring system which could be possible from remote location. This system keeps a track of machine parameters such as 3 phase voltage and current, heat sink and water temperatures. This system some have emergency interlocks to avoid the machine breakdown, however this always been recorded which helps to prepare for action plans. The use of Arduino mega, Ethernet shield, Current transformers, Temperature sensors and other various components are coupled together to accomplish this project. We hope we made enough competent system for data monitoring.

Keyword : - Temperature sensor, water flow sensor, current sensor, HFCT, voltage divider, Rectifier, html server, ESP8266, Arduino mega

1. Introduction

As part of these long term project, our mission is to develop system which can monitor overall machine parameters and send it to html server. This long term project required several student and industrial assistance to work collaborate. Some of the challenges and lessons learned during project are highlighted. Real time monitoring of special purpose machines based on internet of things is proposed and evaluated. This system keeps logs of parameters such as voltage, current, temperature as well as frequencies of the machine in which the system is installed. To monitor these lead-acid parameters, we have developed the data acquisition system by building an embedded system, i.e. dedicated hardware and software. The wireless local area networking used as the backbone

network. The information collected from all the connected battery clients in the system is analyzed in an asynchronous transmission control protocol/user datagram protocol based server program running on a proposal HTML server keeps the record of the transmitted parameters from machine which are displayed using IP address of the system. Further, data are also displayed on an Android mobile device and are stored in HTML server database. We have developed a real prototype to device an end product for our proposed system.

1.1 Existing System

Nowadays, it is very common for the companies to use technologies to a greater or lesser degree. In many cases, the good conditioning and operation of the equipment, networks and systems will be the key for the business to continue operating. In other side, the customer will be offered directly a technological service.

1.2 Need for development

- 1.It is very important to deploy the systems in remote are where human presence for the maintenance is very difficult.
- 2.System is very responsible where the breakdown of the machine costs a massive loss in mass productions.

2. Proposed System design

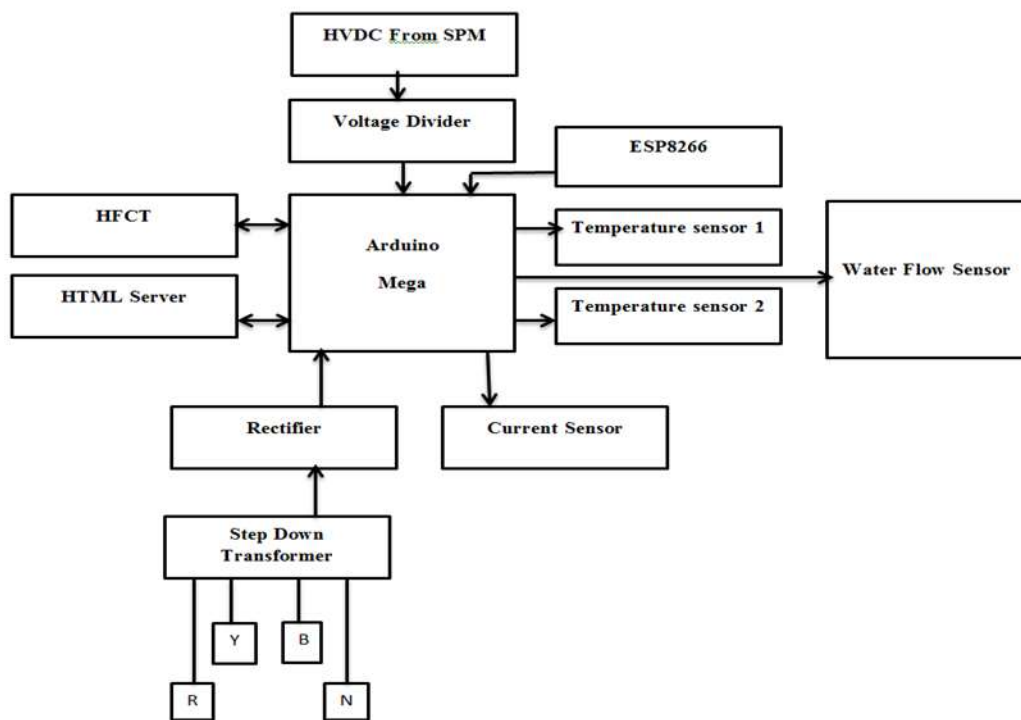


Fig 2.1: Block Diagram Of Prototype

2.1 Component Discription

- 2.1 ESP 8266:For wi-fi connectivity to prototype
- 2.2 Temperature Sensor:To sense temperature of heat sink .
- 2.3 Water flow sensor: To sense the presence of water flow.
- 2.4 Current sensor: To sense the input current.
- 2.5 HFCT: To senses high frequency output signal.
- 2.6 HTML Server: To Upload Data.
- 2.7 Rectifier: To convert the AC to DC.
- 2.8 Voltage Divider: To divide voltage from 600v to 5v..

3. Result

Developed system provides the following outputs on HTML server

- 1.Three phase input voltage
- 2.Input current.
- 3.High DC voltage
- 4.High AC voltage frequency.
- 5.Temperatures at significant points.
- 6.Water flow status.

4. Conclusion

Proposed system can be uses to analyze the system performance troubleshoot any failure condition and monitor the business matrices. Maintaining the database can be proved which is able to indicate the error signals as well as the real time parameters With our prototype, the data monitoring relatively easier than before and the costs is minimized. For the fair comparison of our protype, we have compared it with existing devices that clearly indicates the superiority of our project

5. Acknowledgement

We are thankful to HOD of E&TC department,sanghavi college of engineering, nashik for their valuable support also Mr. Chetan Jadhav for valuable input in paper creation

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