

Fault Detection in Transformer Using GSM Technology

Mr.T Rajkumar
Assistant Professor
ECE Department
SRM Institute of Science and Technology
Chennai,Tamil Nadu,India
kaviraj27@gmail.com

K.Ravi Teja
ECE Department
SRM Institute of Science and Technology
Chennai,Tamil Nadu,India
raviteja199873@gmail.com

A.V.B Sumanth
ECE Department
SRM Institute of Science and Technology
Chennai,Tamil Nadu,India
ssumanthanapu@gmail.com

V.Sri Harsha
ECE Department
SRM Institute of Science and Technology
Chennai,Tamil Nadu,India
sriharshavelampati@gmail.com

M.Sasank Reddy
ECE Department
SRM Institute of Science and Technology
Chennai,Tamil Nadu,India
sasankreddy60@gmail.com

ABSTRACT :

These transmission organizations basically depends on circuit markers (FCIs) so as to help the situating of explicit spots inside their transmission lines where force flaw have been happened. Right now, A new GSM and IoT based shortcoming identification,area framework is utilized to demonstrate so that it will find the specific location where the issue was happened. It will reduce the reaction time to specialized group to repair these issues and subsequently helps to spare transformers from harm and crash.The following frameworks utilizes the present transformers, voltage transformer, PIC 16F877A Microcontroller, ESP8266 module, and GSM modem.The framework naturally discovers blames, examinations and orders these deficiencies and afterward, ascertains the flaw good ways from the technical department utilizing impedance-based calculation strategy. Unquestionably the flaw data is transmitted to the technical department. Taking everything into account, the time required to find a deficiency is decreased, as the framework naturally and precisely gives exact flaw area data.

1. INTRODUCTION

Numerous electric force transmitting organizations are confronting these issues, for example, over burden, over temperature, over excitation, oil level flaw etc., so as to locate the specific area of the spots inside the transmission lines where the issue was happened. However there are numerous challenges for finding the specific spot. The specialized division and patrol department needs to genuinely deal with this to review the gadgets for longer time to discover broken areas of their transmission lines. Right now, A Smart GSM and IoT was actualizing to locate the specific spot where the issue happened. It takes short time to address the flaws, and spare the transformers from harms and crash.

A. RESEARCH OBJECTIVES

- To shorten the response time in order to free transformers from break occurs on large amount of power transmitted.

- To maintain better stability, accuracy and safety for the system in the country for economic development.
- To design a proper impedance based and immediate fault recognition and proper location to the transmitting lines.

B. SCOPE OF WORK

The following effort on this system is to give a proficient framework to identify and find the point to point faults and point to ground faults which can ready to give data directly to the technical department and the specific area where issue was happened.

2. LITERATURE SURVEY

TITLE: Analysis of integral method for fault detection in transformers.

ABSTRACT:

The results acquired from the fundamental method in transformer protection against interior faults currents are presented. The problems of this factors on various waveforms is taken under consider and the circumstances to predict the magnetizing inflow current and a fault system are digitally implemented.

DATE PUBLISHED: Nov 2019

TITLE: Network planning using GSM and GSM based standards

ABSTRACT:

The personal communication networks (PCN) systems licensed by the government are to be based on the ETSI/GSM standard with a minimum set of changes and the architectures of PCN and GSM defined elements are therefore similar if not identical. The PCN variant of GSM standards are known as DCS1800 recommendations. The paper focuses exclusively on the planning of those networks that use DCS1800 specifications.

DATE PUBLISHED: Jan 2017

3. PROPOSED WORK

Here the framework was expected naturally distinguish shortcomings when it happen, break down the fault to decide the sort and afterwards send the data on the deficiency mode and issue area to the technical department by means of GSM. Here the device area is known by the help of

SIM present inside the modem which had a one of a kind distinguishing proof and thus is utilized as the gadget's location. The framework detects, examines and transmits. It is completely done with the help of microcontroller which examines and proceed to give advanced information to the I/O gadgets for the framework to perform the function. By programming the entire work, microcontrollers are made to operate these activities simultaneously.

ADVANTAGES:

High accuracy, Reduce manpower, Safety and easy accessible.

ARCHITECTURE:

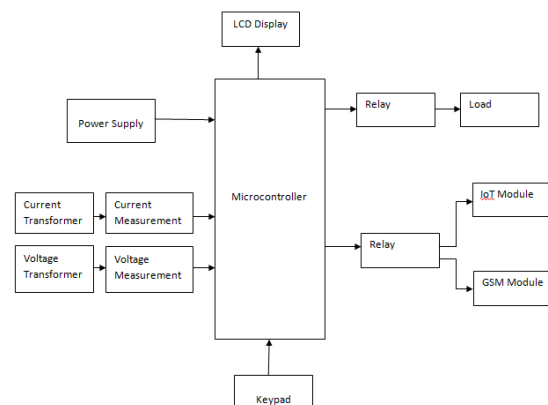


Fig1: Block diagram

4. SYSTEM REQUIREMENTS

HARDWARE REQUIREMENTS:

- Arduino
- Lcd display
- Power supply
- Current sensor
- Voltage Sensor
- GSM module
- Load
- Relay

SOFTWARE REQUIREMENTS:

- Arduino IDE

5. MODULE DESCRIPTION

ARDUINO :It works as a open-source prototyping stage utilized for making of hardware operations. It can compute both physically programmed circuit board and IDE that can fasten within the demand of your PC.

