# Artificial Intelligent Tracing for Inherent Potential Leakage Observance and Control System

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**Abstract**:
A newly designed fault identification system for the electric pole is developed and described in this proposed system. The aim of developing this system is to give immediate and effective solution for the people who accidently goes in contact with electric pole and transmission towers during rainy season and faulty timer which leads to death. To solve the trouble addressed, designed system is incorporated with fault tracking system, wireless communication system and faulty pole location is traced via IOT to the respective persons. In this proposed system newly formalized system integrating a smart microcontroller which is used to detect the faulty electric pole and it is used to prevent from the accident.

Keywords: Microcontroller, Wireless Sensor Network (WSN), IOTmodule, Potential Leak Detector, Driver Circuit, Solar Panel.

## I. INTRODUCTION

Accidents due to power cables has been increasing in India. Through the analysis of such accidents, we found out that the reasons failure of power cable is mainly due to external force, cable assembly manufacture quality and cable body manufacturing quality. The percentage of occurrence of this problem are 58%, 39% and 3% respectively. From this inspect it is found that breakdown of connection andextent of the breakdown is as huge 39%. Cable additions is one of the necessary conditions of the weak link also the running fault of the power cable covering. When the transmitting voltage level increases the covering, requirements needed to be improved and also the manufacturing process of the cable becomes complicated. Therefore, the protection of cable accessories is anecessary condition for the proper functioning of power system. Rapid and accurate determination of power distribution line fault is very important for reliable power supply. Once the fault is identified it must be cleared quickly. The first step is to identify where the fault occurs and type of fault. Electric criterioniscontrolled online and coveringlinkedcriterion are calculated to forecast insulation damage. The aim of the study is developing a new method for the monitoring of cable faults and providing intimation to Electricity board as well as common people.

## II. LITERATURE SURVEY

The unavoidable fault in the distribution system for many uncontrollable factors, such as animals, weather related condition. The main problems during rainy season people don't know about the utility pole and transmission line condition. Due to fault(Earth line fault) occurred in the pole,electricity can be easily passed in case of raining situations. The reason for fault is insulation surrounding old wires get incorporated and wires become live contact to soil. Stray AC currents can go through the mud and alloybody on the area,inclusive of poles, streetlights, manhole covers. Openly touching with these areas specially with uncovered feet or during rainy time will matters electric shock. Human being and pet animals will get hurt or killed by such electric stray voltage. They can be overcome by our newly proposed system.

## III. PROPOSED SYSTEM

In our proposed system, we are continuously checking the electricity leak occur in the pole and when electricity leak occurs it will automatically trip down electricity in the particular pole. In this we are using renewable energy solar panel and piezoelectric plate to generate dc supply and store it in the battery for microcontroller (PIC16F877A).
Potential leak detector, the microcontroller will continuously be checking the pole. When the electricity leak is detected by the potential leak detector it will send detail to microcontroller. Now microcontroller will give alarm sound by using buzzer which is used to signal to people nearby pole and the region of pole is traced and signal message is sent to the electricity board through IOT (Internet Of Things). After this microcontroller will send signal to the utility pole microcontroller to trip down the supply by using WSN (Wireless Sensor Network). It helps to prevent from accident during rainy season and any breakage in the pole.
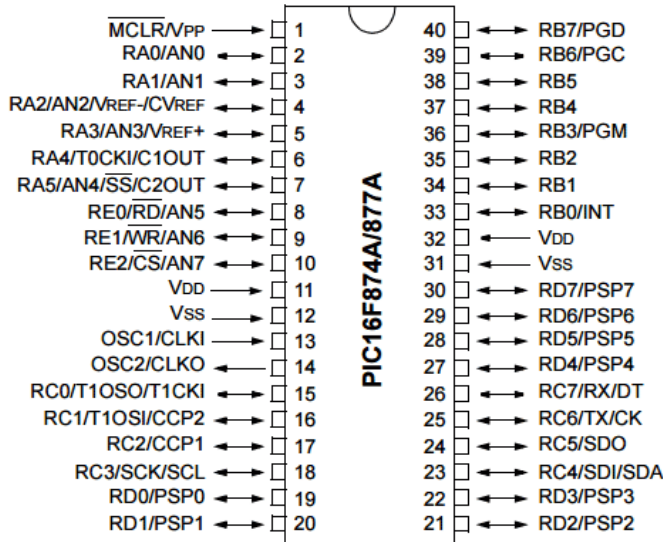
HARDWARE:
- MICROCONTROLLER
- BATTERY
- SOLAR PANEL
- PIEZOELECTRIC PLATE
- POTENTIAL LEAK DETECTOR
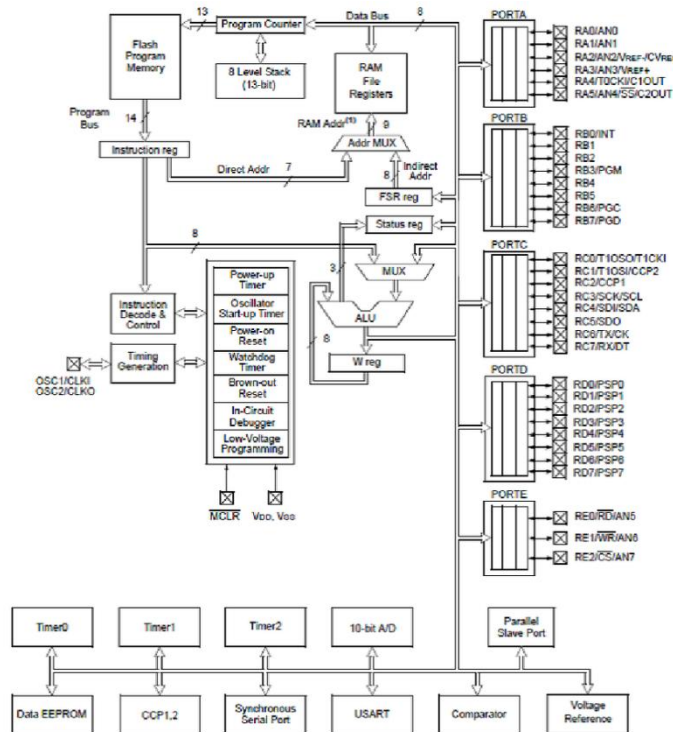- IOT MODULE
- WSN MODULE
- DRIVER CIRCUIT
- LOAD
- BUZZER

