

IOT based Overhead Line Monitoring Fault Analysis Distribution & Transmission

Overhead cables are prone to a wide variety of faults due to environmental conditions, wear and tear, rodents etc. Also detecting fault source is difficult and entire line is to be checked in order to fix faults. So here we propose cable fault detection over IoT that detects the exact fault position over IoT that makes repairing work very easy. The repairmen know exactly which part has fault and only that area is to be checked to detect the fault source. This saves a lot of time, money and efforts and also allows to service cables faster. We use IoT technology that allows the authorities to monitor and check faults over internet. The system detects fault with the help of potential divider network and sensors 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. This voltage is sensed by the microcontroller and is updated to the user. The information conveyed to the user is the distance and the section to which that voltage corresponds to. The microcontroller retrieves the fault line data and also it transfers this data over internet to display online. We use IoTGecko to develop the online system that links with the system to display the cable faults online.

Proposed system:

The demand of electrical power is increasing day by day for households, agricultural, commercial, industry sectors etc. This project is developed in order to maintain that electrical power required by these sectors, as in an electrical system, due to short circuit and open circuit various fault occurs. In this project it has been discussed how to overcome this problem and for this a system is built, which has an auto reclosing mechanism of disconnecting the supply to avoid large scale damage to the control gears, load or manpower in the grid sub-stations. In this way a tripping mechanism is made in order to curb temporary and permanent faults.

In the proposed system overhead line monitoring is done where current and voltage sensors are used to detect fault in the transmission line. We are providing a low voltage three phase supply through 3 transformers to the poles through the current sensor. Whenever there will the short circuit in any of the section then current will increase and their will the drop in

voltage and this will be sensed by the current sensor. This sensor signal of the section is given to the Arduino through A to D converter. A webpage is created and the information collected by the sensors is updated periodically in it through Wi-Fi. This webpage will show whether the fault occurred or not. If occurred, particular section in which the fault occurred is also displayed on the webpage and the person in the power station is able to know where the fault is actually occurred. Once the short circuit fault is occurred the line is tripped automatically and makes the supply off. After 10minutes person in the power station will perform the action to check whether the fault is permanent or temporary and try recloses the line to maintain the power supply. If the fault is temporary then the supply will be maintained but if it is permanent, then through the IoT line is again tripped. This webpage is able to show the fault in a section so electrician will approach to that section without wasting his time by checking the entire transmission line.