ESP8266 : It is an Wi-Fi enabled system which can access the chip (SoC) module and increases the development by a system called Espressif, and commonly taking as a primary device for the improvement of IoT embedded applications.

GSM MODULE : This module is a chip so that we can utilize this to form a connection between the mobile and GSM system.

RELAY: This module are used as switches where it can open and close the circuits electromechanically or electronically.

LCD :Liquid Crystal Display is a sort of level board shows which utilizes liquid crystals in its essential type of activity,as they can be regularly found in cell phones, TVs, PC screens and instrument boards.

KEYPAD : The keypad is an area found on most PC consoles and permits a person to effortlessly enter numeric qualities into a PC. For instance, the keypad is regularly utilized that who manages numbers much of the time or needs to perform counts with a product adding machine.

Arduino IDE : This is an open source software and used for both writing and compiling.

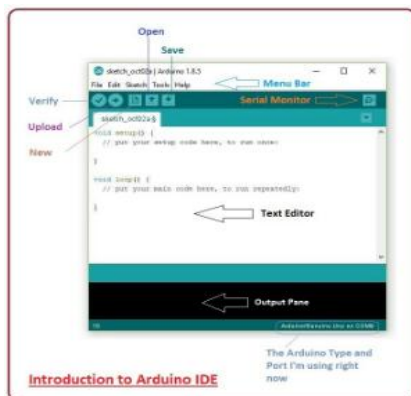


Fig 2 : Arduino IDE

This Arduino programming is too simple for code arrangement.It can access for working softwares like MAC,Windows,Linux which can compile on the Java platform with inbuilt functions and takes a crucial part for debugging and compiling in the system.

6. MODE OF OPERATION

The entire gadget consists of 3 significant segments, Instrument transformer (CT and VT), GSM modem and microcontroller. Primarily the CT and VT are associated with the line sense and relates current and voltage estimations for the module,The output to the ADC of the microcontroller is noted which can changes the signal into digital form so that we should handle by the CPU of the microcontroller.

Here,Gadget is set into limit for the specific regions in transmission system and the place of the issue is determined relatively with situation of the gadget.

Information from the gadget is conveyed right to the Base Transceiver Station which can acts like the connecting point for the gadgets. These transceiver stations are implemented in key areas to accomplish completely.

They are implemented in many areas which can cover a specific range since the system is implemented. They are implemented in different BTSs to cover large areas so we can place in any isolation. Next the information proceeds to Base Station Controller and deals with any assets of at least one BTS and works as connection between the BTS and the exchanging framework. The information at that point will send to the exchanging system that guides the information sign to correct output location called technical department.

At last,the data will sent to the technical department and the another modem gets the data,and sends to nearby server displays on the screen, with the goal that the operator can be able to take a right move. The following figure shows the procedure from control room.

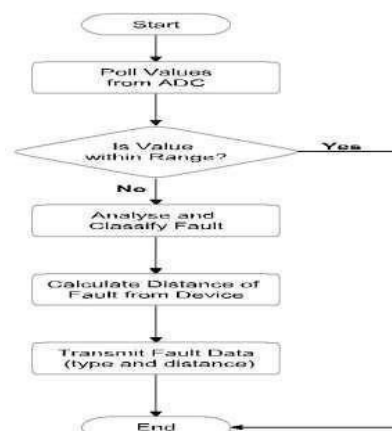


Fig 3 : Flowchart of Field Device

7. CONCLUSION

We proposed a middleware architecture which gives a start to finish security answer for patrons who transfer detecting information. This methodology permits a start to finish encryption of information to make sure about information in travel. In the proposed middleware arrangement all IoT framework limitations are thought about and the rest is utilized for correspondence and information trade. It effectively helps IoT advancement by uncovering and giving an interface to the client to enlist their IoT devices and then safely accessing information gathered by the device.

REFERENCES

1. N.Perera And A.Rajapakse, "Recognition Of Fault Transients Using A Probabilistic Neural-network Classifier" IEEE Trans.Power Del., Vol.26,no 1, pp410-419, Jan.2011.
2. M.Kezunovic , "Smart Fault Location For Smart Grids", IEEE Trans.Smart Grid, Vol.2, No.1, pp.11- 22,mar.2011.
3. Pmu Based Fault Location For Double Circuit Transmission Lines In Modal Domain by snehalv,unde and sanjay s, dambhare 2016.
4. A.Abdulla, "A Wavelet Entropy Approach For Detecting Lightning Faults On Transmission Lines" In Proc.2016 IEEE Power Eng.Soc.Transm.Distrib.Conf.Expo.,May 2016 ,pp.1-5.
5. Fault Detection In Direct Current Transmission Lines Using Discrete Fourier Transform From Signal Terminal Current Signals by shobhaagarwal, aleenaswetapadma,chinmoypanigrahi and abhijit dasgupta,2017.
6. Anandakumar and K. Umamaheswari, "Supervised machine learning techniques in cognitive radio networks during cooperative spectrum handovers," Cluster Computing, vol. 20, no. 2, pp. 1505–1515, Mar. 2017.
7. Roshini and H. Anandakumar, "Hierarchical cost effective leach for heterogeneous wireless sensor networks," 2015 International Conference on Advanced Computing and Communication Systems,Jan.2015

