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Automatic Fault Detection System with IOT Based

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ABSTRACT

The fault location is an important part for any transmission line and distribution system. The location of fault is difficult task sometimes it takes lot of times needed for the exact location of the fault. The exact fault location can help the service man to overcome the fault free system in very less time. In this paper we are able to detect the fault range in easy way using the ESP module and the message is transferred on the mobile. This project is cost effective and reliable. Fast fault detection provide the protection of equipment before any significant damage.

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1. INTRODUCTION

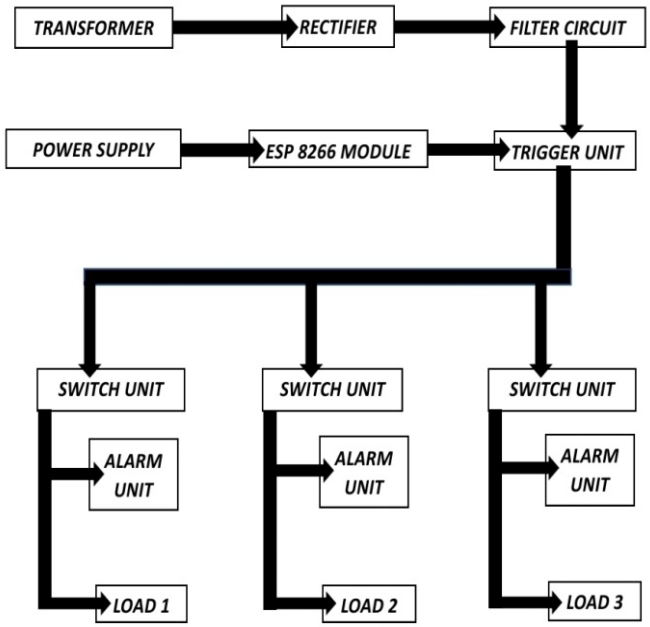
Electricity power is transferred through transmission lines. These transmission lines is so long while carrying power, fault occurring is natural. Prevention of fault is required, so we need to search the fault location as soon as shortest possible time This research paper simulates Numerical with the heip of over current relay that detects faults using IOT based system. These relays are more reliable and have faster response than the normal electro mechanical relays and Static relays. They have increased or decreased range of setting, high accuracy, reduced size, and effective costs, along with many other advantages.So In this paper we are using IoT based system for the protection of fault in the transmission line or distribution line, and monitoring of line.

2. METHODOLOGY

In this hardware setup, we have applied a 9-0-9 transformer to step down the Ac voltage from the source. After this, we have applied a rectifier made up of diode to change the supply from Ac to Dc. A capacitor filter is also applied to clean the unhealthy Ac part in that Dc waveform (Ripple). This Dc supply is used to drive the relays as well as the wires and other circuitory component. This way supply is provided to all the loads and the relay and to all the ESP module drives. 2 ESP -8266 are applied in this hardware to calculate the distance of fault from the location of source. This ESP's are wifi enabled and to maximum 3 device can be connected with these ESP's.

Now coming back to the hardware, 3 loads are connected with 3 alarms, each load has a separate alarm fitted with them, we will be doing an artificial fault by pressing the switches. Each switch is derived by a relay, If operation fails, a red signal or that section bulb will be off, and that alaram will run and red signal is displayed by the bulb connected to that particular load. This opration can be repeated by other loads also. In ESP-8266, there is oe analog pin and around 10 digital pins, but maximum 1 digital pin can only be used to calculate the distance. If more than one digital pin is used, the Ic will not work because of overloading. This ESP's can be used to calculate the distance in units. We have divided section and

distance of that particular section will be displayed on the device connected to the same network. A program is enabled in tht ESP-8266 module, the program is fed into the ESP by the data cable attached with the laptop or something, the program will be shared in the program section of the report. This way ESP will work and distance will be displayed in the "Blynk" app avialble on the playstore.



BLOCK DIAGRAM

3. HARDWARE

This scheme is very much a embedded system so hardware is very important part of this system. The most important hardware is such as:

1. ESP MODULE
2. TRANSFORMER
3. ZERO PCB
4. RECTIFIER
5. TRANSISTOR

4. LITERATURE

Literature Review is the most important step in software development process. Before developing the tool, it is necessary to determine the time factor, economy and company's strength.

Digital Fault Locator for Double End Fed Transmission Lines: Author: Micheletti. R Year: 2010- The paper presents a digital fault locator by dynamic system parameter estimation for a double end fed transmission line. The method uses about 1/6 cycle of recorded fault data and does not require filtering of dc offset and high-frequency components. The system differential equations are based on a lumped parameter line model, Thevenin equivalents at both ends of the line and an unknown fault resistance. The accuracy is demonstrated by a representative set of tests results obtained with computer simulation

Fault location in EHV transmission lines using Artificial Neural Networks Author: TAHAR BOUTHIBA Year: 2004- This paper deals with the application of artificial neural networks (ANNs) to fault detection and location in extra high voltage (EHV) transmission lines for high speed protection using terminal line data. The proposed neural fault detector and locator were trained using various sets of data available from a selected power network model and simulating different fault scenarios (fault types, fault locations, fault resistances and fault inception angles) and different power system data (source capacities, source voltages, source angles, time constants

5. RESULT

We want to achieve results regarding protection of transmission line from any types of fault such as line to line fault, line to ground fault at as specific range of distance with the help of IOT based system.

6. CONCLUSION

This paper presents the concept of overall protection of transmission line which can be done through these model. It can be achieved through single scheme. This is first ever combination of all these protection along with IoT. It is very easy to maintain the reliability of the supply through the transmission line and save the equipment before the fault takes place. overall its increase the reliability of the electricity through the transmission lines.

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