

Automatic Water System

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ABSTRACT

This project is beneficial for agriculture as it has been seen, since last few decades agriculture sector is getting neglected. There must be a smart way to overcome this situation; this project is solution for all those remedies. It is Arduino based project which detects the moisture in the soil and works accordingly, when the sensors detects the dryness in the soil it sends signal to relay and then relay and motor which are connected releases water. The Arduino is programmed in such a way that wastage of water is prevented.

Keyword: - Agriculture, Arduino, Moisture, Motor, Relay .

1. INTRODUCTION

Many environmental problems have been seen since last few decades, due to which plants suffer the most. The problem still sustains due to lack of negligence of humans towards plants.

Plants are important factor in our environment they provide us oxygen due to which we can breathe.

Civilization is big cause of all the problems. There is not sufficient place for planting trees. People plant trees in their backyard or in pots. Many cities do not get proper supply of water. The plants are dependent on sun and water for their growth. But if this cycle breaks ultimately and unfortunately plant dies.

In urban areas human often forget to water plants regularly, this is also major cause which affects plants the most. This can be seen in cities but what about rural areas, what if there will be also same scenario but different problems.

According to the survey, 17% of world's populations, in India only 4% have to manage with freshwater. The problem which we face 'Shortage of Water' is not due to lack of it but we as human fail to manage our precious natural resource

Agricultural sector is also facing many problems due to improper supply of water to plants or may be people don't have any solution towards this cause.

There must be a proper utilization of water as it is also very important and primary factor in our environment.

Regular and proper care must be taken of plants as they provide us oxygen without which our life is impossible.

In rural areas sometimes, it may happen even the source of water is available but there is lack of man- power to pump water and wait until the fields get sufficient supply of water, which stops them from doing other essential activities.

As we all know plants need essential minerals to grow, these minerals are provided to them by regular supply of water. What if this time and efforts gets reduced ? There must be a solution to all these problems.

The concept of 'Automatic Water System' helps farmers to water the plants as well as do other activities. The soil moisture sensor senses the moisture in the soil and gives signal to Arduino. It can be the smart way of performing agricultural activity. What's makes this system smart – it's the working of and proper detection of sensors. The sensors are placed in such a way that it never fails to detect the moisture content present in the soil. Also, the algorithms and proper coding makes smart and reliable system.

This system is helpful in all seasons whether it maybe summer or it may be winter.

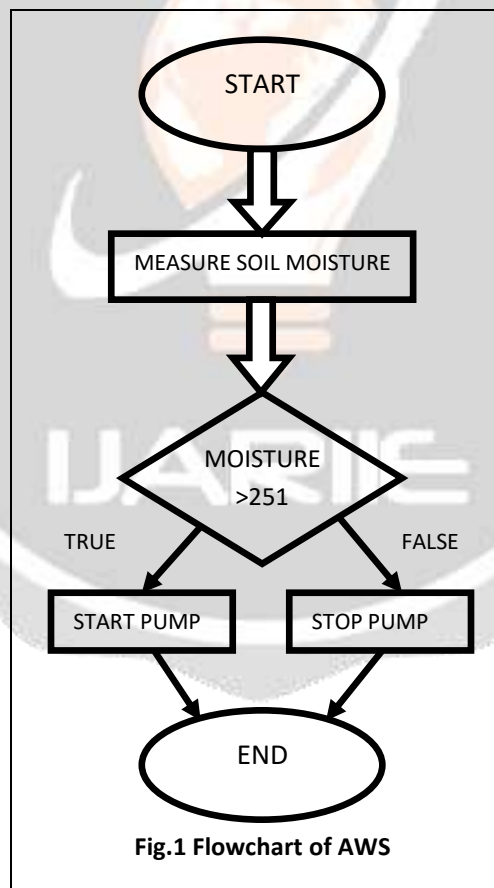
2. WORKING PRINCIPLE

The working principle of this system is connection of soil moisture sensor which is embedded into the plant, which is also further connected to Arduino.

In this system Arduino acts as base to all connections, we can say it controls whole system.

Next comes our soil moisture sensor – it senses the moisture level of the soil and passes signal to Arduino. If the moisture level is low within the certain value passed while coding, Signal is sent to relay module which pumps water to the plant. When plant gets sufficient water again command is sent to relay module and it switch off the motor via Arduino.

All these components do not consume much voltage hardly its consumes 7V to 12V



3. METHODS AND MATERIALS

- Power Supply

- Relay module
- Arduino.
- Soil Moisture sensor.
- Plant.
- Motor.

