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A REVIEW ON SOLAR PANEL MONITORING SYSTEM USING IOT

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ABSTRACT :- Using the Internet of Things Technology for supervising solar power generation can greatly enhance the execution, observing and upkeep of the plant. With headway of innovations the expense of environmentally friendly power gear is going down worldwide empowering huge scope sunlight based plant establishments. This gigantic size of nearby planetary group arrangement requires modern frameworks for computerization of the plant observing distantly utilizing online interfaces as greater part of them are introduced in out of reach areas and consequently unable to be monitored from a dedicated location. The Project is based on implementation of new cost effective methodology based on IoT to remotely monitoring a solar plant for performance evaluation. This will facilitate preventive maintenance, fault detection of the plant in addition to real time monitoring.

Index Terms-Power Measurement, Wireless Transmission, Internet Of Things, Things peak, AT mega 328.

I. INTRODUCTION

When we set up a solar power system we need to monitor it if the system gives us optimum power output this actually helps us to see if the system works efficiently or not. The monitoring system we are introducing here it actually helps us to monitor the real-time data of the Solar Panel be installed power home or working place. There are numerous e advantages of this framework however in this presentation Part I am simply clarifying a couple of reasons why we need the framework. The IOT based checking framework really assists us with checking whether the Solar Panel is working appropriately and proficiently. Assume in case there is sufficient on lying there are excesses of residue on the Solar Panel or then again in the event that it can't Store the Solar Energy appropriately are in case there is any flaw the framework will give us unexpected perusing in comparison to normal. This robotized framework can run and can be screen from anyplace on the planet by utilizing web. The proposed framework and the segments which are utilized to finish this task will be depicted progressively. the framework we are proposing here will constantly monitor the Solar Panel and by using the IOT it will constantly upload the real time reading through internet.

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II. LITERATURE SURVEY

1] An online monitoring and control system for distributed renewable energy sources can be done by Android platform and other platforms also. The method which actually used the WIFI platform on the WIFI interface of different devices like mobile phones laptops and desktop WIFI module which actually creates a communication link for data exchange between the hardware and the power conditioning unit.

[2] There are different methods to monitor renewable energy generation system. Different communication module are used like Bluetooth communication module and Wi-Fi module which actually helps to share the real time data which are read from the hardware system.

[3] Development of an instant monitoring system of renewable energy generation that is constituted with a solar panel on current and voltage measurement of each reliable source the related values are measured by the voltage and current sensor and processed by the node MCU or other microprocessor which it is transmitted via Wi-Fi module to an online platform. It also can be monitored via personal computer and can be stored in a database or can be e monitor the real time data.

III. PROPOSED SYSTEM

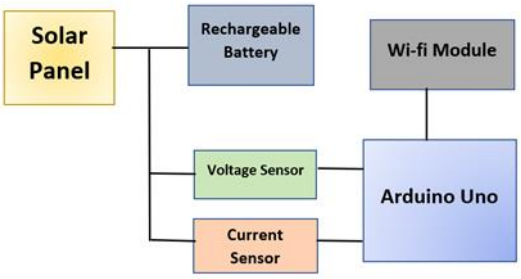

Fig.1 – Block Diagram

3.1. NODE MCU

The node MCU acts as a key processing element for the proposed system as shown in figure 4 and figure 5 which is developed by ESP8266 open source community of micro-controller on single board that can be programmed using the Arduino IDE having a RAM size of 128Kbytes and program storage capacity of 4 Mega Bytes. It can be powered by a USB cable, having an operating voltage of 3.3 to 5 volts and an in built Wi-Fi SoC Architecture.

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3.2. LIQUID CRYSTAL DISPLAY (LCD)

