



# A REVIEW ON REAL TIME CONDITION MONITORING & CONTROL OF INDUCTION MOTORS BY USING IOT PLATFORM FOR AGRICULTURE SYSTEM

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**ABSTRACT:-**This proposed system represents Implementation of IOT (Internet Of Things) for monitoring and control of Induction Motor for applications as Agriculture field The aim of this project is to design and implementation of IOT innovation to screen, to control and analyze the state of Induction engines by recording key activity pointers. The proposed technique includes an IoT based stage to gather. what's more, measure the enlistment engine boundaries like temperature, speed, current, voltage and so forth and boundary of soil dampness, stickiness, temperature and so on The information gathered can be put away in the cloud stage and same can be gotten to through the web page. And also timely alerts will be received for any violation in desired limits of parameters under monitoring, So that immediate action can be taken to avoid unwanted downtime of the motor that saves time and more.

**Keywords:-**Internet of things (IOT),Microcontroller ,Induction Motor.

## I. INTRODUCTION

Most of the Indian population depends upon farming and one third of capital income of India is from agricultural products. Certain issues related to farmers are always impeding the development of country. Development of brilliant agribusiness strategies can resolve some these issues. The majority of the ranchers use Induction Motors in the fields and because of successive force cuts, the manual presence is needed to wind down on and the Motor. In the event that the rancher dwells far away from the area of the engine, particularly during evenings it will be hard for the rancher. The proposed frameworks have concocted an IOT based checking and control framework which can resolve this issue. Different potential deficiencies in Induction Motor are Electrical issues, Mechanical issues and Environmental related shortcomings. To accomplish dependable , adaptable, issue less and productive activity of the Induction Motor, nonstop checking of the above factors is fundamental in any field of utilization. IOT is the network of physical devices which connects and enables exchange of data through these devices. The main purpose of IOT is to reduce intervention and provide computer based

automation. The IOT system comprises of Sensors, actuators, GSM, Wifi etc. The analyzed data is accessed or monitored from a remote place using a web application developed.

## II. SYSTEM DEVELOPMENT

The proposed system is having two parts. First is monitoring of Industrial applications and second includes controlling them. The first part of monitoring is focused on Industrial applications that will be persistently checked through a bunch of sensors as displayed in engineering. A bunch of sensors is placed at industry that gathers the significant information from different mechanical applications to decide if they are functioning admirably under certain edge conditions. The detected information from these sensors is taken care of to the controlling gadget essentially a microcontroller. Presently Wi-Fi module is associated with Internet through Microcontroller. A modern Program has been running in the Microcontroller and in Wi-Fi Module which help this gadget connected to the Thing Speak and Thingier.io Servers via Internet. The Program in the Microcontroller will first On the Wi-Fi Module and help him to connect to internet. Then it will “ON” the 3 Phase Induction Motor via Contactor and Relay through Thingier.io Server by this the Motor get ON. Now microcontroller is ready to sense the data and also to send it to Thing Speak server. Thus it will sense the data first through the sensors one by one and send it to Server. At the Thing Speak server, data will be shown in Graphical manner where we can visualize all the parameter of IM motor in remote device.

