Automatic Fault Detection and Auto Reset on Temporary Fault of Three Phase System

Prof. Suraj S. Shinde[1], Mr. Vajid Rajjak Shaikh[2], and Mr. Ajinkya Dattatray Phadatare[3]

[1] Assistant Professor, SMSMPITR AKLUJ (MS)

[2,3] B Tech Students, SMSMPITR AKLUJ (MS)

Abstract—**The Electric Power System is divided into many different sections. One of which is the transmission system, where power is transmitted from generating stations and substations via transmission lines into consumers. Both methods could encounter various types of malfunctions is usually referred to as a "Fault". Fault is simply defined as a number of undesirable but unavoidable incidents can temporarily disturb the stable condition of the power system that occurs when the insulation of the system fails at any point. Moreover, if a conducting object comes in contact with a bare power conductor, a short circuit, or fault, is said to have occurred. The causes of faults are many, they include lighting, wind damage, trees falling across transmission lines, vehicles or aircraft colliding with the transmission towers or poles, birds shorting lines or vandalism. In this study, the causes and effects of faults in the overhead transmission lines were the focus of the research.**

Index Terms—**Automatic fault detect, L-G Fault, L-L Fault, sensing the fault automatically and disconnect the fault automatically.**

I. INTRODUCTION

As we seen our surrounding the fault occurred in the transmission line is very common in rainy season and it is very dangerous for us. The electrical power system is growing in size and complexity in all sectors such as generation, transmission, distribution, distribution so in this complex network fault is happened which results in several economic losses and reduce reliability of electrical system. We take care to resolve this fault as soon as possible, if we failed to resolve this then it can cause complete black our or grid failure. Generally, the 70% to 90% of faults on overhead lines, most of the faults occurred due to lighting smiles, storm, flashover these is very harmful for the society. In transmission line this type of faults line to line faults line to ground fault there are many types of faults. Due to faults power failure and also damage the electric equipment. Here we show a prototype model or 3p fault detection, so we make the fault line by using switches. We know that impedance of line is increases with increase in length. So, we use resistance combination in senses, for each phase different set of resistance is used for each phase one relay is use to isolate the load at the time of fault which give exact length of fault occur on line. The mastermind of our project is Arduino Uno. The DC supply is required for controlling board.

II. LITERATURE SURVEY

clarified that fault detection in transmission line has becoming a need of important, and increasing demand conditions and advancement made in the power system, fault identification has very become easier. And in this prototype use two bus system is simulated in MATALAB

Manohar Singh: In this paper clarified to the Transmission line protection is very important thing in current scenario, because in power system 85 to 87% of power system faults are occurring in transmission lines. Classify the perfect technique, to detect the fault in transmission line, like line-to-line fault, line to ground fault etc.

Anurag D. Borkhade: Clam file to the proper detection of faults is cleared in transmission line is needful. In these paper detection and classification off sure these faults is done loosed on the ware let analysis or power system translators. Wt has the ability to decompose current and voltage signal. In this method used ware let which shows light signal and provide more features.

Rajeev Valunjker 2017: Clarified that the paper aims to design auroredoser for three phase system with data acquisition system, that says this method is very hardly to detect the fault on transmission lines. This system will reduce the human efforts off closing the circuit

breaker. The in such many solve the problems faced in transmission line and consumers bt using the method, we can easily detect the fault and resolve it and problem solved in real line very useful for the future.

III. OBJECTIVE

Design is very reliable and effective.
The main objective of this prototype model human efforts decreased.
And damage the electrical equipment.
To ensure stability and reliability of power system is boost system is stronger and also strong the economic growth.

IV. METHODOLOGY
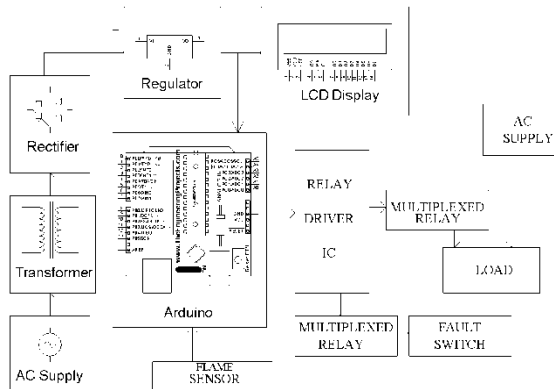
A. Working: A Three Phase Line Fault Detection is a device which provides visual indication & remote detection of the abnormal condition on electrical power distribution system. While patrolling of this fault it can be detected by indication lamps on RYB phase. In recent, impedance relay or distance relays are used to detect and cleared the fault, but this system requires long time to calculate the distance using the impedance & the pre-fault current relay, till to reach the fault location and repair the faulty phase, the system will be in OFF state and the supply to the consumers is unreliable

Open circuit faults: - These faults occur due to the failure of one or more conductors. The most common causes of these faults include joint failures of cables and overhead lines, and failure of one or more phase of circuit breaker and also due to melting of a fuse or conductor in one or more phases. Open circuit faults are also called as series faults. These are unsymmetrical or unbalanced type of faults except open circuit fault

Short circuit faults: - A short circuit can be defined as an abnormal connection of very low impedance between two points of different potential, whether made intentionally or accidentally. These are the most common and severe kind of faults, resulting in the flow of abnormal high currents through the equipment or transmission lines. If these faults are allowed to persist even for a short period, it leads to the extensive damage to the equipment. Short circuit faults are also called as shunt faults ply to the load.

These faults are caused due to the insulation failure between phase conductors or between earth and phase conductors or both. The various possible short circuit fault conditions include three phases to earth, phase to phase, single phase to earth, two phases to earth and phase to phase.

