



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

# IJRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 12, Issue 5, May 2023

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

Impact Factor: 8.423

 9940 572 462

 6381 907 438

 [ijrset@gmail.com](mailto:ijrset@gmail.com)

 [www.ijrset.com](http://www.ijrset.com)

# SMART GREEN HOUSE USING IOT

**Bhagyashri Shendage, Mahendra Metil, Umesh Kokate, Prof. Jyoti Bandal**

Department of Electronic and Telecommunication Engineering, Rajgad Dnyanpeeth's Shri Chhatrapati Shivajiraje  
College of Engineering, Dhangwadi Maharashtra, India

**ABSTRACT:**Sensors are used in IoT-based environmental monitoring to gather data about the environment and wirelessly transfer it to a centralized monitoring system. Sensors can be used to measure variables in solar power systems, including sun irradiance, temperature, humidity, wind speed, and direction. The performance of the solar power system can then be optimized with the help of this data. IoT integration in solar power systems has a number of benefits. First off, it enables real-time system monitoring and control, which can aid in locating and fixing problems before they escalate into bigger concerns. Additionally, it saves time and money by reducing the need for human monitoring. Thirdly, it allows for predictive maintenance and data analysis. The use of IoT in solar power systems for environmental monitoring is a promising field that has the potential to significantly enhance the performance, efficiency, and lifespan of solar power systems.

**KEYWORDS:** Sensors, Think speak, Arduino IDE microcontroller at mega 328 p,

## I. INTRODUCTION

Plants are grown in greenhouses, which are enclosed buildings with regulated environments. The usage of smart greenhouse technology has grown in popularity in recent years. In order to provide plants with the best possible growing conditions, smart greenhouse systems use sensors, actuators, and control systems. This technique can aid in boosting crop yields, lowering water use, and maximizing resource usage.

An intelligent monitoring system for greenhouses can be made using IoT technologies. The Internet of Things, or IoT, is a network of actual physical objects that are connected to the internet and are capable of interacting with one another. Greenhouse owners can track the environmental conditions inside their greenhouse in real-time by using IoT sensors and gadgets. This literature survey focuses on the integration of Internet of Things (IoT) technology into smart greenhouse systems. The goal is to provide an overview of the existing research, technologies, and applications in this field. The survey covers various aspects of smart greenhouses, including environmental monitoring, automated control systems, energy management, and data analytics. By examining the relevant literature, this survey aims to identify the current trends, challenges, and potential future directions for the development of IoT-based smart greenhouses

## II. LITERATURE SURVEY

A literature survey on smart greenhouses using IoT (Internet of Things) would involve reviewing existing research, studies, and publications related to the application of IoT technology in the context of greenhouses or indoor farming. While I can't perform a real-time literature search, I can provide you with a general overview of the topic and highlight some key areas of interest.

### 2. COMPOENTS SELECTION

#### ❖ MICROCONTROLLER (AT MEGA 328p)

Features:-

Design for High Performance and Low Power

Atmel® AVR® advanced RISC architecture 8-bit microcontroller.

- 131 Instructions, the majority of which are completed in one clock cycle.
- Throughput of up to 20 MIPS at 20 MHz
- Working registers of 32 x 8



Multiplier with two cycles

Included in the memory are: 32 KB of programmable FLASH

- a 1 KB EEPROM
  - SRAM of 2KB
  - 100,000 Write/Erase Cycles for EEPROM and 10,000 Write/Erase Cycles for Flash
  - 20 years at 85 °C and 100 years at 25 °C for data retention
  - Optional lock bits for the boot loader
  - Using a boot loader, do in-system programming (ISP).
  - Genuine Read-While-Write functionality
- Package and I/O

#### ❖ Light Dependent Resistor (LDR)

Specifications

Dark resistance: 1-20M ohm; Diameter: 5mm; Pins: 2; Mounting Style: PCB Through Hole; Maximum Operating Temperature: Approximately 800C.

