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MICROCONTROLER BASED IRRIGATION SYSTEM OF SENSING SOIL MOISTURE

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ABSTRACT

Since in India more people depend on agriculture and here important role for development in food production. in our country agriculture are depend on the monsoons which is not sufficient source of water .so the irrigation is used in agriculture field. in irrigation system depending upon the soil type. water is provided to plant in this paper we taking automatic irrigation. in this circuit comprises of sensor part built using op-amp Ic lm 358. op-amps are configured here as a comparator .the most important factor of this system is microcontroller is used to control the whole system by monitoring the sensor in this system using of sensor which sense of dry or wet condition of soil automatically ,the aim of our project is to modernizing agriculture technology by programming component (microcontroller) and built the necessary component for the system the main function of using microcontroller is send command to relay driver intenerated circuit the contacts of which are used to switch ON of the motor and it will switch OFF the motor ,when all the sensor are in wet condition.

Keywords- *Irrigation system, soil moisture sensor ,microcontroller and intenerated circuit .*

I.   INTRODUCTION

In here mostly people whose occupation is agriculture and who totally depend on it so for continuously increasing demand of food necessities its important to rapid improvement in production of food technology .agriculture in only the source to provide this .this is the important factor in human societies to growing and dynamic demand in food production. Agriculture plays an important role in economy and development like India. due to lack of water and scarcity of land water result the decreasing volume of water on earth, the farmer used irrigation. Irrigation may be define as the science of artificial application of water to the land or soil ,that means depending on the soil type plant are to be provided with water. in agriculture ,there is to things is very important, first to get information of about fertility of soil and second is to measure moisture content in soil . Now days for irrigation different techniques are available which is used to reduce the dependency of rain .and mostly this technique is driven by electrical power and ON/OFF scheduling controlled. in this we taking of automatic irrigation system using microcontroller .

II.   IRREGATION SYSTEM

In this paper soil moisture sensor placed in root zone of plant. in hert we using two stiff copper wires are inserted in the soil to sense whether the soil is wet or dry. the microcontroller is used to control the whole system by monitoring the sensor and when sensor sense the dry condition then the microcontroller will send command to relay driver integrated circuit the contacts of which are used to switch ON the motor and it will switch OFF the motor when all the sensor are in wet condition the microcontroller does the above job as it receive the signal from the sensors through the output of the comparator and the signal operate under the control of software which is stored in read only memory of the microcontroller. In this paper soil moisture content has been detected to wet or dry condition of soil. the main propose of this technique is development for moisture soil moisture in real time method. this experiment found that the glowing of LED is ON and OF with the moisture content following depending on the kind of soil wet and dry condition. this paper is design a model of automatic irrigation system which is based on microcontroller and electrical power(conventional source)for source of power supply. various sensor are placed in paddy field sensor sense water level continuously and give the information to microcontroller controls the motor without any human involvement automatically an if the water level reaches at danger level ,automatically motor will be OFF.

III. BLOCK DIAGRAM

BLOCK DIAGRAM OF AUTOMATIC PLANT WATERING ON DRY SOIL CONDITION BY MC

BLOCK DIAGRAM OF AUTO PLANT IRRIGATION
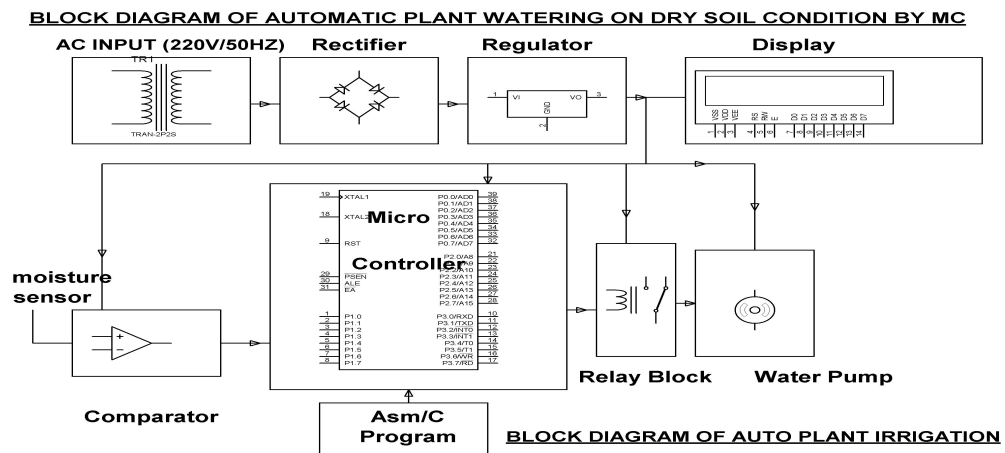
I. TRANSFORMER

In this system we use of step down transformer(230v to 12v).it is most power supplies use a step down transformer to reduce the dangerously high voltage to a safer low voltage. the input coil is called the primary and output coil is called the secondary. there is no electrical connection between the two coils instead they are linked by an alternating magnetic field created in the soft iron core of the transformer waste very little power ,so the power OUT is (almost) equal to the power IN.

II. RECTIFIER

Since we using to in this microcontroller and Microcontroller required very low DC power. So rectifier using to convert AC to DC form. In this project using of bridge rectifier because of its merits like good stability and full wave rectification in positive half cycle .only two diodes will conduct in negative half cycle remaining two diodes will conduct and they will conducts only in forward bias only .

III. MICROCONTROLLER

It is a low power high performance "CMOS 8-bit " microcontroller with 8kbytes of in system programmable flash .the on chip flash allows the program memory to be reprogrammed in system or by a conventional non volatile memory programmer by combining a versatile 8bit CPU within system programmable flash on a monolithic chip.

IV RELAY

It is electrically operated switch .many relay use an electromagnet to operate a switching mechanism mechanically .it is used where necessary to control a circuit by a low power signal(with complete electrical isolation between control and controlled circuits) or where several circuits must be controlled by one signal.

V WATER PUMP

In this project we using of submersible pump (or electric submersible pump),which has a hermetically sealed motor close coupled to the pump body the whole assembly is submerged in the fluid to be pumped .it is required 12v DC of power supply.

IV. FLOW CHART

V. CONCLUSION

India more people depend on agriculture .The history of agriculture dates back thousands of years, and the development has been driven and defined by greatly different climates, cultures and technologies. The main contribution of this paper is to give a overview of project model which will greatly develop the irrigation system using microcontroller in India. The automation of an irrigation system will reduce the gap between requirement and consumed energy and further conserves the resources thereby reducing the wastage of resource. In addition to this system removes workmanship that is needed for flooding irrigation.

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