

FORM 2

**AUTOMATED IRRIGATION
&
THE PATENTS RULES, 2003
PROVISIONAL/COMPLETE SPECIFICATION
(See section 10 and rule 13)**

**TITLE OF THE INVENTION: AUTOMATED IRRIGATION : IOT BASED SMART IRRIGATION
SYSTEM**

1. APPLICANT(S)

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3. PREAMBLE TO THE DESCRIPTION**PROVISIONAL**

The following specification describes the invention

- Simplify the irrigation system by installing and designing the whole irrigation system.
- Save energy, which allows the application of smart irrigation system used more other application.
- Optimize water consumption.
- Automated system fully.
- Decrease the cost of operation.

COMPLETE

The automated system then completes the entire process that includes moisture testing, irrigation and stopping the water flow from the pump.

4. DESCRIPTION**TECHNICAL FIELD OF INVENTION**

This invention will change the irrigation pattern and make it more effective and reliable. This is Fully Automated system whereas drip irrigation requires some amount of labor work and reduces the water consumption by checking the soil moisture and irrigating the soil accordingly without any human interaction. There is even an option to regulate the irrigation manually if one wants to. As this is IOT based the power consumption is very low and we can always improve it more by integrating smart energy saving modules to the system.

BACKGROUND AND PROBLEM WITH EXISTING ART

The economy of many countries depends on agriculture. Farmers are facing problems in meeting these standards, especially those living in poverty.

The project looks into developing an automated irrigation system which ensures automatic watering based on high or low soil moisture content.

This system will work to minimize the number of workers in a crop field, control and save water and electricity, increase agricultural production using small quantities of water, minimize manual intervention in watering operations with increasing watering speed and preserve plants from weedicides.

LIST OF PREFERRED AND OPTIONAL FEATURES

- The system can be expanded to include various other alternatives which could include mobile application control of motor and Wi-Fi controlled monitoring.
- The system can work upon Renewable resources of energy such as Solar power instead of batteries which will help to reduce future cost.
- This system has a vast potential when coupled with IOT and AI.

BRIEF DESCRIPTION OF THE DRAWINGS

- The soil moisture sensors which are nothing but copper strands are inserted in the soil. The soil sensing arrangement measures the conductivity of the soil. Wet soil will be more conductive than dry soil.
- The soil sensing arrangement module has a comparator in it. The voltage from the prongs and the predefined voltage are compared and the output of the comparator is high only when the soil condition is dry.
- This output from the soil sensing arrangement is given to the analog input pin of the microcontroller. The microcontroller continuously monitors the analogue input pin.
- When the moisture in the soil is above the threshold, the microcontroller displays a message mentioning the same and the motor is off. When the output from the soil sensing arrangement is high i.e. the moisture of the soil is less.
- This will trigger the microcontroller and display an appropriate message on the LCD and the output of the microcontroller, which is connected to the base of the transistor, is high. When the

transistor is turned on, the relay coil gets energized and turns on the motor which is connected to the piping system and irrigates the field.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

- Designing or engineering a product in order to facilitate the manufacturing process
- Reduce Manufacturing cost.
- Designer should consider the Type of Raw Material and the form of raw material
- Optimize all the Manufacturing functions: fabrications, assembly, test shipping, delivery, service and repair
- Assure the best cost, quality, reliability, regulatory compliance, safety, time-to-market and customer satisfaction.
- It involves minimizing the cost of assembly.
- Reliability is defined as the probability that a component, equipment or system will Satisfactorily perform its intended function under given circumstances.
- We will also add a siren aur speaker attached to the microcontroller so that it will make a noise whenever there is some malfunction reducing the chances of failure.
- Adding a LM393 driver in case of a system failure the irrigation will work for a few minutes.

5. CLAIMS

Principal claim:

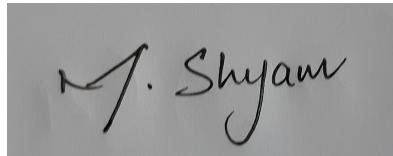
1. Simplify the irrigation system by installing and designing the whole irrigation system.
Make the system easy to use by farmers.
2. Fully Automated system.

