

A REVIEW ON PROTECTION OF TRANSFORMER BY USING GSM

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Abstract- Power transformers are one of the most important electrical equipment that is used in power transmission system as they perform the function of transforming the voltage levels. Hence maintenance of power transformer is mandatory; as they are located at different geographical areas periodical monitoring is not possible all the time due to insufficient man power. Due to this reason transformer failure may occur which leads to unexpected power shutdown. To overcome this shutdown due to transformer failure we proposed a system for monitoring the transformer. The aim of our project is to monitor and protect oil level, temperature and voltage and current level of transformer without involving man power. If any critical condition occurs the SMS will be send to the control unit. This monitoring system consist of 89C52 micro controller, LM35 temperature sensor, level sensor, CT PT voltage and current sensor, GSM and LCD. The proposed hardware results are obtained using miniature model of transformer. Result obtained in the proposed system with suitable modification can be applied to the real time system.

Index Terms- GSM, Power Transformer,

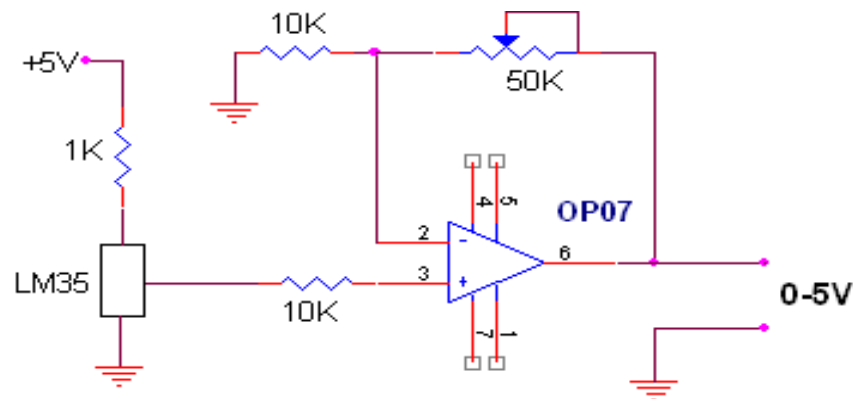
I. INTRODUCTION

A power transformer consists of a set of winding around magnetic cores. The winding are insulated from each other's & the cores. Operational stresses can caused failures of the transformers winding, insulations & cores. The power transformer windings & magnetic core are subjects to a numbers of different for during operations.

1. Expansions & contraction cause by thermal cycling
2. Vibrations cause by flux in the core changing directions.
3. Localized heating caused by eddy current sin part of the winding, Induces by magnetic flux
4. Impact forces cause by faults current.
5. Thermal heating cause by over loading.

These operating limit only consider the thermal effect of transformers over load. Later the capability Limits was change to include the mechanical effect of higher faults current through the transformers. Power Transformers fault produces physical force that causes insulation wear. These effects are cumulative & should be considered over the life of the transformers. The following discussions high light on different capability Limit of transformers.

II. TRANSFORMER TEMP. MEASUREMENT SIGNAL COND.



TRANSFORMER TEMP. MEASUREMENT SIGNAL COND. (Temp span 0-200 C)

III. STUDIES AND ANALYSIS

3.1 GSM Modem

A GSM modem is a device which can be either a mobile phone or a modem device which can be used to make a computer or any other processor communicate over a network. A GSM modem requires a SIM card to be operated and operates over a network range subscribed by the network operator. It can be connected to a computer through serial, USB or Bluetooth connection.

A GSM modem can also be a standard GSM mobile phone with the appropriate cable and software driver to connect to a serial port or USB port on your computer. GSM modem is usually preferable to a GSM mobile phone. The GSM modem has wide range of applications in transaction terminals, supply chain management, security applications, weather stations and GPRS mode remote data logging.

In this project GSM module communicates with the control unit or authority and informs about the calamity by sending a text message includes details about the calamity whether earthquakes or damaged bridges. The instructions for sending the sms are received from the micro controller.



IV. OPERATION

When 230 single phase AC supply ,50 Hz is given to the 1kv transformer this is given to the isolation transformer which is we can get required voltage for the next operation in the case of abnormal condition whenever any fault occur on the secondary transformer like overloading (over voltage , over current , temperature) this fault sense by the relay it gives comment to circuit breaker and that time contact of the circuit breaker will separate and buzzer will be on and this give signal to the microcontroller will be initialize by the microcontroller and gsm model will send the message to the operator and operator will know the exactly fault where is occur and that fault recovered by the operator.

ADVANTAGES

- Fast operation
- Unskilled person are work
- Easy to handle

APPLICATION

- Use in substation
- In industry

FEATURES

- It measure power factor
- It measure oil level
- It check oil quality

V. CONCLUSION

The GSM based monitoring of a distributions transformers is quite useful as compared to the manual monitoring & also it is reliable as it is not possible to monitor always oil level, oil temperature rise, ambient temperature rise and load current manually. After receiving a message of any abnormalities we can take action immediately to prevent any failure of a distribution transformer. In distribution network there are many distributions transformer & associating each transformers with such a system, we can easily figure out that which transformers is undergoing fault from message sent to mobile. We need not have to check all transformer & corresponding phase current & voltage & thus we can recover system in less time. The time for receiving message may vary due to public GSM network traffic but still then it is effective than manual monitoring.

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