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A Survey on Solar Based Smart Antibiotic Sprinkler System Using Internet of Thing

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Abstract - The objective of this work is to device an intelligent and autonomous sprinkler system that operates based on the real time moisture content in the soil to be watered. A moisture sensor that was submergedin the soil was interfaced to a sprinkler and programmed to control the water supply based on themoisture fraction present in the soil. Moreover, the IoT enabled controller allows the control the sprinkler remotely in the extraordinary situations. The system is built as a low-costmodel as compared to the earlier reported sprinkler systems using different wireless modules. The IoT feature in the present system can be an additional advantage as the user, from anywhere in the world, based on any forecast of thunderstorm can seize the watering processfrom a remote area, in the process saving a lot of waterand preventing the death of plants through overwatering. This work proves thepossibility of replacing conventional sprinklers with the smart sprinklers with IoT capability at relatively lower cost.

Key Words: Wi-Fi Module, Soral Panel, Soil Moisture Sensor, Humanity Sensor, Cloud Storage, Mobile App,Sprinkler.

1. INTRODUCTION

The supply of electricity is not reached up to every village. Solar energy is the most abundant source of energy in the world. Solar based irrigation system a suitable alternative for farmers in present state of energy crisis In India (Also it is eco-friendly-green way for energy production) An automaticirrigation system using solar power, Motor and Moisture sensor is used to pump the water.[1]

An IoT controller has Internet connectivity that enables it to transmit remotedata to the cloud and help analyze it.The basicprinciple behind the controller sensor and the actuator continuously communicates with the controller and the controller to the cloud via MQTT Protocol.[3] This benefit of IoT makes our Antibiotic sprinkler automatic and efficient.

1.1 PROBLEM STATEMENT

Misuse of Fertilizers and farm antibiotics due to unawareness on their usage metrics causing food adulteration and degradation in the nutritional value offood grains and vegetables.

1.2 OBJECTIVE

Continuous tracking of the sprinkler will be takingplace. This system will help you keep track of the safetyofyour IOT device and offer a centralized view of control panel. Reduces your costs by reducing overuse of fertilizers. Reduce the time for managing IOT devicesdueto mobile technology.

2. LITERATURE SURVEY

Various researches have been carried out and many papers have been published in order to design to solar based smart antibiotic system using IOT. Only some of them are discussed here the literature survey is a literature review include for understanding on some of the fundamentals of learning the definitions and conceptsthat will help in discovering topics that are based on previous research. It identifies the most relevant research papers from a study on a project. [2] It is often written asa part of thesis, dissertation, or research paper, in order tosituate your work in relation to existing knowledge. According to the survey conducted by the Bureau of Electrical Energy in India in 2011 there are around 18 million agricultural pump sets and around 0.5 million new connections per year is installed with average capacity 5HP. Total

annual consumption in agriculture sector is 131.96 billion KWh (19% of total electricity consumption)[4] In GSM based Automated Irrigation Control using Raingun Irrigation System by R.Suresh, S.Gopinath, K.Govindaraju, T.Devika, N.Suthanthira Vanitha [5]

Sr. No.	Author	Title ofPaper	Year	Software	Accuracy
1.	Kalaivanik Vidhyav Veeram mal.V	Smart irrigation System withIOT monitoringand notificationIndian Agriculture	2017	YES	95%
2.	.Banumath.D saravan	An androidbased automatic irrigation System using Bayesian n/w with SMS and voice Alert	2020	YES	95%
3.	Pratik D.Solanki Ram H.Mistry	Solar BasedSmart Irrigation System Using Internet of Things	2020	YES	96%
4.	M.Mediawan	AutomaticWatering System in Plant House- Using Arduino	YES	YES	94%

Table -1 Literature Survey

3. METHODOLOGY

Inthis project, thewhole projectis dividedinto twoparts. The first one consists of app and the second oneconsists of dashboard side. We are providing an app named Schedule is specifically for professors only.

Wewill be using Arduino IDE for coding of embedded clanguage to code the firmware.

3.1 ESP 256 WIFI MODULE

This small module allows microcontrollers to connectto aWi-fi network and use hays-style commands to create simple TCP/IP connection

Fig.3.1 ESP 256 Wifi Module

- Processor: L106 32-bit RISC microprocessor core based on the Tensilica Xtensa Diamond Standard 106Micro running at 80 MHz[5]
- 32KiB instruction RAM
- 16 KiB ETS system-data RAM

- 32 KiB instruction cache RAM
- 80 KiB user-data RAM
- SPI
- 17 GPIO pins[6]
- WEP or WPA/WPA2 authentication, or opennetworks
- IEEE 802.11 b/g/n Wi-FiSOLAR PANEL

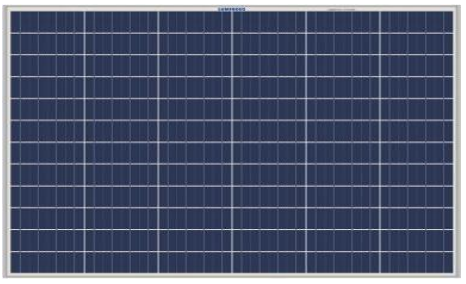

Fig.3.2 Solar panel

- Poly crystalline Cells type Panel
- Capacity - 40 W, 12V
- Voltage: Voltage at Max Power (Vmax) - 18V,Open Circuit Voltage (Voc) - 22V
- Current: Current at Max Power (imax) - 2.23A,
- Short Circuit Current (isc) - 2.42A
- 25 years performance warranty.
- Compliance to IEC standards

3.2 DC MOTOR

Fig.3.3 DC motor

- Weight of the motor: 500 gm.
- Liquid Discharge : 1ltr/Min
- Operating power required : 10 W
- Operating voltage : 12 V
- Operating current : 0.8 A
- Motor speed : 1500 RPM

4.DESIGN AND IMPLEMENTATION

4.1 FLOW CHART

As fig. 4.1 shows the overview of the system and the flow which will read soil moisture detector if the reading not match with the values then it will goes to the soil moisturedetector or if match then motor will turn on.

