

# Review on Modern Irrigation System

Jyoti Saini<sup>1</sup>, Amit Saxena<sup>2</sup>, Zaheen Ahmad<sup>1</sup>, Mohit Singh<sup>1</sup>,

Assistant Professor<sup>2</sup>, Electronics and Communication Engineering department, Moradabad

Institute of Technology, Moradabad

Student<sup>1</sup>, Bachelor of Technology (ECE), Moradabad Institute of Technology, Moradabad

## ABSTRACT

In our India agriculture is the most important for people. About 70% of Indian people depend on Agriculture Fields .Because the India is an big agriculture country. In this we use Modern Irrigation system technologies. It day by day update in this technology so is called modern irrigation system with smart monitoring. Because the population of the country is increasing day by day for which more production of crops, food grains is required for feeding the huge population in India's economy. And its help for save water, which is regarded to be one of the most important for the plants for the growth of agriculture and its make a better farming technology technique. So in this paper we focused only on the smart irrigation system with smart monitoring. In this we used a better monitoring the tank automatically as well as better farms which will be beneficial for water in smart way. And in this used IOT system whose made smart the system. Its smart sensors help for overcome the man power and its do all work automatically and in this overcome the highly power supply. And also we focuses on measuring and maintaining the soil temperature within permissible value. That's by these project overcome the all problems and upgraded agriculture system for the country.

**Keywords :** Arduino UNO microcontroller, GSM, Soil Moisture Sensor (LM393), DHT22 Sensor, IOT, Relay, Led etc.

## 1. INRODUCTION

India is focused only on the agriculture based system. At presents the population of the country is increasing day by day so the requirements are increasement in crops and requires a lot of man power because the farmers manually irrigates lands, which due this way they cannot properly monitor and maintence each and every field of their farming land, they do not prevent drainage problems and not overcome the water crisis in India. But now due modern technology we overcome traditional farming, lack of automation, lack of knowledge and unavailability of sufficient water as well as electricity as these resources are scarce. Thus the proposed designed a application for farmers to automatically monitor and control the irrigation system using a arduino Uno controller, some sensors and the other electronics components and comparators. Now the farmers may automatically irrigate the farms and control the man power, and saving a lot of time using the modern irrigation system with smart monitoring. And control whether temperature on LCD.

## 2. LITERATURE REVIEW

### A. Smart Wireless Sensor Network are used

This paper presents a system to monitor irrigation system in the agriculture fields. Because the irrigation system is one of the serious sector in developing countries. So in this proposes a low cost and efficient wireless sensor network technique which is used to monitor the soil moisture and temperature from various farm fields and control them. According to need of crop, the microcontroller take decision that it do it means ON and OFF, and itself find out what need of crops. And after according this sprinkle the water on the crops that how many need of water of crops. So the aim of system is to develop wireless system based low-cost soil temperature and moisture monitoring the system that can detect the soil and moisture of the fields in real time and sprinkle system water is fed to the soil near the roots depending on nature of crops growth in the soil.

### B. Used Control System

All of sensors controlled in current available system, the arduino Uno will be used in this project that can sense data seen the Internet. The system provides real time monitoring and control environmental. Thus, the farmer exactly knows whether a field required water or not. Hence, a farmer saves time, money and water resources by using “Modern Irrigation System”. The system has a distributed wireless network of soil moisture sensor placed in the root of the plants. In this we used a threshold value they created an algorithm to determine the amount of

water to be supplied. They have worked automatic sprinkling system, and pump or irrigation system.

### C. Problem in irrigation system

Today, India ranks second in the world in farm output with 64% of cultivated land dependent on monsoons. Irrigation accounts for 55-70% of water usages in India .Lack of over irrigation and under irrigation problem. Land is more and we need man power, smart tank, electricity, lack of IOT, installation costs etc.

## 3. COMPONENTS USED IN PROJECT

Firstly two major components used in their system are..

### i. Temperature Sensor

Temperature sensor is continuously monitored by soil temperature. The soil temperature is one of the most important environment factors for the proper vegetation of the crops. Its physical process of soil is dependent on soil temperature. Its change soil temperature of soil temperature affects the soil moisture and nutrients content.



Figure1: Soil Temperature

### ii. Moisture Sensor

To measure the moisture in the soil a resistive sensor is designed. It moisture sensor consists of two probes which are deeply inserted into the soil. It works only on the principle of electrical conductivity of the soil. If the moisture content in the soil increases, then the resistance of soil decreases and vice versa. Proper irrigation of water will improve crop quality and

save natural resource.