#### ❖ DHT11 Humidity and Temperature Sensor

Features: • Power Supply: 3.3–5.5V DC

- Four-pin single-row output
- Measurement Range: Temperature 0–50°C, Humidity 20–90%RH.
- Accuracy: temperature +2°C, humidity +5%RH
- Resolution: 1%RH relative humidity, 1°C temperature
- Exchangeability: Complete Exchangeability

#### ❖ Moisture Sensor

Specifications: • 3.3V to 5V operating voltage

- Dual output mode, more precise analogue output
- A bolt hole that is fixed for simple installation
- With a green digital switching output indicator and a red power indicator.
- Having a reliable LM393 cESP8266

#### ❖ Features & Specifications of the ESP-12F ESP8266-

- Serial port baud rate: 115200 (default), can be changed to various values with the AT command
- Serial communication format: 8N1
- Communication interface voltage: 3.3V
- Working current: 240mA (MAX)

WLAN @ 2.4 GHz, support for WPA / WPA2 security mode, and compatibility with ESP-12(ESP-202) • Wireless Network Mode: station / softAP / SoftAP + station • Wireless Criteria: 802.11 b / g / n • It is very simple to construct projects with AT commands

Multiple GPIOs for all your sensor needs. Surface Mount Package with 2mm Pitch Pads.

- TCP/IP protocol stack; • TR switch, balun, LNA, power amplifier, and matching network; •x PLL, regulators, DCXO, and power management units; • Wi-Fi Direct (P2P), soft-AP;
- Integrated low power 32-bit CPU could be employed as an output power of +19.5dBm;
- Power down leakage current of 10uA;



- Having a reliable LM393 comparator chip

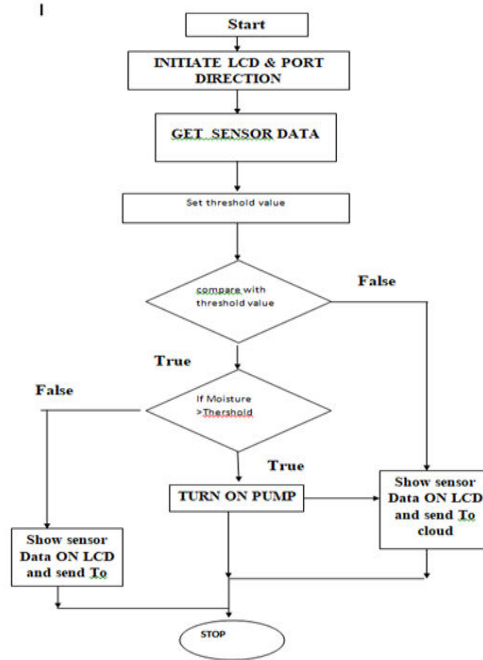


Figure -1: Flow chart

### III. ALGORITHM

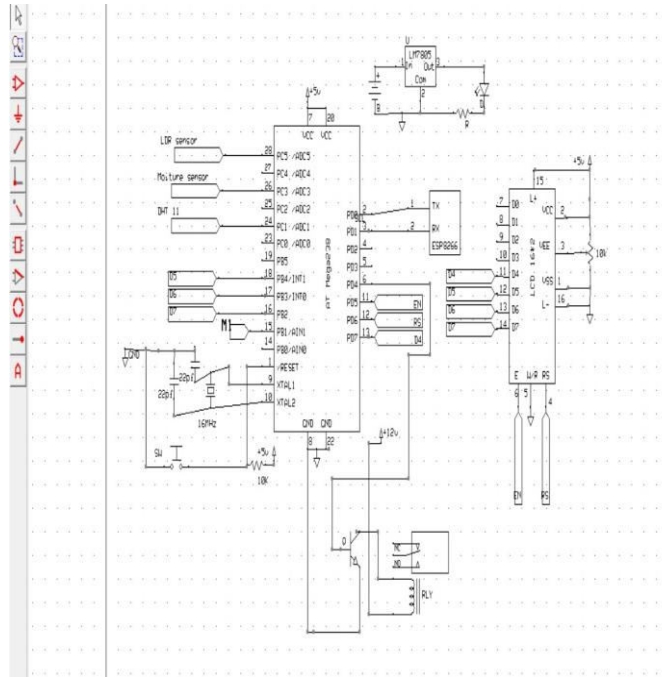
1. Start
2. Start the ports and the sensor.
3. Analyze sensor data.
4. Set each sensor's threshold value.
5. Verify the given data and compare it to the cutoff value.
6. If the threshold is exceeded, activate the off pump.
7. Display data on an LCD and send data to the cloud.
8. STOP.



