GREEN HOUSE TECHNOLOGY USING IOT

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Abstract- Optimized agro automation using renewable resources is a complete system to monitor and control the environment parameters inside a greenhouse .it is necessary to design a control system to monitor humidity, soil moisture, light intensity. here controlling process takes place effective by both manual and automatic manner. this software uses an arduino for monitoring as well as controlling green house, connected to variety of sensor modules , the entire system is powered by renewable energy source

Index Terms- Embedded system; Internet of things; Monitoring; sensor

1. INTRODUCTION

Greenhouses are often used for growing flowers, vegetables, fruits, and transplants. Special greenhouse varieties of certain crops, are Plants require a limited range of temperature, soil moisture, light, humidity, air (Oxygen, Carbon Dioxide and Nitrogen), and nutrients to grow. Plants also require some type of physical support for roots and shoots. Plants also depend upon symbiotic relationships with fungi and insects to grow and reproduce. The greenhouse covering helps to control many of these factors to help increase plant growth and Greenhouse Solar Power is our term for all encompassing solar options to help you Green Your Grow. Clean, green and silent, Greenhouse Solar Power will help you cut your fuel usage or reduce your grid electricity usage and save money over time. Greenhouse Solar Power is the ultimate sustainable power option to Green Your Grow.

2. LITERATURE SURVEY

[1] **Linxi Dong(2016):**designed intelligent greenhouse environment monitoring control system which is based on IOT and embedded technology. This system consists of three main components: upper machine processors, environmental factors.

[2] **Pranay P(2015):**A survey based on Smart Homes system using Internet-of-Things ,developed IOT based Smart Homes. Smart homes are those where household devices or home appliances could monitor and control remotely.

[3] **Nikesh Gondchawar(2016)**: IOT based smart agriculture, smart irrigation with smart control and intelligent decision making based on accurate real time field data.

[4] **Karan Kansara(2015**): sensor based automated irrigation system with IOT, objective of this paper is to provide an automatic irrigation system thereby saving time, money and power of the former automatic environmental change detection.

[5] **K. Rangan and T. Vigneswaran(2016):**An Embedded Systems Approach to Monitor Green House. They are used an embedded system approach to monitor and control the greenhouse parameters. They are measuring humidity, temperature, pH of the water, soil wetness and light intensity by sensors

[6] **B.VidyaSagar(2015):** has specified about architecture of a green house monitoring system consisting of a set of sensor nodes and a control unit that communicates with each sensor node and gathers local information and makes necessary decisions about the physical environment.

3. TOOLS USED:

3.1Operation of humidity sensors:

A humidity sensor senses, measures and reports the relative humidity in the air. Measures both moisture and air temperature. Sensor which we are using is DHT11. Humidity sensors consists of a hygroscopic dielectric material sandwiched between a pair of electrodes forming a small capacitor. Humidity reaches to 80 the gear motor operates .

Figure 3.1humidity sensor

3.2Operation of Temperature sensors:

Temperature sensor is a device which measures the hotness or coldness of an object. LM35 is a precision IC temperature sensor .Using LM35,the temperature can b measured more accurately than with a thermistor. Low self heating and sensitivity is 0.1 °C temperature rise in still air. When the temperature rises beyond the required level (32°C), the cooling fan starts to operate.

Figure 3.2temperature sensor

3.3 Operation of Soil Moisture:

The Soil Moisture Sensor measures dielectric permittivity of the Surrounding medium. Permittivity is a function of the water content. The sensor creates a voltage proportional to the dielectric permittivity, thereby measuring the moisture level. When the moisture level decreases below the required level (400) in the soil, water pump starts to pump water.