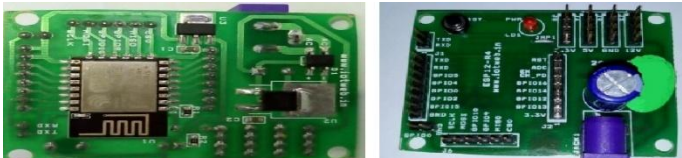SOFTWARE:
- EMBEDDED C
- MPLAB IDE
- PROTEUS

## 40-Pin PDIP



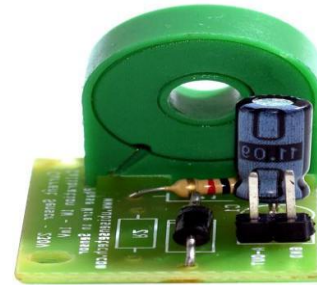## PIN DIAGRAM OF PIC16F877A



## ARCHITECTURE OF PIC16F877A

## IOT MODULE

The Internet of things (IoT) is the network of dailyobjects real things embedded with electronics, software, sensors, and connectivity enabling data transfer.



## POTENTIAL SENSOR

A DC potential sensor is going to be able to determine and even supervise and measure the potential supply.



## DC MOTOR

A DC motor is manufactured to rush on DC supply. Two case of pure DC layout are Michael Faraday's homo polar motor (which is uncommon), and the ball bearing motor, which is (so far) a uniqueness. By far the most familiar DC motor modules are the brushed and brushless types. We in our project are using brushed DC Motor, which will operate in the ratings of 12v DC 0.6A which will drive the flywheels ito make the robot movements.

## PIEZO ELECRIC PLATE

A piezoelectric plate is a device that uses the piezoelectric effect, the piezoelectric crystal is placed between two metal plate collects these charges, which can be used to produce a voltage and send an electrical current.



Wireless Sensor Networks
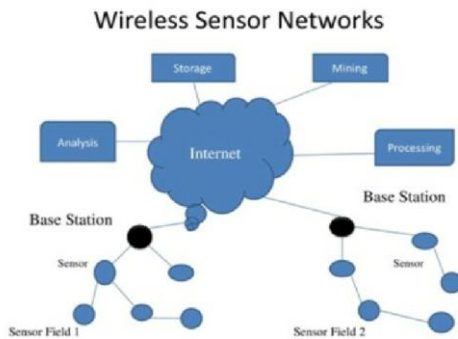
## WIRELESS SENSOR NETWORK

A Wireless Sensor Network (WSN) is by hundreds of small, low-cost nodes it is network of wireless devices that gather and communicate the details through the wireless links.

