IOT BASED FAULT DETECTION IN TRANSMISSION LINE

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ABSTRACT

This study aims in energy monitoring and transmission line post fall detecting system. Protection of transmission line is important, because 85-87% faults of power system occur in these transmission lines. In this study, it presents a method and technology to detect and classify the various shunt faults on a transmission line for quicker and reliable function of protection schemes.In the Transmission Line Falling Detection System, the 3 axis position sensor will be used to detect any post fall and line fall. Microcontroller is implemented in this method and accelerometer sensor is used to detect position of transmission line stand. It also detects the line connections of the post. GSM modem is used to send data from microcontroller to Cloud with location and post number and inform the nearest power station.

Keywords: fault detection, transmission line, GSM , accelerometer sensor

INTRODUCTION

A electrical equipment with a fault is defined as a defect in its electrical circuit because of which the current is changed from the original path. These faults are mostly created by accidents, mechanical failure, excessive internal and external stresses etc. With the lower fault impedance, the fault currents are relatively becomes higher. During the faults, the power flow is changed towards the fault which affects the supply to the neighboring zone. Voltages become unbalanced. It is mandatory to detect the fault as soon as possible. It will detect the faults and will give signal to relay. Fault detection are important task to protect electric power systems. Protection of the transmission line is an important part in power system engineering because 85-87% faults of power system occurs in the transmission lines. The occurrence of short circuit in main power line causes serious problem. It affects the actual load and voltage which can easily damage the many electronic devices. The main problem in high voltage transmission line is efficiency and safety. Efficiency of any transmission line depends on factors like conductor, temperature, length of wire etc. Nowadays transmission lines are heavily loaded due to increased power consumption moreover, the conductor used in transmission lines undergo expansion and shrinkage due to fluctuation in voltage throughout the year and also quality of the conductor, like copper or aluminum which are used as a main line conductor and during the high load and temperature, it gets expanded.That expansion of conductor disturb the transmission line structure and causing them to Sag. Sometimes it may causethe line fault.

Safety of transmission line can be improved usingSag monitoring system and line fault prediction The design methodology includes the use of microcontroller and the combination of relay circuitry with display on a LCD screen. It sends the notification to nearest power distribution center with geo location using wireless technology so that the data can be easily sent to the server.

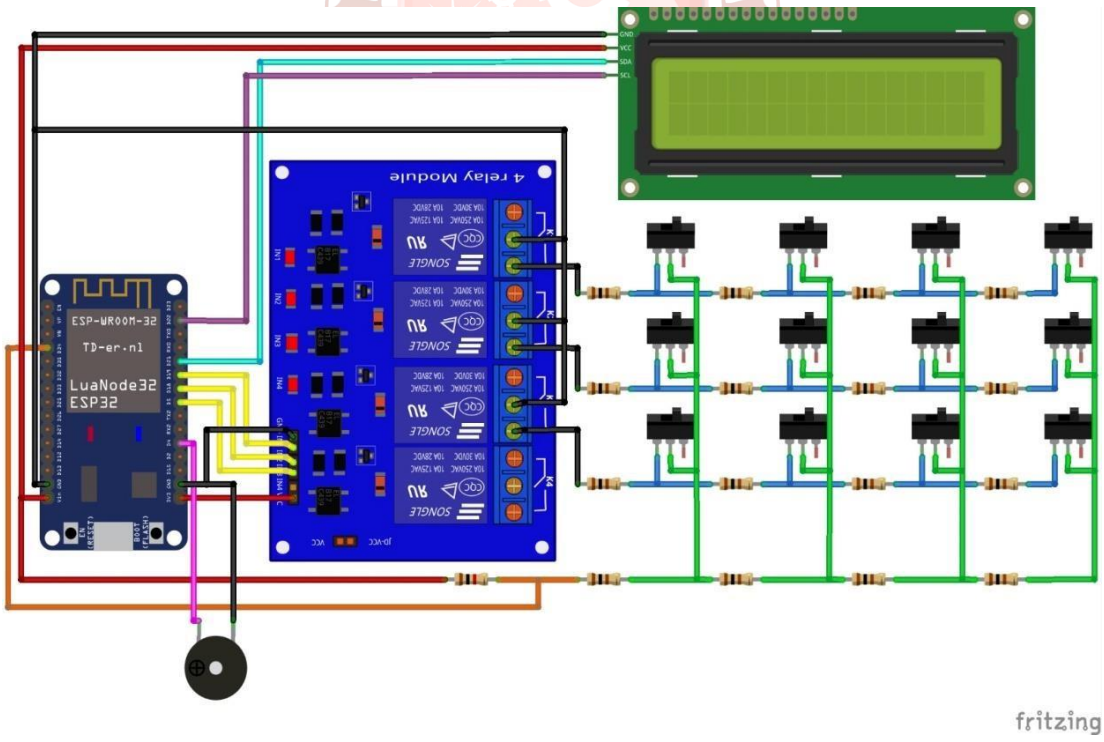
PROBLEM DEFINATION

In India one of the main economic activities is the agriculture. It has the maximum agricultural land that is second largest after U.S. This is because of the high soil fertility and large network of water sources for irrigation. Due the varying nature of climatic conditions at different locations it ensures the high availability and productivity of flora. Although the well presence of resources it does not produce the results equivalent to the availability. It is because of scarcity and incompetent use of technology, deficiency of knowledge and awareness among the agrarians, use of some antiquate methods. . Agricultural productivity nowadays may seem to have reached a stationary (maximum) point due to the global availability of fertilizers and pesticides which are used to improve

crop yield. However, misuse of these products and lack of awareness of the field parameters can decrease our productivity and endanger the environmental balance in the cultivation area. III.