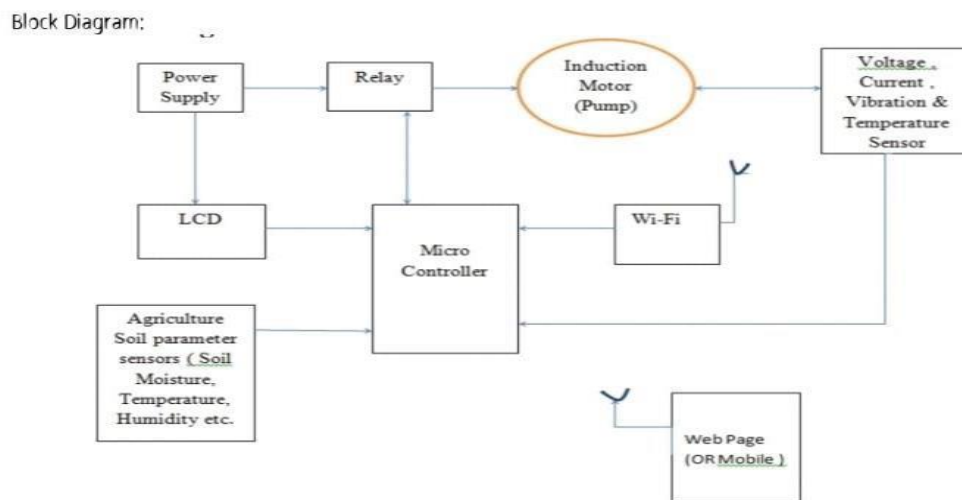


Fig 2.1 Block diagram of Proposed System

The proposed system has come up with a IOT based monitoring and control system for agriculture field specially for crops like tomato, The objective of condition monitoring of induction motor & farming soil is achieved by continuously recording the considered parameters using various sensors. A moisture, temperature, humidity sensor interfaced with MSP430 micro controller, is placed in the soil to sense the moisture content, humidity of system and temperature level of soil (and indirectly environment). All the sensors are connected to micro controller board which is to be installed at the motor and farm site. The Micro controller is programmed in such a way that the motor turns ON/OFF with the help of a Relay,



depending upon the value of the moisture content. The sensors will sense the parameters and are analyzed by the micro controller board according to the instruction coded. The data sensed by different sensors can be seen on the serial monitor. The collected data can be stored on the IoT platform using wi-fi module. Using serial communication between the micro controller and the node mcu board the data is initially transferred to Node mcu board which can be seen on the serial monitor. Then using wi-fi functionality the data available at node mcu is uploaded to Thing speak cloud platform. The objective of condition monitoring of induction motor & farming soil is achieved by continuously recording the considered parameters using various sensors. Accelerometer is used to record vibrations, LM 135 temperature sensors are used to record winding and bearing temperatures, ACS712 current sensor for current, and a Voltage sensing circuit to measure voltage.

A moisture, temperature, humidity sensor interfaced with MSP430 micro controller, is placed in the soil to sense the moisture content, humidity of system and temperature level of soil and indirectly environment). The Micro controller is programmed in such a way that the motor turns ON/OFF with the help of a Transfer, contingent on the worth of the dampness content. Every one of the sensors are associated with miniature regulator board which is to be introduced at the engine and homestead site. The sensors will detect the boundaries and are broke down by the miniature regulator board as indicated by the guidance coded. The information detected by various sensors can be seen on the chronic screen. The gathered information can be put away on the IoT stage utilizing wi-fi module. Utilizing sequential correspondence between the miniature regulator and the hub mcu board the information is at first moved to Node mcu board which can be seen on the chronic screen. Then, at that point utilizing wi-fi usefulness the information accessible at hub mcu is transferred to Thing talk cloud stage .IoT/cloud Platform: The focal piece of the Internet of things architecture is IoT platform which enables the connection between the real and virtual worlds hence providing communication between objects. The IoT platform used in this project is Thing speak which is an analytic platform service that allows to visualize and analyse live data available in the cloud and is operated by Math works. It produces visualizations for the data uploaded by the devices to the platform instantly.

