

LIFE SAVING DEVICE FOR HUMANS AND ANIMALS FROM CHARGED ELECTRIC POLES

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REPORT

PROBLEM STATEMENT – When it rains in monsoon/ rainy season , sometimes some of the electric poles gets electrified due to any short circuit , poor workmanship or breaking of insulation . Some people by mistake touch the electrified pole and get high tension current. Electricity travels through water or wet surface through humans and animals to the ground.

Why does an electric poles gets charged ?

The electric pole sometimes gets charged during rainy season due to :-

- (i) Sometimes due to bad weather conditions there is a short circuit and the electric pole gets electrified or charged.
- (ii) This also happens because of bad workmanship and the electric current passes through the electric poles.
- (iii) If there is a breaking in the insulation electric easily passes through the electric pole.

During rainy season lightning may strike gain power line towers .if it really strikes there will be a spark in the voltage and heavy current may be induced. Any current passes the overvoltage limit of the power line, will be fault current and dangerous to the

power system and utility too. Therefore to avoid this, a power cut is a way to protect the large power system and utilities connected too this grid from faults. Once the faults gets cleared, power is restored.

STATISTICAL DATA:-

Electrical hazards cause more than 300 deaths and more than 4000 injuries each year among U.S. The total number of accidental deaths by electrocution in India was 9606 during 2014 and nearly 30 Indians a day . Fatalities are high across states and they are rising in many places year after year.

BESCOM data further indicates that in 201-19 there are 283 deaths already caused due to technical faults .

High voltage alternative current (HVAC) lines are the technology of choice for the transport of large amount of energy over long distance . The operation of these lines produces static electric fields (EF) but the data revived in previous assessments were not sufficient to assess the need for any environmental limit. According to the statistics available 92 persons were electrocuted in 2016. The number increased to 108 in 2017. It is sometimes due to negligence and ill-luck. Public suffer the most in electrocution incidents. While seven KSEB and 12 contract staffs lost their lives in different electrical accidents in 2016. The fatal accidents occur when people accidentally touch the power line while handling iron pipe/ladder or tree branch.

MATERIALS REQUIRED:-

Four Ultrasonic sensors , three microcontroller, RF wireless transmitter and RF receiver, buzzer for siren , two relay , encoder decoder and 16x2 display.

DESCRIPTION OF THE SYSTEM:-

ULTRASONIC SENSORS- The device consists of four Ultrasonic sensor which helps to detect the space between the object and the pole.

MICROCONTROLLER – There are special types of sensor which detects that the pole is charged or not. If the pole is charged the sensor sends a message to the microcontroller and the microcontroller sends a command to the RF transmitter which transmits a wireless message to the RF receiver which is fitted in the power house.

RECEIVER – When the RF receiver receives the message it send the message to the microcontroller (Arduino UNO) .The microcontroller displays the message in the 16x2 LCD display.

ENCODER – An encoder converts analogue signal to digital signal.

DECODER – A decoder circuit takes multiple inputs and gives multiple output.

WORKING OF THE DEVICE AND THE SOLUTION TO THE PROBLEM.

During Monsoon or bad workmanship, electric pole gets electrified. Animals / humans unknowingly touch the pole and get electric shock.

CONCEPT:-

DETECT AND ALERT:- As soon as the electric pole gets electrified the system attached to the electric pole detects it and immediately it sends a wireless message to the power station so that the concerned authorities are alerted about the issue and they can rectify it.

INFORM:- when the concerned authorities are informed about the issue and they are trying to rectify the issue , Meanwhile if any animal/human approaches near the pole an alert siren is beeped on the pole so that the person or animal is alerted. An alert message is displayed on the LCD display along with pole number that is charged fitted in the powerhouse.

SAVE LIFE:-when an animal/human approaches very near or crosses the threshold limit the system immediately sends a wireless command to the powerhouse and through the command the electricity of that division is shut down. The buzzer fitted in the pole beeps a double siren.

Thus, the life of the humans and animals are saved .This process happens very fast as it takes very less time to loose a precious life. If the pole is not charged the system behaves normally.

This system can be fitted in parks , residential areas and bus stops. It is very cost effective.

CONCLUSION:- This was my utmost effort to save the life of human beings and animals from charged electric poles.