## IV.    CONCEPTUAL BRIEFING

Design and implementation of this system is efficiently done by using microcontrollers. In our system the location of the faulty pole can be identified with accurately and faulty pole can be corrected as soon as possible.  There are two section in this system both are controlled by using microcontroller.   Pole side microcontroller is operated with pole side supply and other one is operated with dc battery which is charged using piezoelectric plate and PV panel.   The microcontroller is programmed with Embedded C and programmed microcontroller is connected with IOT, WSN and Buzzer.  IOT can be operated with internet connection to share the accurate location of fault pole. WSN is used to interact between the two-microcontroller section to trip the supply in the pole whenever the fault (potential leak) is identified in the pole.   The location of the faulty pole is sent to the respective person and electricity board and buzzer in the pole gives alarm sound to alert the peoples near the pole.
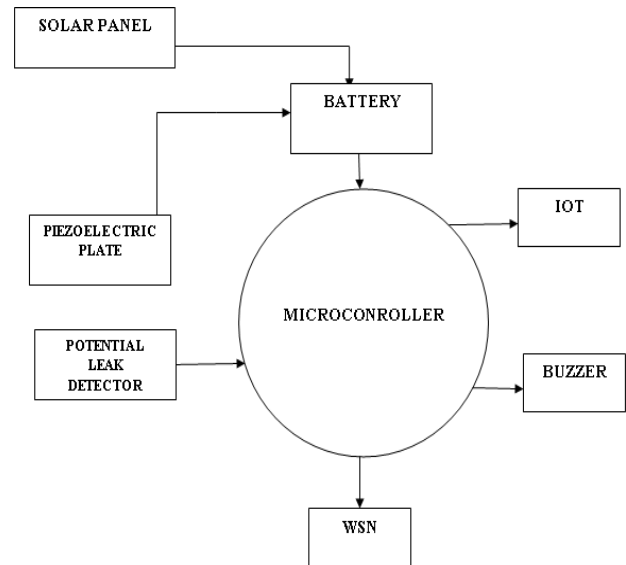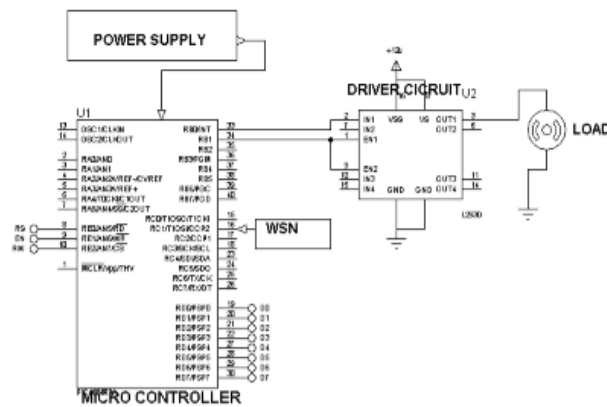