Dependent claim:

- Reduction in water consumption as compared to drip irrigation system
- Fully Automated system whereas drip irrigation requires some amount of labour work.
- Ensures proper nutrition to plants as compared to drip irrigation.
- Ensures proper irrigation to the field due to uniform distribution network during the initial growth phase of the crops as compared to drip irrigation.

6. DATE AND SIGNATURE

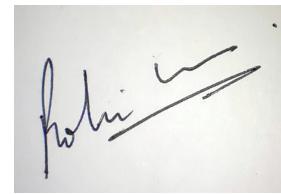
Date: 10th November '21



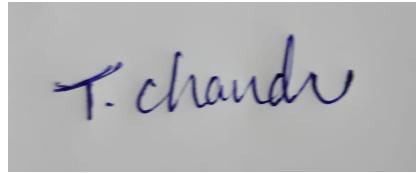
M. SHYAM SUNDAR



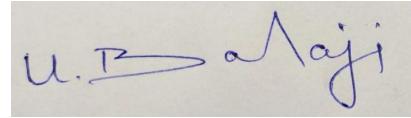
MUDIT JAIN



ROHIT VERMA



T CHANDRASHEKHAR

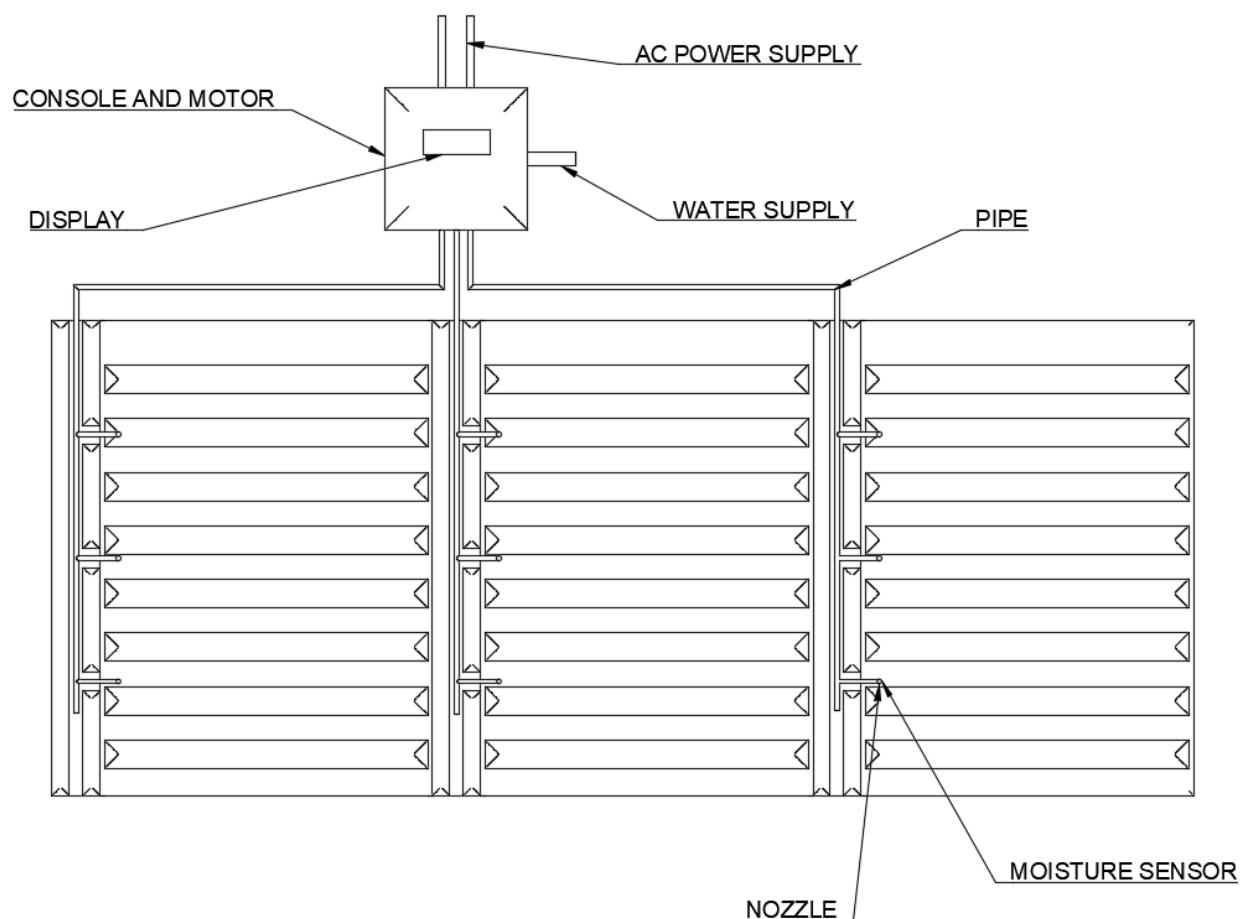
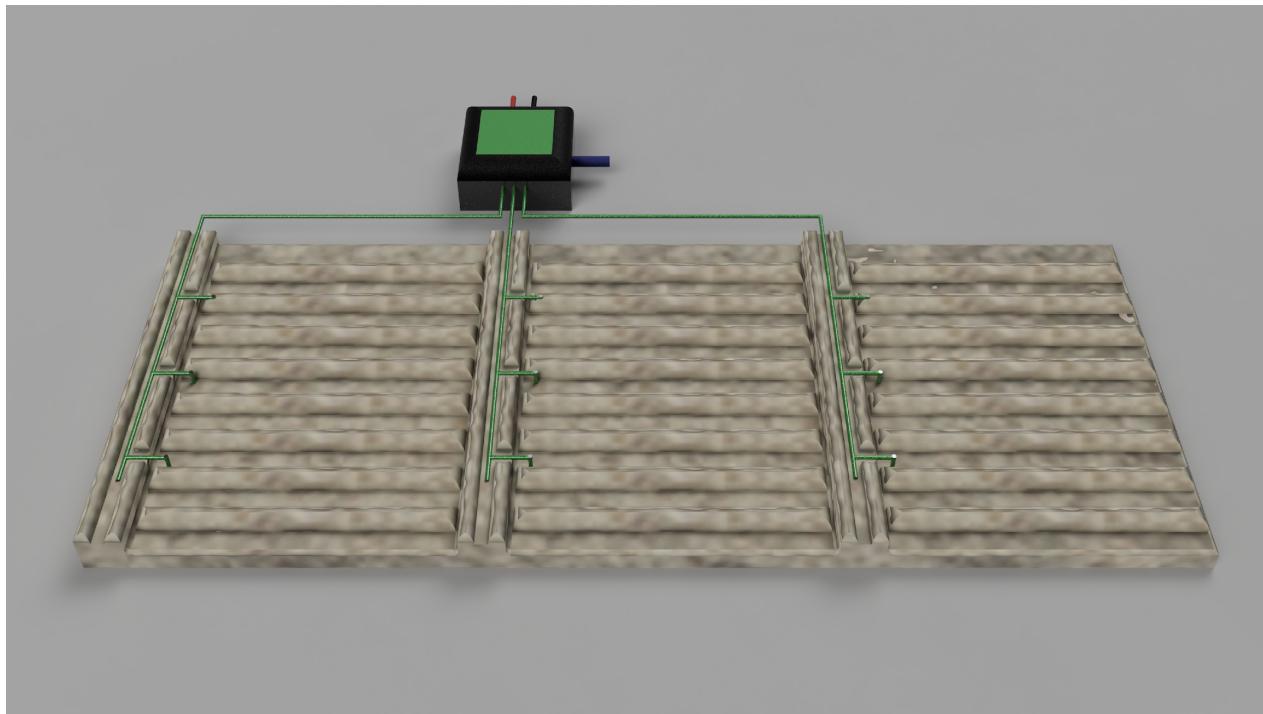