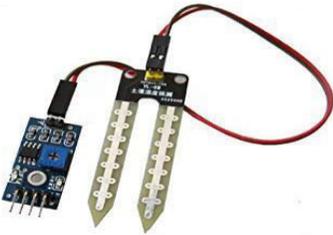


Figure2: Soil Moisture Sensor

And other component which help for irrigation like

1. Sensors: We use sensors DHT 22 sensor for humidity and temperature sensor, Ultrasonic sensor that quantify the distance to a body or object by utilizing sound waves. It evaluates and measure distance by sending a sound wave at a particular recurrence and tuning in for that sound wave to skip back. And we use water level indicator system.
2. Gsm: A GSM Module is fundamentally a GSM Modem associated with a PCB with various sort of yield.
3. LCD: LCD stands for Liquid Crystal Display. LCD screen is an electronic display module and locate an extensive variety of use. The data is the ASCII representation of the character to be displayed on the LCD.

4. Relay Switch: A relay switch used for switching device those open or close circuits.
5. RTC: Real time clocks (RTC), as the name recommends are clock modules. The DS1307 is a low-power clock/calendar with 56 bytes of battery backup SRAM.

#### 4. HOW THIS DEVICE WORK?

Sensors from different device continuously emit the data in the soil, crops etc about the working state of them. Arduino Uno microcontroller provides a common platform to dumb their data in a common language for all devices to communicate with each other. Firstly soil moisture senses the level in the soil and based on the value that is shown on display, according to the control circuit motor will be start and it will pump the water with the help of a pump and pumping actions will continue till it fulfills the conditions. This Smart Irrigation and Tank Monitoring System provide a smart way to monitor the water tank and irrigate the crop field automatically. This proposed system reduces the man power of farmers like supplying water to plants and controlling the motor to fill tank. DHT22 sensor, Soil Moisture sensor, GSM Modem, Ultrasonic sensor etc, are used in this system and according to this sensor parameters farmer are provided an automated way to irrigate their fields and monitor by tank. In this we take water many resources for crops.

#### 5. BASIC BLOCK DIAGRAM

The basic block diagram shown in the figure3. The paper aims at designing an irrigation system with smart monitoring which can be government is very large in respect of this developing this

device. All Complete system worked under in IOT .

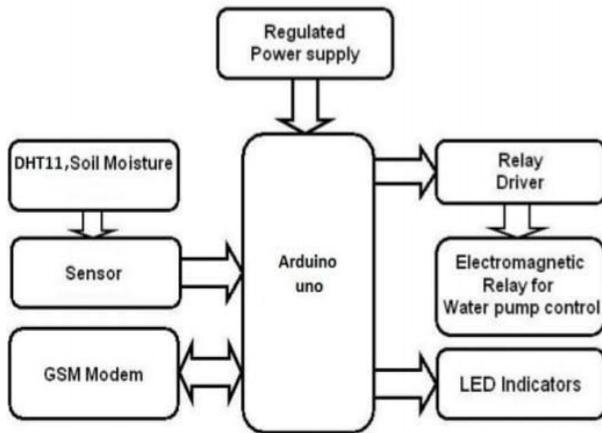


Figure 3: Block Diagram of the Simple Irrigation System

In this one of most important part is controller which representation of the application run screen. The moisture level values from the Moisture sensor will be displayed in the allotted widget after selecting the parameters in the application, the user now will be allowed the control to the motor either to start or stop the process. The application screen must be in run mode as the data and the control can be done over to the Arduino Uno.

### 6. RESULT ANALYSIS

As the goal of the project is to design a smart irrigation system to reduce the wastage of water and electricity as well as the workload of farmers and water plants with the use of device like Arduino Uno, Moisture sensor and other components. Controller shows the number of hours work and a number of times it should water the field and the duration between each cycle, after selecting these parameters the status of the motor is to be selected.

### 7. CONCLUSION

This project provides an attractive user interface with the most efficient way of controlling the irrigation system. In this firstly we have defined the various system and devices available. In this we monitor through comparator devices, GSM, Controller Sensor, IOT, Reset button or any other devices. There are some important things to be considered like power consumption, maintenance, expandability, environmental friendly and increases in productivity etc..Its work advances monitoring. This system is highly recommended in the region where there is scarcity of water to improve their sustainability and give farmers a hope. Through this design consists only limited person by which user can interact and send a control sensor and also monitor the environment. So by having a proper idea of different technology we can develop a much simple and smarter system which will be affordable as well as easy to use for the farmers.

### 8. FUTURE ASPECTS

Our work can demonstrate vast opportunities to work on the device, and also on the field using the device that we have worked with. It devices can be used anywhere. Finally, it is hoped that although this Review is primarily intended as a guideline, other involved in research and development in irrigation and drainage may find it useful when drawing up plants and programmes for future research. The sensor that we have been worked with can also be reset according to most recent time update. In future time, our device can be kept testing for checking whether the

sensor still runs properly and give real time data.

## 9. REFERENCES

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