

Intellectual Earthing System

Namdeo K. Jadhav, Ankush D. Deshmukh, Somnath K. Somase, Vivek D. Aher, Prof. Nitesh Kumar

MET's Institute of Engineering, BKC, Nashik, Maharashtra, India

Abstract: - This system used to maintaining and controlling earth resistance. The earth resistance is maintained by controlling moisture of earth using moisture sensor. The main component of the proposed earthing system is intellectual earthing kit which limits the leakage current. If the fault current is excessive than the conventional earthing capacity then controller circuit sense this excessive current and divert this leakage current into intellectual earthing kit. Soil moisture sensor senses the moisture of the soil and gives data to the micro-controller. If moisture decreases microcontroller operates solenoid valve through opto-isolator and water supplied to soil.

Keywords: - soil moisture sensor, intellectual earthing kit, leakage current, micro-controller, opto-isolator.

to limit electrical current flow and therefore allow continued operation despite the earth fault.

The earth leakage circuit breaker is capable of precisely determining whether to perform a 5 trip operation with respect to an earth leakage signal applied there to. The earth leakage circuit breaker is capable of preventing a malfunction due to a noise signal similar to an earth leakage signal.

An automatic moisture sensing and watering system detects a moisture level within the soil. The automatic moisture sensing and watering system may be 30 implemented in combination with a conventional automatic watering system to accurately control a moisture content of a plot of soil.

I. INTRODUCTION

Nowadays there is increase in problem due leakage current and widely variations in earth resistance caused break down of earthing system. So to eliminate these problems many systems and methods for earthing system are developed.

Impedance measurements made by a galvanic resistivity tool in a borehole in an earth formation are corrected by a factor that depends on the mud conductivity and the mud dielectric constant.

Arrangements an earth fault will have low impedance to the ground and therefore have excess electrical current flow. In now days electrical resistance is provided in the earthing path

II. OBJECTIVE

1. Primary object of the present project is to provide a system for maintaining and controlling earth resistance.
2. Another object of the present project is to provide a system to protect the earthing from excessive leakage current.
3. another object of the present project is to provide a system to measure and control the moisture content of the soil.

III. BLOCK DIAGRAM

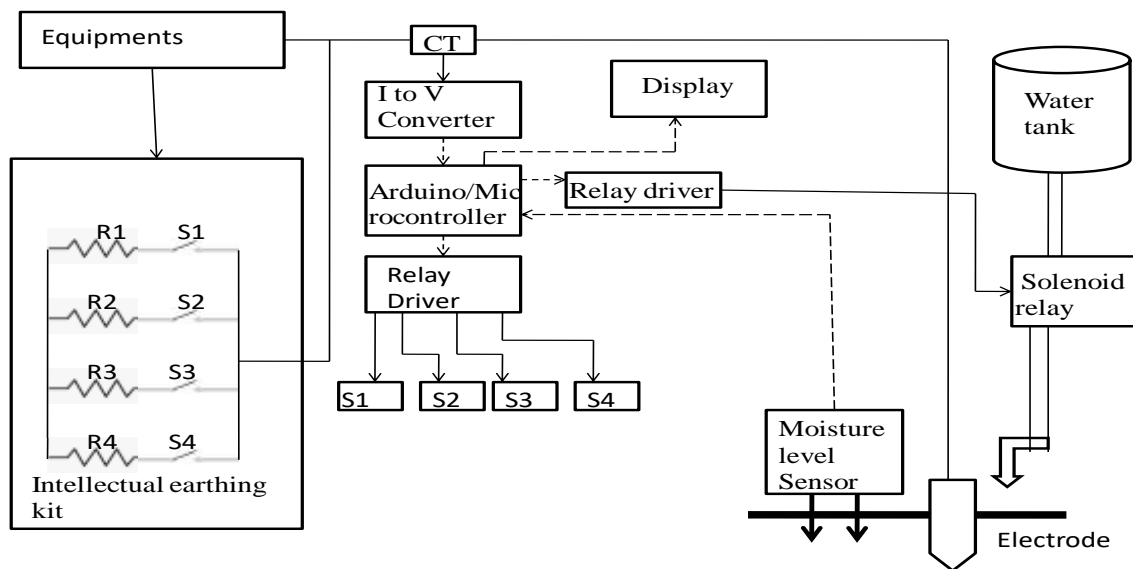


Fig 1 Block diagram

Block diagram descriptions:-

This project relates to system for maintaining and controlling earth resistance. The earth resistance is maintained by controlling moisture of earth using moisture sensor . The main component of the proposed earthing system is intellectual earthing kit. which limits the leakage current.

As shown in figure 1, the number of equipment shown is connected to common earthing point. The current transformer (C.T) is used to sense the current flowing through earthing wire and then it supplied to I to V converter .The output of I to V fed to microcontroller and the microcontroller take a decision and switch the relay according to magnitude of a leakage current.

In the intellectual earthing kit block the parallel resistance is connected which help to divert excessive leakage current and converted into in the form of heat.

Soil moisture sensor senses the moisture of the soil and gives data to the micro-controller. If moisture decreases microcontroller operates solenoid valve through opto-isolator and water supplied to soil.

In this project by using soil moisture sensor the moisture content of the soil is measured and by using electronic circuit it maintains moisture level. The micro-controller circuit continuously monitoring moisture level if moisture level goes down the controller circuit automatically open the solenoid valve and water is supplied to earth here moisture level is goes up to required level. If the fault current is excessive than the

conventional earthing capacity then controller circuit sense this excessive current and divert this leakage current into intellectual earthing kit .The excessive fault current goes into intellectual kit. It consist the parallel resistance and capacitor bank.

IV. ADVANTAGES

1. This leakage current is used to charge the capacitor. this capacitor voltage is used to charge the battery.
2. Same system can be used for higher leakage current as protection provided by intellectual kit.

V. CONCLUSION

Intellectual earthing system reduced the damage to the equipment because of earth leakage current. It also helps to maintain and controlling earth resistance. It is possible to control leakage current beyond the capacity of conventional earthing with the help of intellectual earthing kit.

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