U. BALAJI

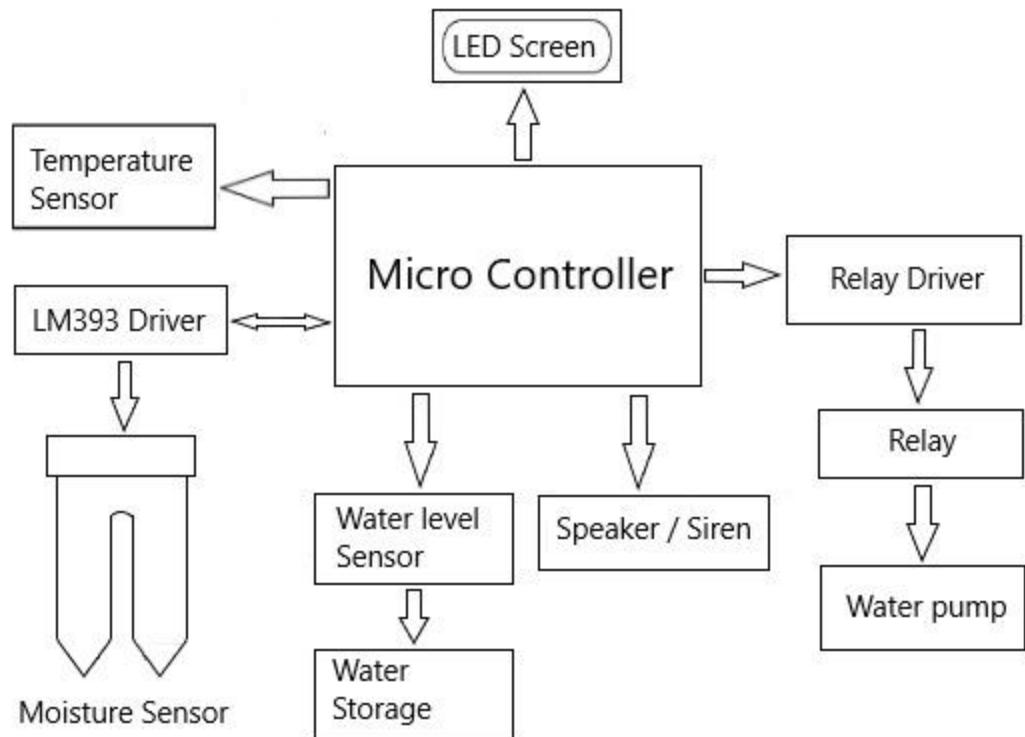
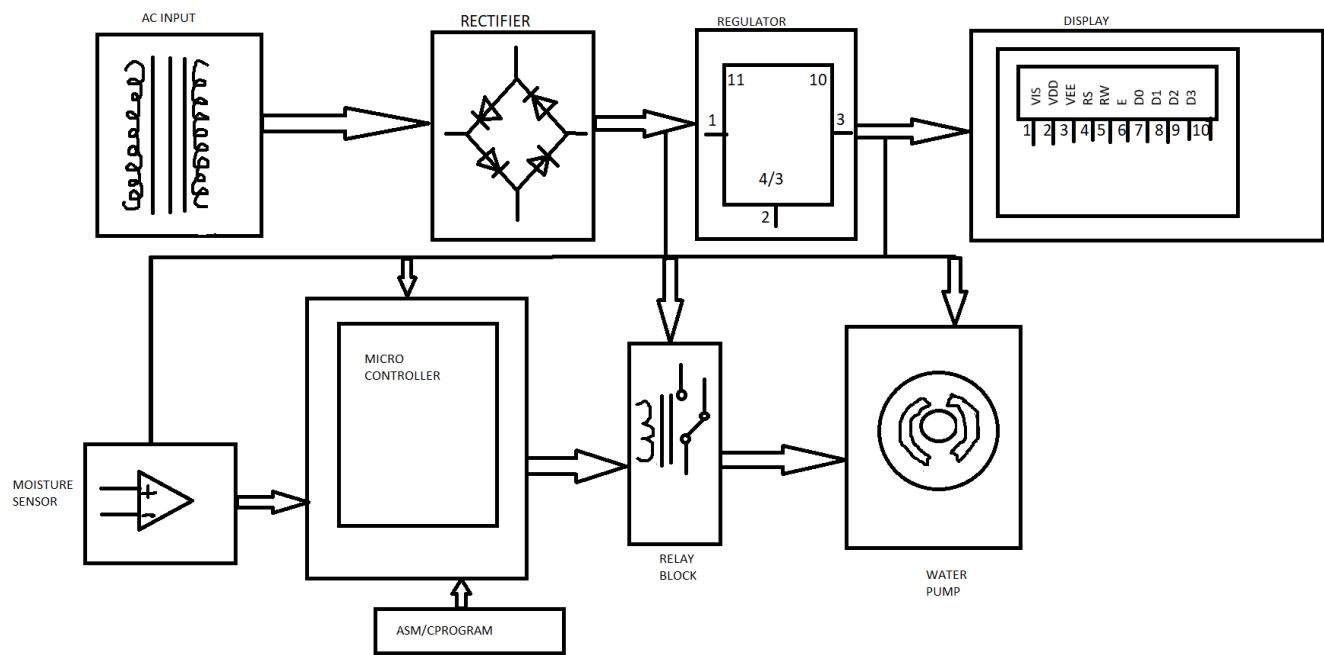
7. ABSTRACT OF THE INVENTION