V. A. CIRCUIT DIAGRAM
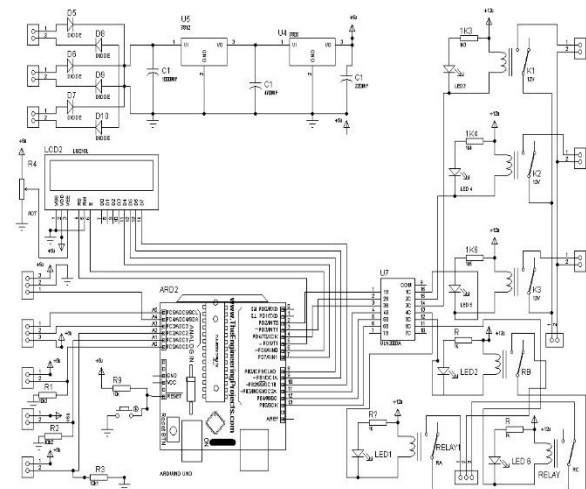
Project is to determine the line-to-line fault as well as the line to ground fault USING AN Arduino board. While a fault occurs for some reason, the repairing process related to that particular cable is difficult due to not knowing the exact location of the cable fault. The project uses the standard concept of Ohms law i.e., when a low DC voltage is applied at the feeder end through a series resistor (Cable lines), then current would vary depending upon the location of fault in the cable. In case there is a short circuit (Line to Ground), the voltage across series resistors changes accordingly, which is then fed to inbuilt ADC of Arduino board to develop precise digital data for display in kilometres. It is assembled with a set of resistors representing cable length in KM's and fault creation is made by a set of switches at every known KM to cross check the

accuracy of the same. The fault occurring at a particular distance and the respective phase is displayed on a LCD interfaced to the Arduino board.

B. RESULT AND MODEL

Automatic fault detection and Auto Reset on temporary fault of three phase system. This objective of this project is to determine the distance of the line to ground line to line fault from the base station in kilometre using Arduino board Here we have used flame sensor. Whenever any flame is detected, the project stops the supply to the load.
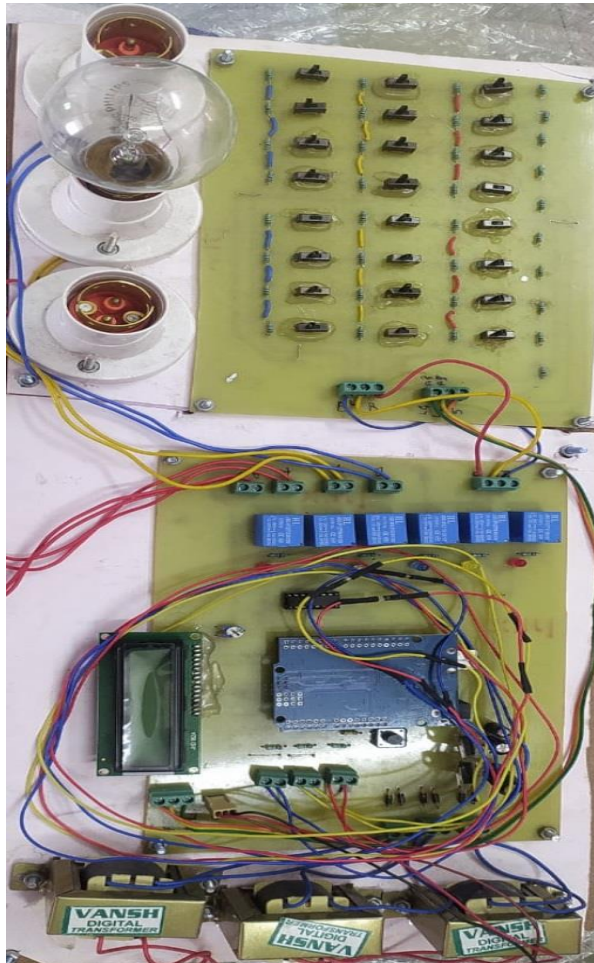
C. CONCLUSION

The four-quadrant operation of the dc drive is successfully implemented and the output voltage in the regenerative mode is boosted more than the supply voltage. This boost in voltage is compared in terms of the intensity of light of the regenerative load (bulb) The model shows good results in an applied voltage range of 100-150V.

D. REFERANCES

1) Fault Detection and Classification In Three Phase Transmission Line Using Signal Processing (Dr. Kavitha, May 2018)
2) Guruprasad P. Sali, Mohini J. Deshmukh, Mrunalini S. Wankhede, Bipasha B. Patra, "Smart IOT Automation for Advanced Home Security", International Journal of Engineering Research in Electrical and Electronic Engineering (IJEREEE), Vol 6, Issue 4, IFERP, April 2020, ISSN (Online) - 2395-2717, pp.1-6, Doi: 01.1617/vol7/iss4/pid45820
3) Dhawale, Vishva deep J., Vishal Dake, and Prafulla A. Desale. "Blocking the Distance Relay 3rd Zone Operation during Power Swings by DTLR Enhancement in MATLAB/Simulink." International Journal of Electronic and Electrical Engineering. Vol. 7. No. 7. International Research Publication House, 2014. 757-765.
4) Transmission and fault detection and classification (Manohar Singh, Dr.B.k panigrahi, Dr.R.P Maheshwari, Member I EEE)
5) Transmission line fault detection using wavelet transfer(Anurag.D.Borkhade, Assistant Professor)
6) Arduino based auto recloser for three phase AC system (Rajeev Valunjker 2017)
7) Arduino based underground and overhead cable fault detection (Aditya Sharma, Himanshu Sharma, Md Irfan Ahmed Nov 2017)