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# FARM AUTOMATION SYSTEM

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**ABSTRACT—**

**The main objective of the paper is design and implementation of farm automation system. In the conventional farming, water is supplied to the farm by using various irrigation methods manually. This requires more labors and also it is very time consuming. So to overcome these drawbacks we are developing a farm automation system using GSM module.**

**Keywords—Microcontroller, Sensors (IR 217 sensor, soil moisture sensor E-77, float water level sensor D78, LM 35) , Automation, GSM module.**

## I. INTRODUCTION

The population of our country is increasing day by day. Our country economy is based on agriculture. To feed all the population, it is necessary to take large amount of crop yields. For this appropriate water supply to the farm is necessary. But nowadays the climatic conditions that we are facing are very drastic. Sometime there is overrunning or sometime farmer has to wait for rainfall. In sufficient amount of water supply to the farm causes lots of damages to the farmer.

Due to the modernization many farmers are shift in urban cities. So for these farmers who live far away from their farm it is very difficult to take care of their farms. They have to travel a large distance just to turn on the motor for supplying water to their farm. Farm automation system is an advanced system compatible for automatic and beneficial for farming. This will remove all the above drawbacks.

In our project we have four sensors. We use moisture sensor at the plant to measure the amount of water which is present in the soil. On that basis we decide the requirement of motor to turn on or off for supplying water to the farm.

Water level sensor is used to measure the level of water present in the well. On the basis of the water level the motor will be turn on or off and respective SMS is sends to the farmer mobile phone through GSM. While doing this if the temperature of motor goes beyond the safety limit then for this we use temperature sensor for preventing the motor from burning. Here we are providing secondary supply in case some power supply failure is occurred. We use electricity meter for counting the electricity that the system will consumed monthly and send the SMS of that amount of reading to MSEB through GSM. And all the sensors output we displayed on the LCD display.

## II. LITERATURE SURVEY

H.T.Ingale1, N.N.Kasat2 1GF's G.C.O.E, Jalgaon, Assistant Professor 2SIPNA's C.O.E.T, Amaravati Associate Professor[1] "AUTOMATED IRRIGATION SYSTEM". In this 89c52 microcontroller is the heart of the system. Microcontroller takes the output from ADC and stores in the memory in that memory the limit is set. Depending on that limit value and humidity value which we get comparison takes place. On that basis motor is turn on or off and supply of water to the farm is necessary or not is decided. But this system is complicated.

Aniket H. Hade, Dr. M.K. Sengupta[2] "AUTOMATIC CONTROL OF DRIP IRRIGATION SYSTEM AND MONITORING OF SOIL". This system is based on zigbee and microcontroller. In this system moisture of the soil is sensed by moisture sensor and sends the result to the microcontroller according to the result the water is supply to the soil. This system automatically control using internet. But this system is used for a limited distance, as the range of zigbee is 10-100m.

Gayatri Londhe1, Prof. S.G. Galande2,[3] "Automated Irrigation System By Using ARM Processor". In this system ARM9 and trans receiver Si4432 and various sensors are used. It senses the humidity, moisture and according to that requirement it supplies the water and nitrogen mixture to the farm. The water and nitrogen mixture is supplied for a specific time interval. This time interval is decided on the basis soil condition. But the system is not reliable.

Drishti Kanjilal, Divyata Singh, Rakhi Reddy, Prof Jimmy Mathew[4] "EXTENDING AUTOMATION TO THE FARM LEVEL SYSTEM USING MICROCONTROLLER 8051". In this humidity sensor is used to detect the humidity of the

atmosphere. On the basis of that microcontroller decides water is supplied to the soil or not. Also it uses digital solenoid valves to activate the sprinkler. But this system is not accurate as it depends on humidity, and we know our environmental conditions are very drastic in nature.

Ms. Deweshvree Rane, Prof. P. R. Indurkar, Prof. D. M. Khatri[5] " REVIEW PAPER BASED ON AUTOMATIC IRRIGATION SYSTEM BASED ON RF MODULE". This project contains RF module and ARM LPC2148 microcontroller. In this it sends acoustic sound and measure speed of the returning signal. The speed of the signal decreases as the soil contains more moisture. Now this signal is given to the microcontroller then according to the conditions water is supplied to the farm. And SMS is sends to the user. But it is a costly.

## III. SYSTEM DESCRIPTION
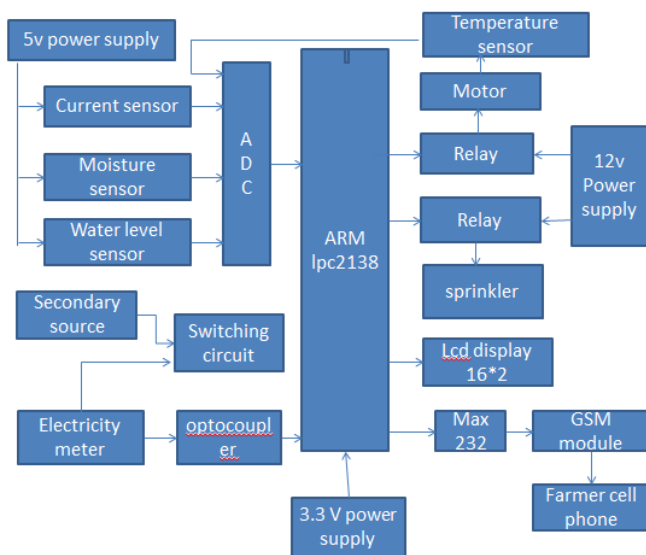


Our system consists of lpc2138 microcontroller. The system is based on automation of conventional agricultural system. We are using different types of sensors, current (IR 217 sensor), moisture (soil moisture sensor E-77), temperature (LM 35), water level sensor (float water level sensor D78). First we turn on our system then the current sensor (IR217) will sense power supply to indicate supply is continuous. After that a resistive type of moisture level sensor (E77) is used to calculate the amount of moisture is present in the soil. The amount will be displayed on the LCD in terms of pH. On that moisture amount we decide the sprinkler should supply the water or not. Sprinkler is controlled by relay with motor.

Then, we will verify the level of the water in a well by using water level sensor (D78). If the level of the water is

more than the some limit then motor will turn on and the sprinkler will sprinkle the water in the farm. Otherwise motor will be turn off and sends the SMS to the farmer that the 'well is empty' through GSM module. For safety purpose we mount temperature sensor (LM 35) on a motor. If the temperature rises out of the limit it will sense by the sensor and we can prevent it from bursting. And the output of the temperature sensor will display on the LCD display in degree. The energy consumption of the whole system is calculated by interfacing electricity meter and display the reading on the LCD. And send the SMS to the MSEB.

## IV. CONCLUSION

To overcome all the above problems that are accuracy, memory consumption of the microcontroller, reliability, cost we developed mobile control based automation system using GSM module. Our system solves all these problems. Our system provides the best output to those farmers who live far away from their farms. As our system does automatic turn on or off the water supply then there is no need of farmer to present every time in the farm. Also some fault may be occurred it sends the SMS to the farmer as GSM module covers a large distance area. Also our system solves the billing illegal issues as it directly calculate the bill and sends only that amount of reading to the MSEB so that farmer has to pay only that much amount of money. Hence corruption is avoided.

## V. REFERENCES

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[4] Drishti Kanjilal, Divyata Singh, Rakhi Reddy, Prof Jimmy Mathew[1] "EXTENDING AUTOMATION TO THE FARM LEVEL SYSTEM USING MICROCONTROLLER 8051"

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