- As you Can see in the diagram, we have added a temperature sensor for DFM
- Also, we Have now removed the rectifier and regulator
- We have added a speaker/siren attached with a microcontroller in order to prevent malfunction of the control module.
- Also, we have added a LM393 Driver

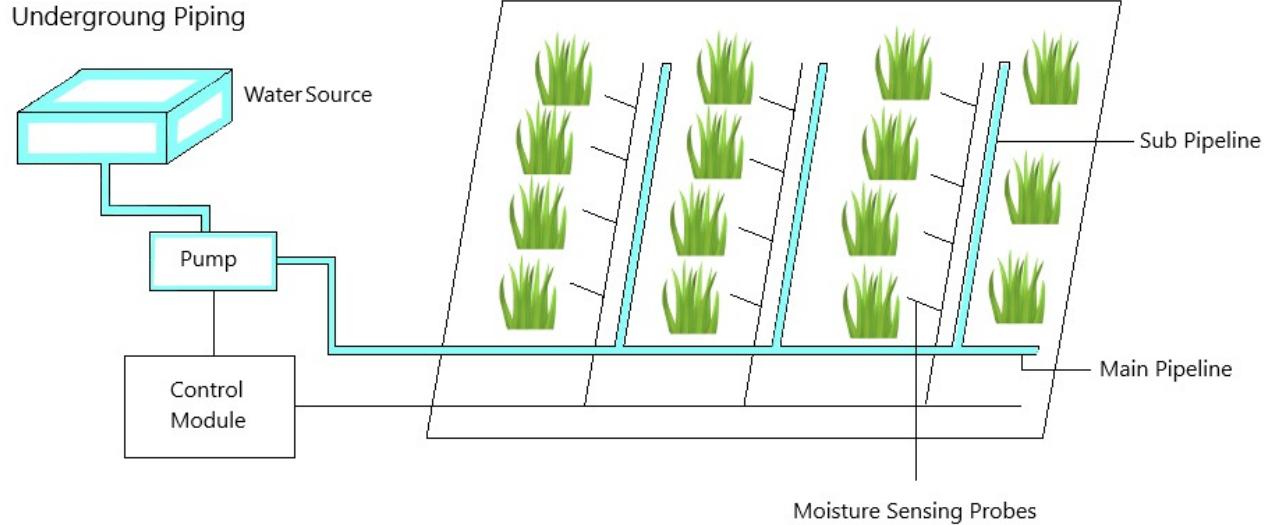
Schematic Layout



Control Module



Automatic subsurface irrigation



Automatic Drip irrigation

