

# Solar Powered Auto Irrigation System using GSM Module

**Suman**

B. Tech Student

Department of Electronics & Communication Engineering  
Moradabad Institute of Technology, Moradabad, 244001 Uttar Pradesh, India

**Manjari Sharma**

Assistant Professor

Department of Electronics & Communication Engineering  
Moradabad Institute of Technology, Moradabad, 244001  
Uttar Pradesh, India

**Srishti Tyagi**

B. Tech Student

Department of Electronics & Communication Engineering  
Moradabad Institute of Technology, Moradabad, 244001  
Uttar Pradesh, India

## Abstract

Sun powered power is utilized as just the wellspring of energy to control the general framework. Sensors are set on the paddy field and these sensors constantly sense the water substance and give the message to the agriculturist. Without going to the paddy fields, ranchers can get the data about the Moisture substance and agriculturist can control the pump set by communicating something specific from his PDA even from a remote place where system is accessible. Be that as it may, if the Moisture level scopes to the low level the engine will naturally begin without insinuation to agriculturist and to guarantee the correct water level in the site. Toward the finish of this paper, a total equipment usage of this proposed robotized water system framework will be introduced.

**Keywords-** Automated Irrigation, GSM Mobile, Moisture Sensor, Microcontroller, Water Level Sensor

## I. INTRODUCTION

Investigation of the power in country India demonstrates that the power provided by Electricity Company is exceedingly erratic and profoundly intruded. The greater part of the agriculturists have their land parcel at far of separation. All harvests in these grounds rely upon the best possible water system, which makes them to sit in the field and screen for the power and Turn ON or OFF the pump. This makes them more troublesome in setting off to the land exchanging ON the pump for water system. Right around a human asset is spent for this operation. A human asset time is taken round the check for all days in a year and making them more stressed. To go around this issue a GSM answer for achieve the agriculturist independent of his area could be come to. The arrangement goes for mechanizing the water system pump control requiring little to no effort and remembers the agriculturist from his normal obligation of keeping up the water system pump cell phone is a standout amongst the most well-known and valuable customer hardware devices on the planet today. As the gadget is so much mainstream and some portion of consistently exercises, many extra circuits are built to make it still more component rich instrument. Such extra element is this framework which enables client to switch on/off burdens from remote end. It discovers applications in homes, workplaces and even in businesses. Here is a Mobile telephone worked gadget control circuit which empowers exchanging „on“ and „off“ of machines through remote stations. It can be utilized to change machines from any separation, defeating the restricted scope of infra-red.

## II. SYSTEM MODEL

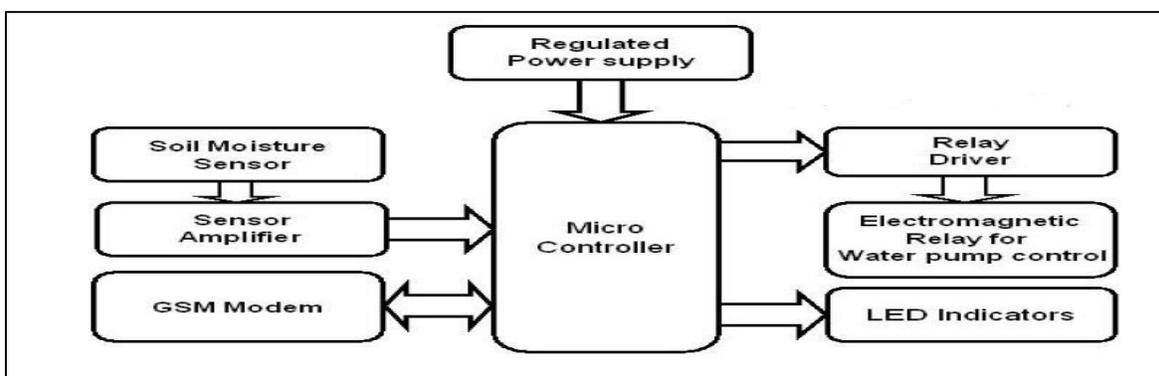


Fig. 1: Power Supply Circuit Diagram

### III. PREVIOUS WORK

GSM based Automatic Irrigation Control System for Efficient Use of Resources and Crop Planning by Using an Android Mobile by Pavithra D. S, M. S. Srinath in this paper creator talked about the nursery based current horticulture enterprises are the current necessity in all aspects of farming in India. In this innovation, the moistness and temperature of plants are exactly controlled.

Because of the variable climatic conditions these conditions once in a while may change from place to place in huge farmhouse, which makes extremely hard to keep up the consistency at all the spots in the farmhouse physically. It is watched that interestingly an android telephone control the Irrigation framework, which could give the offices of keeping up uniform ecological conditions are proposed.

