Wind Power Management using IoT and Wi-Fi

V. Jayalakshmi, K. Sakthivel, S. Sherine

Abstract*: As the call for wind power keeps on creating at exponential rates, decreasing activity and redesign costs and improving unwavering quality have come to be zenith needs in wind Mill(WM) upkeep methods. additionally to the improvement of more prominent very created WM plans expected to improve accessibility, the utilization of dependable and cost compelling circumstance observing (CM) procedures offers a green strategy to accomplish this goal.among those exceptional systems temperature,oil degree following and voltage detecting is a principle job. The center objectives of this proposed remote wellness checking frameworks are to find the common wellness circumstance of the framework, to avert debacles brought about by mechanical and electrical flaws, to anticipate the seriousness phase of issue, and to assess the valuable existence of the gadget utilizing net. [19],[20],[21]

Keywords* : *ATmega328 ,Wifi , Temperature sensor , Oil level sensor , Oil condition sensor , Voltage sensor , Vibration sensor.

I. INTRODUCTION

The internet of things (IoT) is the community of bodily gadgets or matters embedded with electronics, software, sensors and network connectivity which permits those gadgets to accumulate and exchange statistics. The internet of factors permits gadgets to be sensed and managed remotely throughout existing network infrastructure, developing possibilities for more direct integration between the physical global and pc-based systems, and resulting in improved efficiency, accuracy and monetary benefit. except the pleothra of recent application regions of internet related automation to increase into , IoT is predicted to generate massive quantity of records from various locatiob i.e. aggegrated right away,thereby growing the need to better index, shop and procedure such information. [14],[16], [18]

II. WIND POWER MANAGEMENT USING IOT AND WIFI

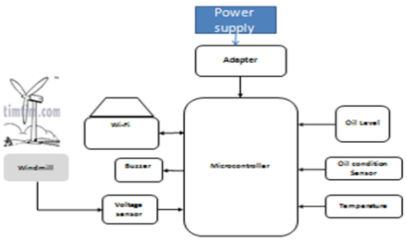

Figure 1 Wind power management system

It contains ATmega 328 microcontroller, oil level sensor which detects the level of oil present over there, oil condition sensor which detects the thickness of the oil, temperature sensor which detects the temperature of the windmill, voltage sensor which detects the voltage level ,wi-fi to connects and monitor the windmill and also buzzer which beeps whenever fault occurs. So the main function of this system is to detect fault by using IoT and wifi which reduces man power.

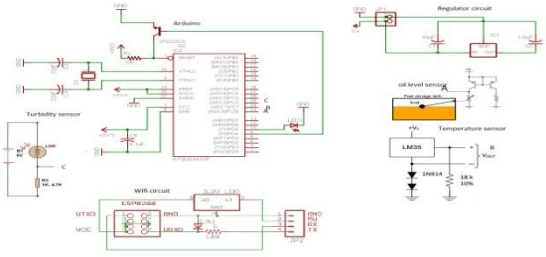

Figure 2 Circuit diagram of wind power management system

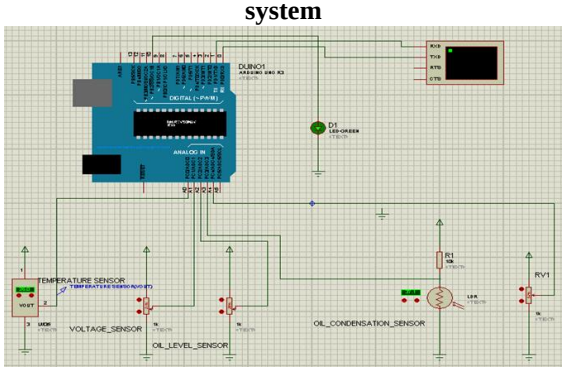

Figure 3 Simulation circuit of wind power management system

In our project we develop a smart network by using Wi-Fi and internet. The purpose of networking is to know the overall power available and fully automated windmill monitoring ,to prevent failures caused by mechanical and Electrical faults and to predict the severity level of fault. [13], [15] ,[17]

First we will give 5v power supply to the arduino kit then we will connect temperature sensor to A0 , voltage sensor at A1 , oil level sensor at A2 , oil condition at A3, vibration sensor to A4, ESP8266 Wifi at 8th&9th pin and buzzer at 11th& 12th pin. [8],[10] ,[12]

We will see the output through wifi on internet. On thingspeak website we can check the condition of each parameters at time to time.

After giving proper connections,we will upload the program in the arduino kit which contain the API key , range of each parameters are also declared

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in the program. So whenever any fault occurs in the windmill then the buzzer beeps**. [7],[9] ,[11]**

III. RESULT AND DISCUSSION

A. *TEMPERATURE SENSOR*

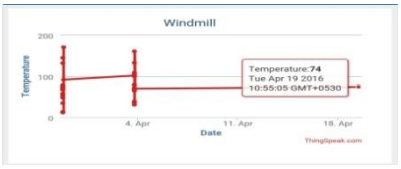

Figure 4 temperature sensor

The Figure 4 shows the graph for temperature sensor. It is the output of the temperature sensor which varies time to time according to the temperature it get.It will show values in the form of ADC[2],[4],[6]

B. *OIL CONDITION SENSOR*

Figure 5 Oil condition sensor

The Figure 5 shows the graph for oil condition sensor. It is the output of the oil condition sensor which varies time to time whenever the oil gets contaminated.It will show values in the form of ADC.

C. *OIL LEVEL SENSOR*

Figure 6 Oil level sensor

The Figure 6 shows the graph for oil level sensor. It is the output of the oil level sensor which varies time to time when the level of the oil is varied.It will show values in the form of ADC.

D. *VOLTAGE SENSOR*

Figure 7 voltage sensor

The Figure 7 shows the graph for voltage sensor. It is the output of the voltage sensor which varies time to time when the voltage gets fluctuated.It will show values in the form of ADC.

E. *VIBRATION SENSOR*

Figure 8 Vibration sensor

The Figure 8 shows the graph for vibration sensor. It is the output of the vibration sensor which varies time to time when any kind of vibration occurs in the windmill.It will show values in the form of ADC. [1],[3],[5]

IV. CONCLUSION

The mechanical and electric failure is the maximum serious trouble faced within the wind mills. greater touchy areas like gears and turbines are extra vulnerable to faults that are the foremost reasons to have an effect on the production of wind turbine. The device fitness monitoring that is proposed here is greater crucial aspect that to mentioned.

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