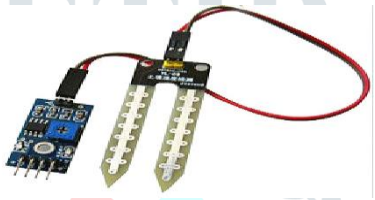
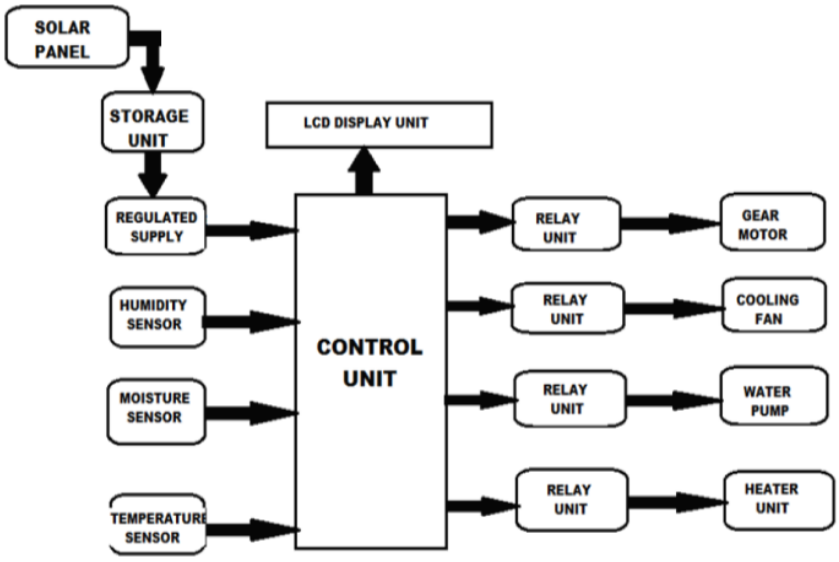


Figure 3.3soil moisture

3.4 BLOCK DIAGRAM



We are discussing about a basic embedded system that keeps record of certain parameters of the greenhouse, mostly climatic parameters and continuously monitors those specifications at regular intervals. The idea not only enhances the greenhouse cultivation process and productivity, but it also reduces the human effort invested and prevailing issues to a greater extent. In this project, simple components like sensors, arduino, Adc (analog to digital converter), actuators are employed which makes it more cost-effective. And also the entire system is self-empowered through solar panels and it also includes efficient waste management system.

At ordinary conditions, the system "greenhouse automation system | automated greenhouse" remains active monitoring the climatic condition, as soon as the sensor fitted at several spots start detecting variation in the continuously monitored factors like changes in temperature, the project compares it with the threshold value set in the program and takes necessary actions. In technical words, when sensor detects changes, the arduino gets activated and it reads data collected from sensor at its input terminal. By then, the adc already converts the analog data into presentable digital form. As per the requirement, arduino triggers corresponding relays to settle the environmental conditions and those parameters reach the best possible state.

4. CONCLUSION

Optimised agro based automation using renewable energy sources control system has been designed and constructed. The prototype of the system worked according to specification and quite satisfactorily. The system components are readily available, relatively affordable and they operate quite reliably. The system helps to eliminate the stress of manual Agricultural and irrigation control while at the same time conserving the available water supply.

Improving The efficiency can contribute greatly to reducing production costs of agricultural products, thereby making the industry to be more competitive and sustainable. Assist with the development of agriculture automation. They provide the "foundation" of a control and communication serial data network messages and protocol now available for implementing automation.

5. REFERENCE

1. "Green House Monitoring And Automation Using Gsm", In International Journal Of Scientific And Research Publications, Volume 2,Issue 5, May 2012
2. K. A. Czyzyk, S. T. Bement, W. F. Dawson, and K. Mehta, "Quantifying water savings with greenhouse farming," in Global Humanitarian Technology Conference (GHTC), 2014 IEEE, Oct 2014, pp. 325–332.
3. Z. Xiaoyan, Z. Xiangyang, D. Chen, C. Zhaohui, S. Shangming, and Z. Zhaohui,"The design and implementation of the greenhouse monitoring system based on gsm and rf technologies," in Computational Problem-solving (ICCP), 2013 International Conference on, Oct 2013, pp. 32–35.
4. M. Mahdavian, M. B. Poudeh, and N. Wattanapongsakorn, "Greenhouse lighting optimization for tomato cultivation considering realtime pricing (rtp) of electricity in the smart grid," in Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON), 2013 10th International Conference on, May 2013, pp. 1–6