The Android Software Development Kit gives the apparatuses and Application Programmable Interface important to start creating applications on the Android stage utilizing the Java programming dialect. Cell phones have practically turned into a necessary piece of human life serving various requirements of people. This application makes utilization of the GPRS [General Packet Radio Service] highlight of cell phone as an answer for water system control framework. GSM (Global System for Mobile Communication) is utilized to educate the client about the correct field condition. The data is passed onto the client ask for as SMS.

### IV. PROPOSED METHODOLOGY

Fundamental intension of our venture is by utilizing sun powered vitality to run the entire operation. The sunlight based board creates 12v of voltage that can be changed over to 5v by utilizing controller and the directed voltage from controller which is not correct 5v it contains some air conditioner symphonious substance it can be separated by utilizing capacitor channel circuit. Sunlight based vitality put away in the battery (1.58Ah move down) straightforwardly associated with pump, transfer and solenoid valve. Those are worked at 12v and 200mA current. All the contraption are inside associated with the microcontroller (PIC 167877A). It controls the entire operation of our venture.

Every one of the states of the land shown in LCD show and a similar message send to previous or proprietor by utilizing GSM framework. It additionally shows the solenoid valve working conditions and SMS gotten by the previous. At the point when the harvest arrive ends up plainly dry consequently pump and solenoid valves are turned on and supplies the water to the land. At the point when the yield land is in wet condition the both pump and solenoid valves are killed for further vital of the water to the land we can turn ON the pump by sending the SMS to GSM modem which contains client SIM card.

The dampness sensor is utilized to detect the water content (level) of the land. By utilizing hand-off the microcontroller will sends the signs to the hand-off to make opening & closing of pump close and open the pump, rely on the data from dampness sensor. Before the working framework picking the operation of every administrator. The GSM demonstrates flickering in three second means system is available in embedded SIM. In the event that it indicates squinting in one moment implies system is absent in embedded SIM. The pump is totally submerged in the water tank or bore well for legitimate operation. Since the pump we can utilize as a part of the framework is sub-immersible sort.

### V. RESULTS

Various experimental tests showed that the system was able to function as expected and observed that the sensitivity of sensor was affected by temperature during checking of soil moisture level to determine watering.

This somehow resulted in variations in the measured moisture values at different times from the set moisture values to trigger watering. 80% out of 10 trials were successful in responding correctly. The system was however, able to send SMS to the user and LCD system upon starting and completing a scheduled task as well as the occurrence of events at all the 10 trials. Similarly, the system was able to respond to the SMS command to turn the irrigation pump on and off for watering at all the trials.

### VI. CONCLUSION

In this project automatic controlling of solar pump sets and SMS alert has been discussed fruitfully. The overall idea is that users to take advantage of the globally deployed GSM networks with its low SMS service cost to use mobile phones and simple SMS commands to manage their irrigation system.

To demonstrate the functionality and performance of the controller system, the prototype was implemented and tested. Results showed that it will be possible for users to use SMS to monitor directly the conditions of their farmland, schedule the water needs for crops, automatic control of water and set control operational conditions in accordance with the water needs of crops. This will help to minimize over water in gand crop production cost. Further, it will help users to take advantage of the prevailing GSM networks to provide value added services.

## REFERENCES

- [1] Pavithra D. S, M. S. Srinath “GSM based Automatic Irrigation Control System for Efficient Use of Resources and Crop Planning by Using an Android Mobile” IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE) e-ISSN: 2278-1684,p-ISSN: 2320-334X, Volume 11, Issue 4 Ver. I (Jul- Aug. 2014), PP 49-55.
- [2] Fangmeier, D. D., Garrote, D. J., Mancino, C.F and Husman, S. H., “Automated irrigation systems using plant and soil sensors”, American Society of Agricultural Engineers, ASAE Publication, 1990, pp. 533-537.
- [3] Benzedrine, A., Meghriche, K., and Refoufi, L., PC-based automation of a multi-mode control for an irrigation system Proceedings of International symposium on industrial embedded systems, Lisbon, July
- [4] Shinghal, K., Noor, A., Srivastava, N., and Singh, R., Wireless sensor networks in agriculture for potato farming International Journal of Engineering, Science and Technology, Vol. 2, No. 8, 2010, pp. 3955-3963.
- [5] Gautam, I., and Reddy, S. R. N., Innovative GSM-Bluetooth based remote controlled embedded system for irrigation, International Journal of Computer Applications, Vol. 47, No. 8, 2012, pp. 1.
- [6] Zhang, F., Yang, M., and Ying, H., The application of GSM communication in agricultural automation, Journal of Technology for Agriculture, Vol. 1, No. 1, 2004, pp. 39-41.