|| Volume 12, Issue 5, May 2023 ||

| DOI:10.15680/IJIRSET.2023.1205353 |

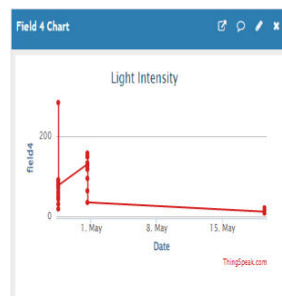
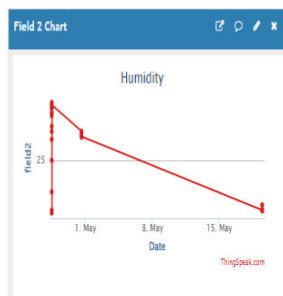
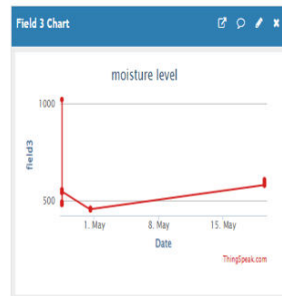
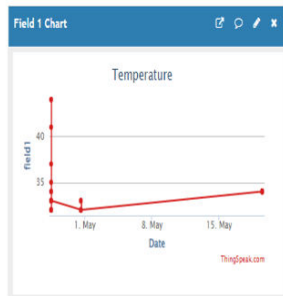
Schematic Diagram



IV. OUTPUTCHART

Channel Stats

Created: 22 days ago  
 Last entry: less than a minute ago  
 Entries: 95



## V. RESULT



## VI. CONCLUSIONS

In conclusion, a solar-powered IoT environment monitoring system can have a hugely positive impact on both the environment and society at large. Utilizing sustainable energy sources, like solar energy, allows us to lessen our carbon footprint and contribute to the fight against climate change. IoT technology integration offers real-time data collection and remote monitoring, enabling for more precise and effective environmental monitoring. This system can be used to track various environmental factors, such as air quality, water quality, soil moisture, and temperature, among others. The collected data can be analyzed and used to make informed decisions related to conservation efforts, natural resource management, and disaster response. Additionally, this system can be used in remote or hard-to-reach areas, where traditional monitoring methods may not be feasible.

## REFERENCES

- 1] "Design and Development of Precision Agriculture System Using Wireless Sensor Network", IEEE International Conference on Automation, Control, Energy and Systems (ACES), 2014; S. R. Nandurkar, V. R. Thool, and R. C. Thool
- 2] "Real-Time Automation and Monitoring System for Modernized Agriculture," by Dr. V. Vidya Devi and G. MeenaKumari, International Journal of Review and Research in Applied Sciences and Engineering (IJRRASE), Vol. 3 No. 1, pp. 7–12, 2013.
- 3] "Remote Sensing and Control of an Irrigation System Using a Distributed Wireless Sensor Network", IEEE Transactions on Instrumentation and Measurement, 2008, pp. 1379–1387. Y. Kim, R. Evans, and W. Iversen.



Impact Factor: 8.423



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  [ijirset@gmail.com](mailto:ijirset@gmail.com)



[www.ijirset.com](http://www.ijirset.com)

Scan to save the contact details