# Miss Call Based Irrigation System

**Avinash**

Engineer, Shilpa Mediacre Ltd, Raichur, Karnataka, India.

**Abstract:** *In this paper we purpose Miss Call Based Irrigation System using microcontroller. The main purpose is to start motor without visiting to the pumpset location by giving just one miss call. Also supplies water to the field by sensing the soil condition. For sensing the soil condition, whether it is dry or wet, we use soil moisture sensor and output of these sensors are fed to the microcontroller. There are electrically controlled valves, when particular plant soil found to be dry then automatically the controller energizes that particular solenoid valve & supply water to that particular field. In addition to the above, the system is designed to monitor the water level in water tank.*

**Keywords:** Microcontroller, GSM Module, Irrigation, and SIM.

## 1. Introduction

In India agriculture is the most important occupation of the people. More than 60% of our total population depends on agriculture. Thus the entire economy depends on agriculture. Nowadays, water shortage is becoming one of the biggest problem in the world. Many different methods are developed for conservation of water. Agriculture is one of the fields where water is required in tremendous quantity. Wastage of water is the major problem in agriculture. In this regards, a thought is given to develop a Miss Call Based Irrigation System.

## 2. Literature Survey

Normal Irrigation techniques which are manually operated are most commonly used in India due to its low cost and high profits. In our literature survey we found that the previous versions had major drawbacks. The problem with the previous versions was that they had only for automatic plant watering and they were unable to detect the soil condition which was a huge drawback. And they did not have an automatic water tank level controller.

To differentiate our system from other is farmer usually don't know to read or write message. There are system in which switching ON and OFF motor via message so we are overcoming this problem by switching motor ON and OFF through miss call.

## 3. Problem Definition

Even in the modern day's farmer in rural side facing so much of problems in agricultural field in spite of growing technologies. Farmer is having 3-phase motor for pumpset but 3-phase power will be supplies to villages during night time only. In order to switch ON the motor farmer has to wait till night and has to go the pumpset location. To overcome this problem, we are giving a solution called Miss Call Based Irrigation System. Nowadays, it's quite common that everyone are using mobiles so switching ON the motor using mobile is our solution.

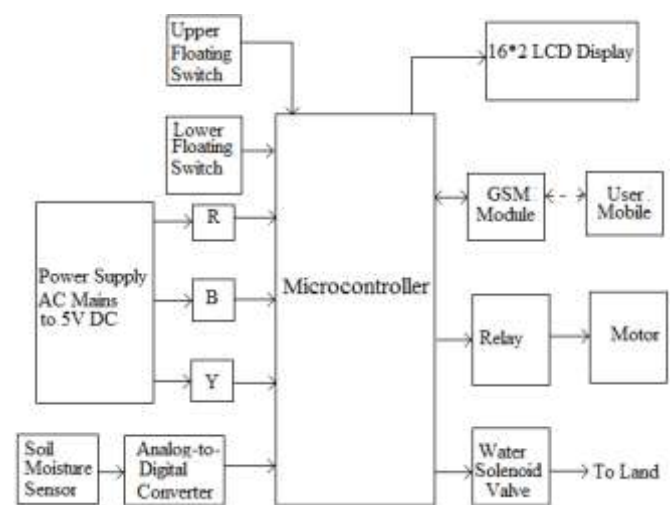## 4. The Technique

### 4.1 Block Diagram



**Figure 1:** Block diagram of Miss Call Based Irrigation System.

The block diagram of Miss Call Based Irrigation System is shown in above figure. The microcontroller is center part of the system, which integrates & coordinates all other devices connected to it. And this programmed to take some decisions for different inputs. LCD displays the status of phase power and GSM status. A working GSM SIM will be inserted in GSM module for which user has to give miss call. Relay is used to switch ON and OFF the motor. Moisture content of the soil will be measured by the Soil Moisture sensor whose output is given to the microcontroller through Analog-to-Digital converter. Incoming 3-phase power supply will be converted to DC volts using three numbers Step-down transformers (One for R, second for B and last for G).

### 4.2 Working Principle

After arrival of power (1-phase or 3-phase) the farmer gets message indicating "Motor System Started" from GSM module where working SIM is inserted in that module. After reading this message the farmer has to give a call to the GSM module SIM. The call will be disconnected itself. If there is absence of 3-phase power means motor won't start and GSM module sends message indicating "Motor is OFF Single

Phase", also displays the same status on LCD display. Then farmer comes to know that there is absence of 3-phase power. During presence of 3-phase power, upon giving miss call, the motor starts pumping water to the water tank & GSM module sends message to farmer indicating "Motor is ON", also displays same message on LCD module. We place water level floating switches in water tank at the top level and bottom level whose outputs are fed to the Microcontroller. The switch placed at the top level is referred as Upper Floating Switch & the switch placed at bottom level is referred as Lower Floating Switch. Assume that just now motor has started filling water to the water tank. The lower float switch floats up and keeps motor pumping the water. When upper floating switch floats up with water, the output of the switch causes motor to turn OFF. Then farmer gets message from GSM module that "Motor is OFF". While motor is pumping water to the tank, our system also checks the moisture of the soil. The soil moisture sensor is connected to the microcontroller through ADC. Moisture content of the soil is measured by the sensor and is fed to the Microcontroller. If the moisture value is below reference value (Dry condition) then this condition causes the water solenoid valve to supply water to land. If moisture of the soil is above reference value (Wet condition), the solenoid valve doesn't let water to flow to the land.

## 5. Conclusion

The proposed technique provides several benefits & can operate from anywhere in the world. The system supplies water to land only when the moisture in the soil is below than the reference value. By this transfer of water to the roots water conservation takes place. Thus the system is efficient & compactible to the changing environment.

## 6. Future Scope

With a numerous fields of application and various advantages of the system has made it one of the major option available for the farmers. The increasing interest in this area of research may bring about more and more consumer efficient system. The changing climatic condition and global warming Issues prevailing throughout the world can be overcome through this system.

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## Author Profile

**Avinash** received the B.E (Electronics and Communication Engineering) and M.Tech (VLSI Design and Embedded Systems) degrees from Visvesvaraya Technological University, Belagavi, Karnataka, India in 2013 and 2015, respectively. Currently working as an Engineer in Shilpa Medicare Limited. He is interested in Embedded Systems & has capability of writing own programs in Assembly language 8051 Microcontroller.