METHODOLOGY

Many techniques have been developed in cable line fault detection over the last few decades. Generally, we use overhead lines. It can easily identify the faults but in rushed places or familiar cities we can't use overhead lines. So, we are moving to underground cables. In this project it uses IoT technology that allows the authorities to monitor and check faults over internet. The system detects fault Figure 1. Block Diagram with the help of potential divider network laid across the cable. Whenever a fault gets created at a point shorting two lines together, a specific voltage gets generated as per the resistors network combination. As the existing system is not efficient, this project proposes a system based on IoT. The objective of this project is to determine the distance of underground cable fault from base station in kilometers using an IoT platform. The underground cable line system is used in many urban areas. Various fault locating methods like the sectionalizing methods, acoustic detection method, Murray loop methods are not used much because they suffer from many disadvantages. The sectionalizing method can't be employed because section wise checking of underground cable is not possible. The acoustic method may become disastrous at the time of rain and it is a bit cumbersome method too. The Murray loop method is based on the principle of Wheatstone and due to different resistances of leads There are many electrical, telephone and other signal cables are laid underground. In normal methods we have to check with the machine where the fault is occurred. It required lot of time and the workload is also more.

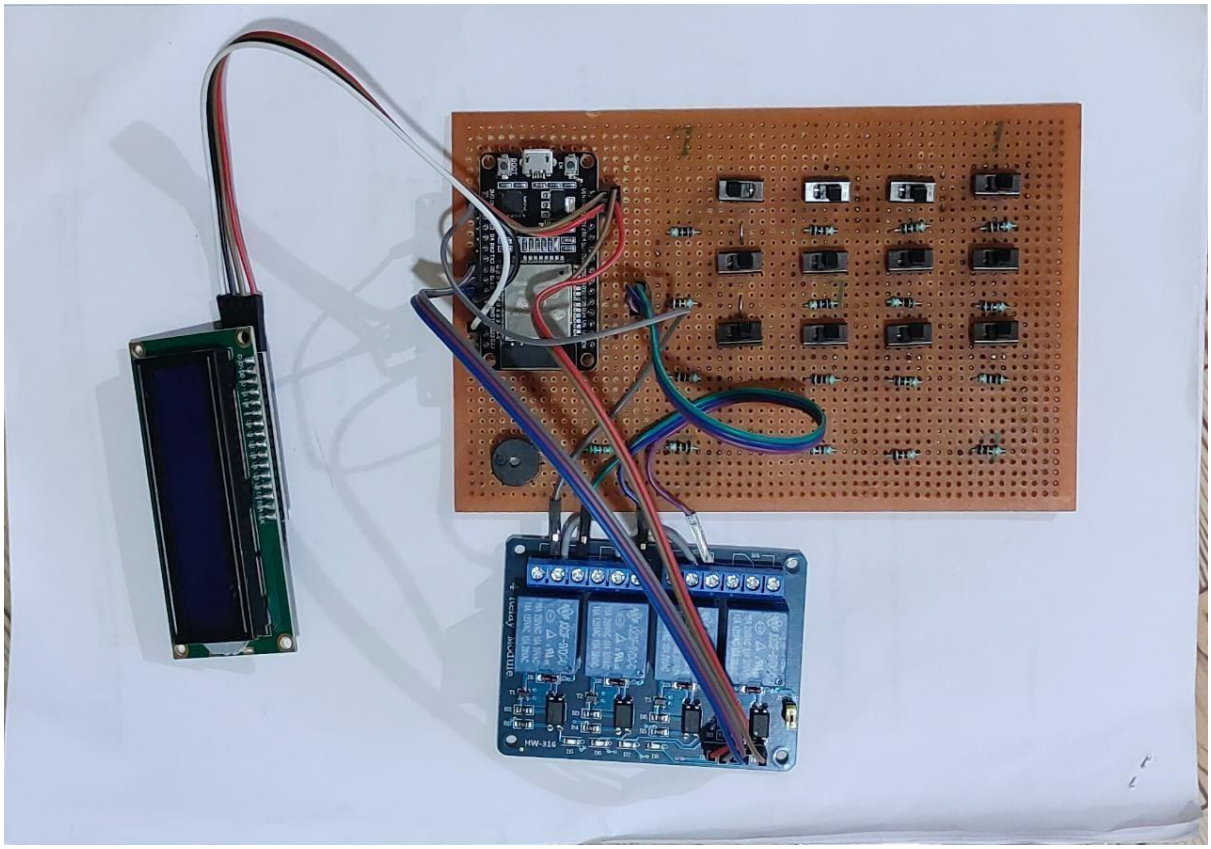


In IoT based underground cable line fault locator whenever a fault is occurring in the cable line, we can see the location in the IoT Thing Speak online system. Then the admin can inform to the repairman. Many time faults occur due to construction works and other reasons. It is difficult to dig out cable lines full because we do not know the exact location of the cable line fault. In case if it is a short circuit, the voltage across series resistors changes accordingly. This voltage is sensed by the microcontroller and is updated to the user.

CONCLUSION

The major problems occurring in underground cable fault detection are to locate the exact distance of faults, the nature of faults, effective monitoring system and these are difficult to repair. In order to tackle these problems, many different methods have been devised. All the previous methods used have their own significance and limitations as well. Currently, the system consists of a fault detection system that determines the location of underground cable faults in an efficient manner. However, for further effectiveness of the fault locating mechanism, a protection system may be designed which disconnects the faulty line from the system and hence will prevent the system to undergo greater damage.

RESULT



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