

# Online Analysis And Fault Finding System For Distribution Transformer By Using Iot

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**Abstract-** This project is highlighted for faults of distribution transformer by monitoring it by using different sensors voltage sensors current sensors temperature sensors. This can be done with help of internet of things (IOT).which connected to the the microcontroller they send information to ADC from sensors. They are actually at distribution transformer side. They watch the parameters of transformers and if any abnormal activity seen they alert the users before any bigger faults and helps to protect the system.

**Keywords-** Internet of Things (IOT), Microcontrollers, Sensors, Transformer

## I. INTRODUCTION

The distribution transformers used for distributes power to household, industries to all users and it has main role in power system if it fails it can't be acceptable. There might be problem of overloading,short circuit faults on it may because it fails to work and it's not acceptable. So we have to design a system for reliability as well as continuity of power flow which can be done with help of continuous monitoring of system which can done with help of this IOT based system.

## II. BLOCK DIAGRAM AND CIRCUIT DIAGRAM

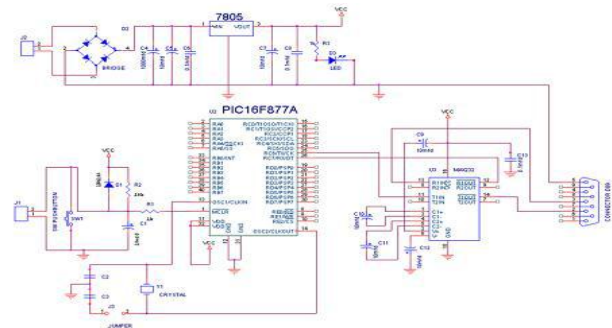
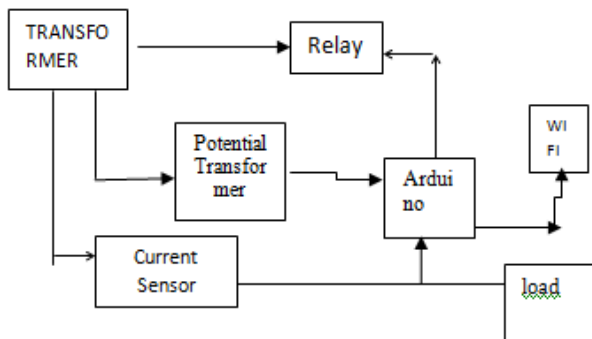


FIG.2 Circuit diagram

## III. COMPONENTS USED

### 3.1 TRANSFORMER (1 KVA)-

It is an distribution transformer (3.3kv/230 V). A transformer is a static device transfer's electric energy. The rating of distribution transformer 3.3kv/230V.

### 3.2 RELAY (5V)-

It is an electromechanical device which used for protection purposes. The relay is used about 5v. Due to its protective quality its used in many industries and households. When it energizes in some cases it might open or close he contacts.

### 3.3 CURRENT TRANSFORMER-

To avoid contact with direct to the highvoltage lines we have used current transformer for relays, ammeters.

### 3.4 Voltage Sensor-

In voltage sensor we use an voltage divider circuit to measure the voltage parameter.

### 3.4.1 RECTIFIER

For conversion Of AC into DC we have used rectifier

### 3.4.2 FILTER

Filter used for to block DC and stops the unnecessary AC signal.

### 3.4.3 VOLTAGE REGULATOR

It stops or maintain voltage fluctuation .And also tries to maintain output voltages around 5v.. It uses fold back technique.

### 3.4.4 NOISE FILTER

In it Low-Pass filter and capacitor are present. The Low-Pass filter is bypasses the high frequency signal and allows low frequency signal. I t used to remove unwanted signal like harmonics.

,The controller selected for this is PIC16F877A .

### 3.5 POTENTIAL TRANSFORMERS

The potential transformer has same principle which is been used by power transformer. But difference is that of the ratings 100 to 500 volt amperes (VA).