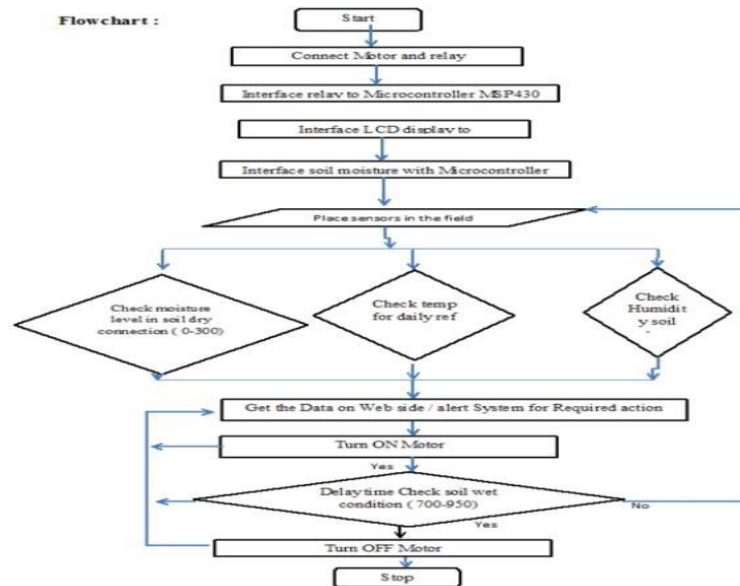


Fig 2.2 Flow chart of Proposed System

### III. OBJECTIVES AND SCOPES

The main objective is to increase the reliability of the motor application by using the recent technology advancement. This work ensures the continuous monitoring and easy control of high horse power induction motors used in variety of industrial fields. By ensuring the system reliability abnormal conditions are easily identified and easily rectified. As Induction machines are used nearly 90% in industries, the economic data monitoring is required. The productivity of industries can be increased by doing the preventive maintenance of induction machines. By taking preventive measures the failure of system and cost of high horse power motors is protected. • To monitor and control an induction motor based on internet of Things (IoT) for safe and economic data communication in industrial fields.

- To start or stop the induction machine to avoid system failures by Automatic and manual control methods.
- To monitor and control the motors used in Electric vehicles (to make EV vehicle as automatic one)

### IV. CONCLUSION

This proposed work “Real time Condition Monitoring & control of Induction Motors by using IOT platform for Agribusiness framework” has been executed for on off control, condition observing of Induction Motor in centered rural field generally in cultivating of tomato, pomegranate, drumstick tree. With the assistance of IOT ongoing estimation of various engine and soil boundaries it is conceivable which stays away from the regular expectation control. With early identification of issues in the engine, measure interferences, harm to the engine can be reduced to a greater extent which in turn makes the farming more reliable affiliations.



## REFERENCES

- [1] A.Ajitha,D.Swathi, J.Laxmi Prasanna, D.Shyamala, “IoT platform for Condition Monitoring of Industrial Motors” , Proceedings of the 2nd International Conference on Communication and Electronics Systems (ICCES 2017) IEEE Xplore Compliant -Part Number:CFP17AWO- ART, ISBN:978-1-5090- 5013-0 .
- [2] Sudharani Potturi, Dr. Rajashekar P. Mandi , “ Critical Survey on IOT Based Monitoring and Control of Induction Motor, 978-1-5386-9175- 5/18/\$31.00 ©2018 IEEE, 2018 IEEE 16th Student Conference on Research and Development (SCOREd), Bangi, Malaysia (26-2018).
- [3] Md Ashifuddin Mondal, Zeenat Rehena “IoT based Intelligent Agriculture field monitoring system” , 978-1-5386-1779-9/18/\$31.00 ©2018 IEEE, 2018 IEEE 8th International Conference cloud computing.
- [4] V.S. D Rekha, Dr. K.Srinivasa Ravi, “Induction Motor Condition Monitoring and Controlling Based on IoT” , International Journal of Electronics, Electrical and Computational System, vol 6, Issue 9, pp. 74-89, September 2015.
- [5] M.Saikrishna, G.Vijaykiran,"IOT Based Home Electrical Appliances Control Using Node MCU," International Journal of Scientific Engineering and Technology Research, ISSN 2319-8885, Vol.06, Issue.04, pp.0783-0788, February 2017.
- [6] P. Sindhura, P. Swathi, S. Ejas Basha, K. Anil Kumar “Agriculture Field Motor Control System Based on IOT” , International Journal for Research in Applied Science & Engineering Technology (IJRASET) , Volume 5 Issue III, March 2017 IC Value: 45.98 ISSN: 2321-9653,