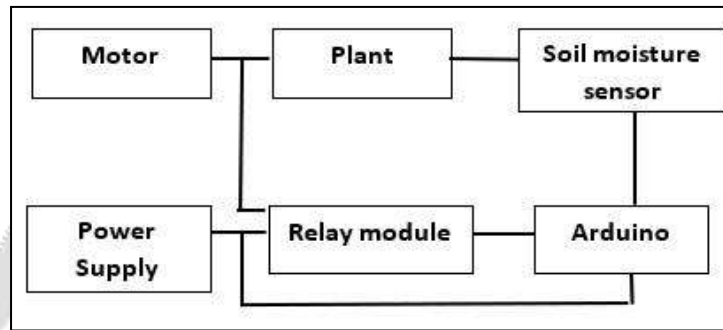


Fig.2 Working of AWS

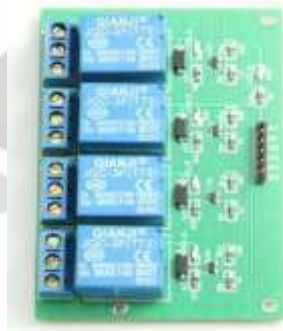
All the required materials are connected exactly as displayed in figure.

When Arduino and relay module receives power supply ,Arduino gets activated to receive signal from soil moisture sensor – the value is assigned to soil moisture sensor which keeps on checking the moisture of soil. If sensor detects that moisture level of soil is more, it passes value to Arduino which activates the motor pump .But when sensor detects that moisture level of soil is less, it passes the value to Arduino and it switches off the motor.

- We will see detailed description of each component.

3.1 RELAY MODULE

The Relay Module controls both AC and DC motors – it is designed to handle 4 relays at single time.



(a) Relay Module

3.2 ARDUINO

It is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor. We can programme the Arduino accordingly to do the needful work.



(b) Arduino

3.3 SOIL MOISTURE SENSOR

It detects the moisture of the soil around the sensor, It is very to use, we only have to insert it into the soil and then read it.

It uses the two probes to pass current through the soil, and reads that resistance to get the moisture level. More water makes the soil conduct electricity better; while dry soil conducts electricity is poor.



(c) Soil Moisture Sensor

3.4 MOTOR

Its wok is only to supply water to plant when relay gives it signals it pumps water with help of pipe.



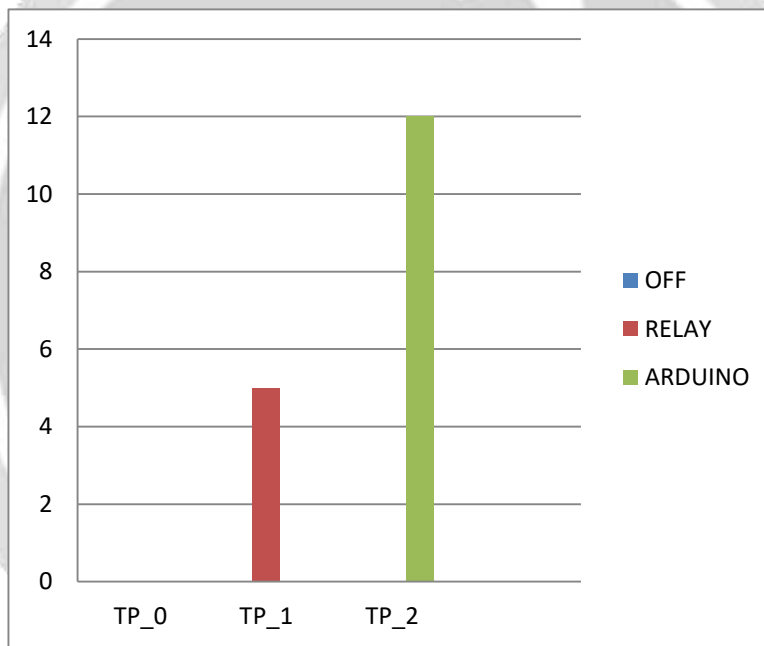
(d) Motor

4. GRAPHS AND TABLES

Table for Test Point (TP)

TEST POINTS	
Test point	Details
TP_0	0V
TP_1	5V
TP_2	12V

This table describes test points of the system which acts accordingly to supply of voltages.



The above graph depicts, Voltage and Test Points of this system – it shows values when voltage at point 0 the system is off , when it gets supply of 5v Relay module gets on , when it receives 12v supply Arduino is ready for processing.

5. CONCLUSION

After the observation of this project since last 10 days –we have concluded that this system works absolutely fine.

The relay receives signal for stopping the motor. We have observed that wastage of water is totally avoided. We can control amount of water to be released.

This system is biggest solution to many problems. Without any hesitance we can use it in our garden, fields etc.

This application is very beneficial for agriculture as it very helpful for humanity

Hence, we conclude that this system has both narrow and wide application.

6. REFERENCES

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