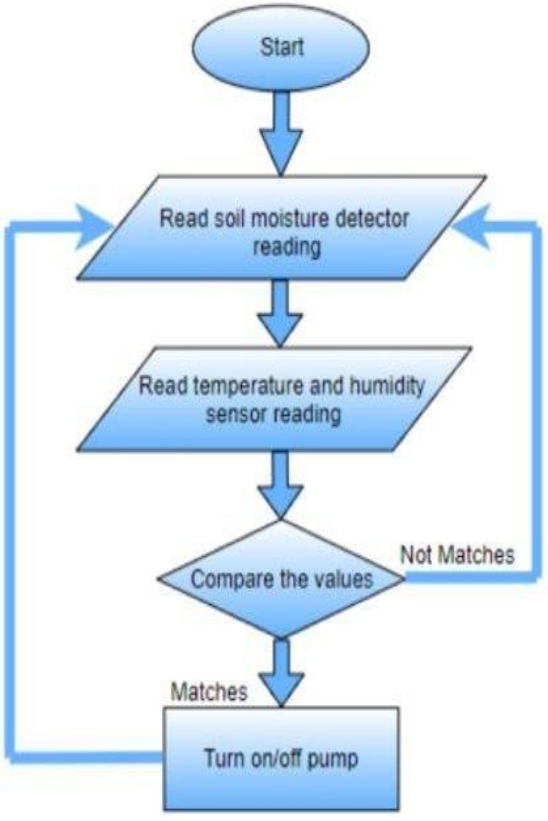

Fig.4.1 Flow Char

4.2 BLOCK DIAGRAM

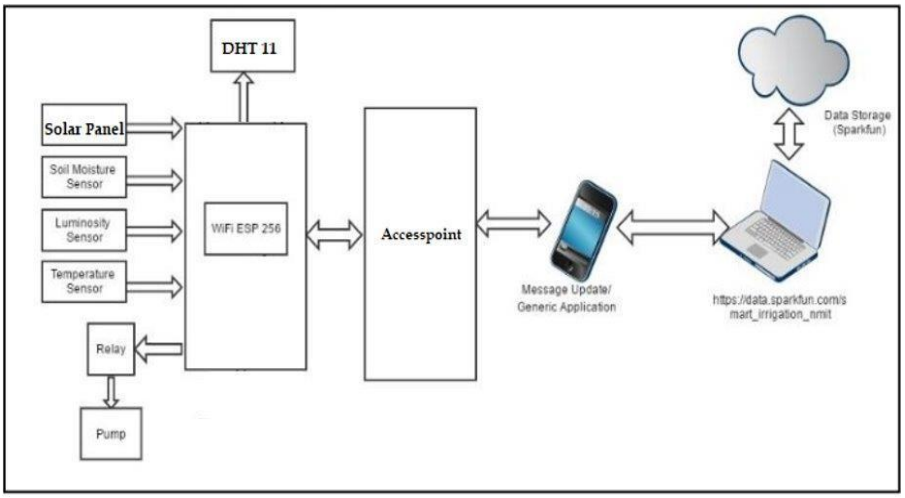

Fig.4.2 Block diagram

Block diagram shows all the sensors are connected to the Wi-fi module. The solar panel which is convert solar energy into electrical energy. Soil moisture sensor which measure the water contain in soil. relay is used to ON/OFF the motor. The luminosity sensor which detect the light. DHT11temp sensor which used to measure humidity and temperature. The sensor data such as moisture content temperature, humidity are measured and it is send to database so that farmer can view the live records data from remote location. when we apply voltage the pumping motor pumps the water throughout the field. then sensor will send data to the wi-fi module which will collect all the information and send it to access point which accessall the data and we will get msg on mobile phone anddata will store in cloud through the app.

5. CONCLUSIONS

We have proposed a Solar based Smart Antibiotic sprinkler using IoT system for increasing the device accuracy and reducing the risk of food adulteration. This project proposed solar based smart antibiotic sprinkler system using IOT there is no human interference, while antibiotic the plants.

6. ACKNOWLEDGEMENT

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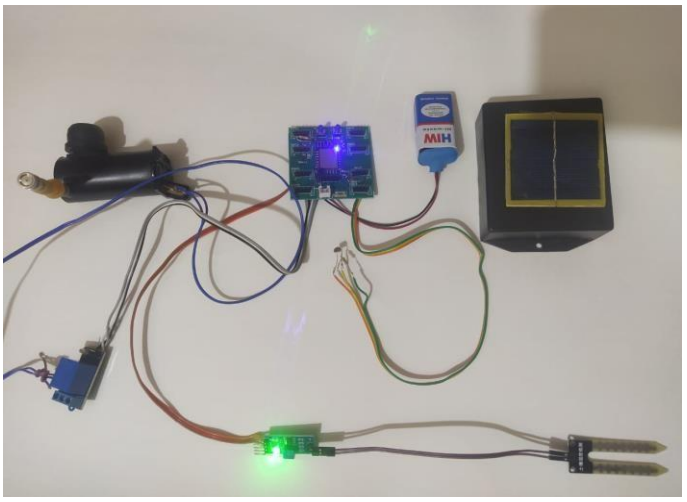
7.OUTPUT



8. FUTURE SCOPE

- By adopting Hydraulic system to wheels, the Ground clearance can be easily adjusted.
- The use of Latest computer technology willmake to automate the system completely.
- By adopting adjustable width of frame, therobot can be used for all crops.

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