

Transformer Temperature Monitoring and Circuit Breaking System using IoT Blynk Server

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ABSTRACT: Statistics suggests that majority of electrical accidents occurs during electrical line maintenance work and are caused due to miss communication between electric substation staff and maintenance staff. To prevent this we are implementing automated breaker with a far better interfacing. Internet of things is at the forefront in areas of real time monitoring, situational awareness and intelligence, control and cyber security which makes the system efficient secure reliable resilient and sustainable. This project gives maintenance complete control for turning ON/OFF the load . The proposed idea put forward a more secured operating condition for the line man and ensures unauthorized access and that an switching of the line does not occurs. This is realized using a password verification method.The line man can operate the line according the requirement. The status of the line which includes the voltage and current and ON/OFF status can be accessed on a webpage, connected via an IOT module.Normally most of the transformers are burning because of over load; hence by incorporating blynk server to maintain the transformer temperature and determine the fault line.

KEYWORDS: Circuit breaker, ESP module,Relay ,IoT

I. INTRODUCTION

In India, the amount of death thanks to electrical accidents has reached more than 1500 in last five years Of these, majority of the victims are electrical line man who lost their life during maintenance work. The main reason behind these upsetting figures is due to the improper charging and discharging of electrical lines occurring due to miscommunication and lack of coordination between maintenance staff and engineers at the substation.1Another cause is that the unauthorized operating of line. In the event of power outage due to fault or other abnormalities the lines are sometimes charged without proper communication from the concerned authority. In order to avoid this, we have designed a system that checks the authenticity of the user. The password based circuit breaker accomplishes this by using a password verification method. By entering in the password by means of this improve the working condition of maintenance personals as he alone can operate the line.The system is linked to internet by means of an IOT module. C.Nagarajan et al [3,4,5] have developed this also increase the responsibility of substation staff because the one person is held in charge of operating the road.

II. METHODOLOGY

A user or operator at the opposite end can remotely connect with the system using a web device and an interface named "IoT blynk". Here, the user or operator must log in on IoT blynk interface passing through an extra layer of security that's Password Protection. From the IoT blynk interface, the user can control the state (on/off) of the connected load remotely virtually from anywhere round the globe. this technique has a plus over other remotely operable circuit breakers because it uses a faster medium which is that the internet to attach the operator and loads. the extra speed is

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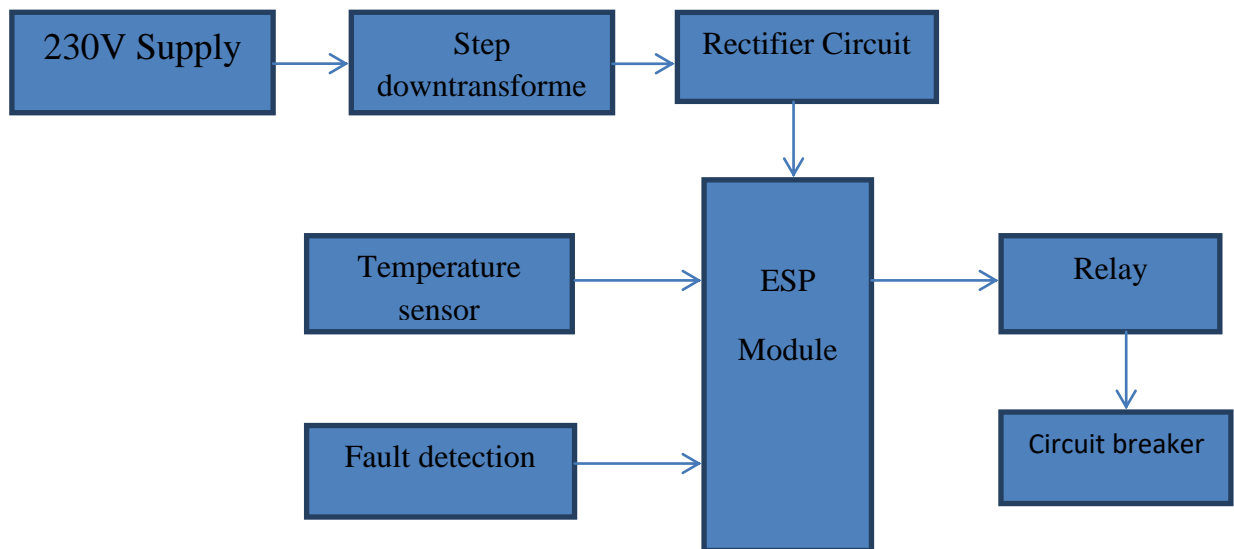
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added with the utilization of quick circuit breaking solution using the transistors, rather than relays which are comparatively slower as they mechanically break the circuit. this method is indispensable when industrial safety involves play, as a use of such circuit breaking systems removes any chance of common accidents, like electrical shocks. The system is meant to watch the voltage and current during the whole period of operation on the road .The voltage and current value is displayed through LCD and updated periodically. Once the upkeep work is completed, the road are often reactivated by entering the password and comparing again with the pre-set password. If it matches, almost like deactivation, the road are often activated separately. The system is linked to a IOT module which communicates the info and standing to a BLYNK, and may be accessed by personals within the substation.

Fig1:Block diagram



The block diagram for the system is represented by Fig1. The supply is step-down 230/12v which is provided to a bridge rectifier to obtain the dc voltage equivalent. The regulator gives a constant 5V to ESP module. Transformers have a long life, if they are operates under good conditions. In case they are overloaded then their life is significantly reduced.To monitoring the transformer temperature at the normal level by using mobile application.If any fault in transmission line “RYB” usingblynk server find the fault in any particular line.

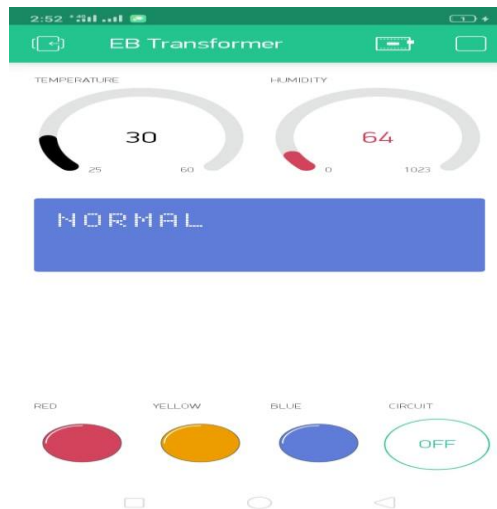
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III. SIMULATION RESULTS



Blynk app overview

Blynk is a Platform with IOS and Android apps to control over the Internet. It's a digital dashboard where you'll build a graphic interface for our project by simply dragging and dropping widgets. Blynk isn't tied to some specific board or shield. This new ESP8266 chip, Blynk will get you online and prepared for the web of Your Things. Blynk was designed for the Internet of Things. It can control hardware remotely, it can display sensor data it can store data, visualize it and do many other cool things

IV. CONCLUSION

The password based circuit breaker was designed to protect maintenance personals from accidents occurring due to miss communication and negligence. By utilizing a password to check for authenticity, the accidents occurring can be reduced to a large scale, as the line man can himself ensure his safety. As all unauthorized access is restricted, outsiders cannot tamper with the supply circuits. This project has been implemented utilizing an IOT module. A detailed account of the working condition of the availability system are often maintained and may be accessed remotely. A modification to this project is possible developing a webpage that can be accessed by the substation personal anywhere. These can be connected to a mobile application and can be made available as an app

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