### 3.6 ARDUINO

Arduino Controller is used which accepts all the value which is measured by individual sensors are given at the input port which are port A2,A6,A1.In it A2is used as input of temperature parameter, A1 is used as input of voltage parameter, A6 is used as input of current parameter. The codes for measurement of all the parameter are programmed on in it. Then all output are given to Wi-Fi module. For Wi-Fi module Port P11 and P12 are program to transmit and receive data

### 3.7 Wi-Fi Module

ESP8266 Wi-Fi module is used to send all the data which is given by Arduino as a input to it.This captured data is send to on to the mobile phone or computer to watch the parameters of transformer. The web page is form of HTML page.

### 3.8 Temperature Sensor

LM35 is a temperature sensor used to measure the temperature of devices. It measure the temperature as voltage present during that interval.

### 3.9 Current sensors

In this project we use the current sensor ACS712. Input supply for current sensor is 5V. The current sensor measures the current in transformer which is given to the Arduino at Port A6 which is program to determine the current. Its convert analog to digital reading using ADC. Which is than feed to ESP8266.

### 3.10 IR SENSORS

Infrared sensors electronic device. IR sensors can sense heat as well as detect motion. The emitter is simply an IR LED and the detector is simply an IR photodiode sensitive to IR light of the same wavelength. To check oil quality we have used the IR sensors.

## IV. FLOWCHART

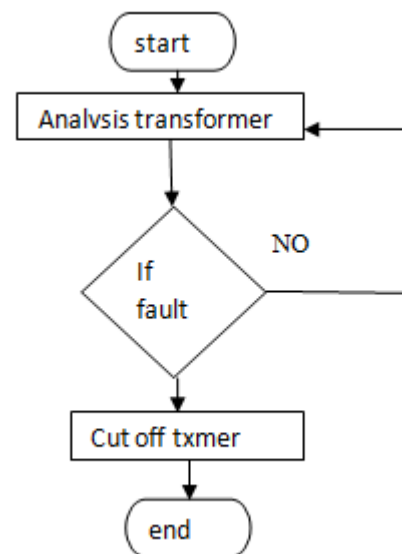
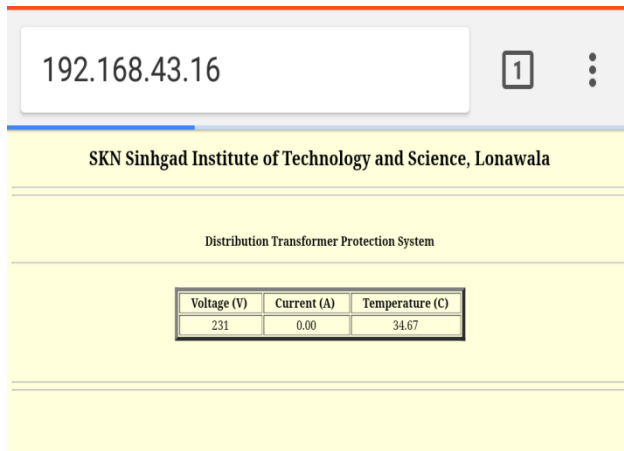


FIG.3 FLOWCHART OF FAULT FINDING DISTRIBUTION TRANSFORMER

## V. PERFORMANCE ANALYSIS

According to reference paper we have concluded that, wifi, PIC was used for the purpose of parameter of transformer and controller was used respectively. In our project we replaced ZIGBEE by Wi-Fi modules which have overcome the issues like with the meter range, multiple user access through Wi-Fi module. By sensing individual parameter, we can determine the performance of the transformer and we can avoid failure. Following are some test results.



Voltage (V)	Current (A)	Temperature (C)
231	0.00	34.67

Output results

## VI. CONCLUSION

The IOT based transformer cooling is better method to controlling the transformer parameter. It is a reliable method to control distribution transformers. we can remotely control the parameters .we can monitor the parameters, so if any abnormal condition occurs we will get to know it before, so we get idea of preventive maintains just before the faults.

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