## BLOCK DIAGRAM
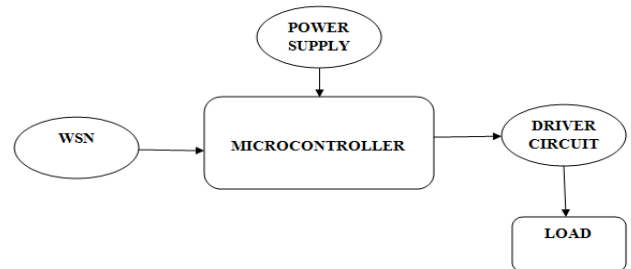


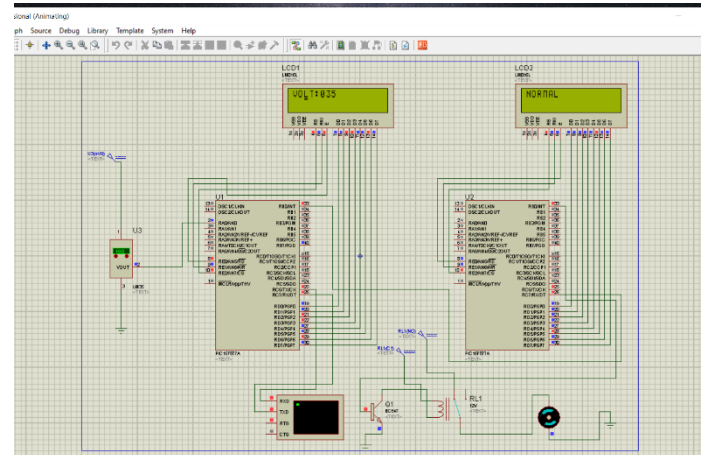## BLOCK DIAGRAM OF POLE SECTION
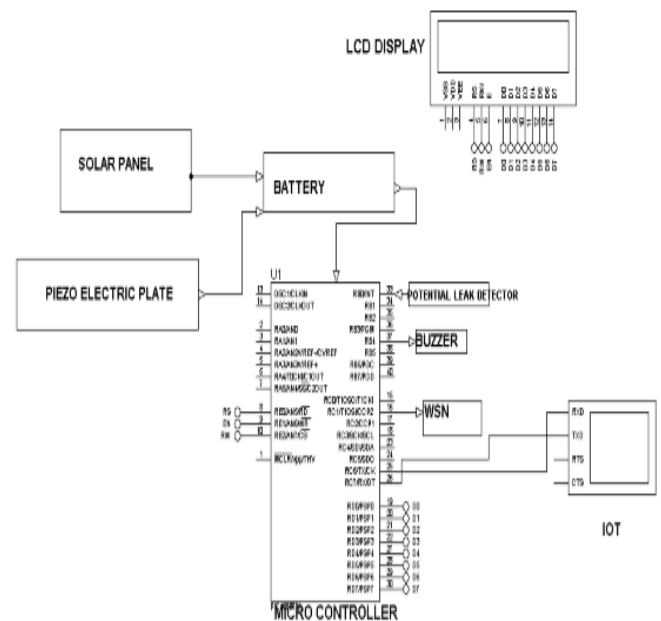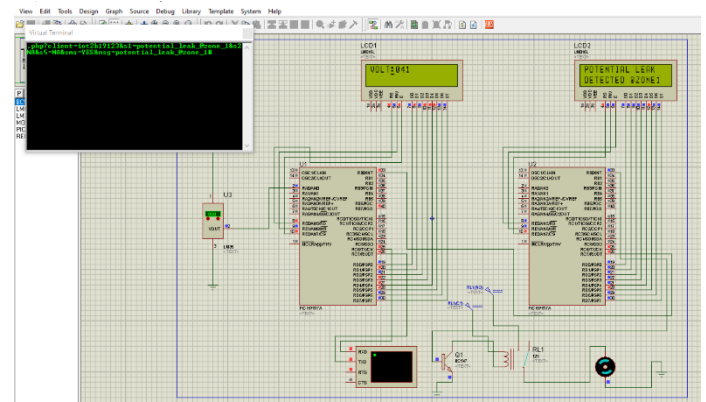
## CIRCUIT DIAGRAM



## POLE SECTION CIRCUIT DIAGRAM

## V.    SOFTWARE SIMULATION RESULT

Proteus design tool is used as software simulation used for designing of electrical automation.





## DESING OF CIRCUIT DIAGRAM



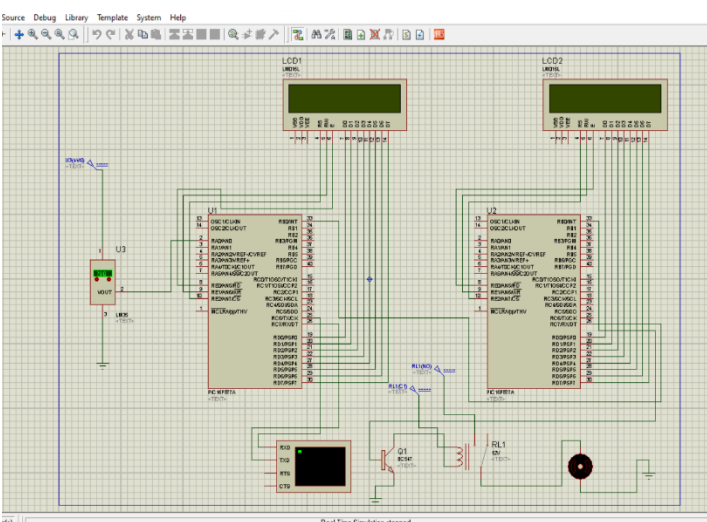## BEOFRE FAULT IDENTIFIED IN POLE



## AFTER FAULT IDENTIFIED IN POLE

### VI. CONCLUSION

The system gives an automated system for continuous monitoring electric poles and to trip down the electricity supply to faulty pole and transmission lines. Sensors are used for measuring output voltage and monitoring technique. The result is the location of faulty pole can be identified accurately and fault is corrected before affecting the environment. The system will make present electric system better and proficient from many views.This may save many people who unknowingly contact with the pole during fault and it is reliable.

## VII.     REFERENCES

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