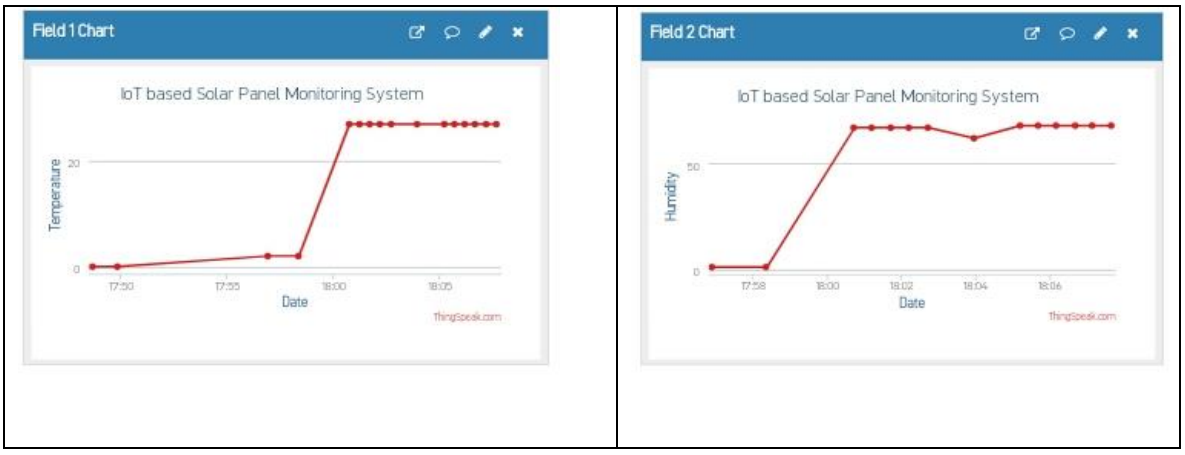
LCD is used for displaying the product name& total cost. When product is put into cart after scanning, it will show the cost and name and if second product is scanned, then second product cost will get added and it will be displayed on LCD.

3.3. Wi-Fi MODULE (ESP8266)

All the calculated data by ATmega 328 is further processed by Wi-Fi Module in order to store on IoT (Internet of Things) Server or Cloud. In order to analyse this data on daily, weekly and monthly basis we are using popular IoT platform Things peak.

3.4. DHT11–Temperature and Humidity Sensor

The **DHT11** is a commonly used **Temperature and humidity sensor.** The sensor comes with a dedicated NTC to measure temperature and an 8-bit microcontroller to output the values of temperature and humidity as serial data. The sensor is also factory calibrated and hence easy to interface with other microcontrollers. This approach works the best in guidance of fellow researchers. In this the authors continuously receives or asks inputs from their fellows. It enriches the information pool of your paper with expert comments or up gradations. And the researcher feels confident about their work and takes a jump to start the paper writing.



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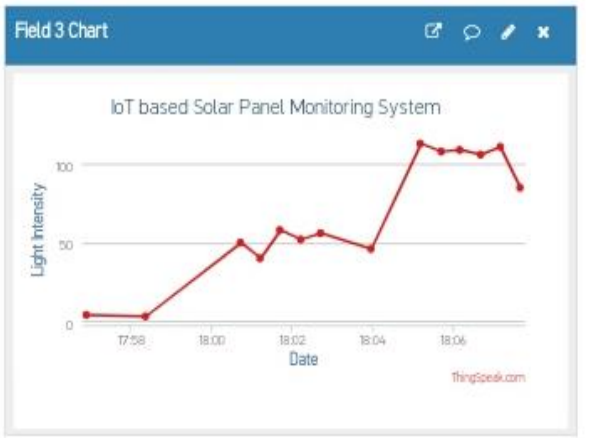

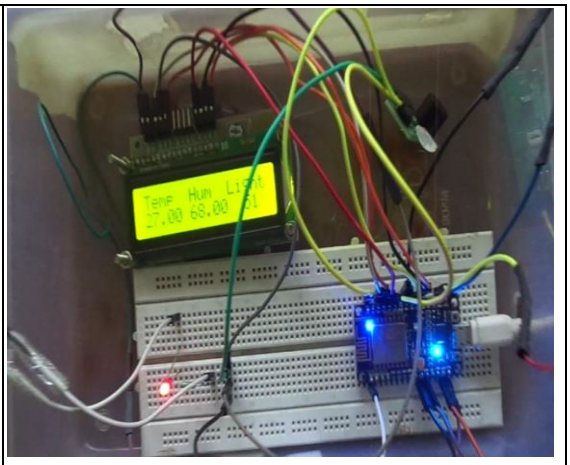

WHAT'S BEING MONITORED?

Monitoring systems provide a wealth of information about the performance of a solar system. Sensors can help monitor external conditions such as:

Temperature, Relative Humidity,Voltage, Current, Radiance of the sun(Intensity)

HOW DOES IT WORK?

Internet of Things (IoT) platform integrates data from the different solar panels and applies analytics to share the most valuable information with applications built to address specific needs.

These powerful IoT platforms such as Thingspeak, Microsoft Azure and Google cloud platform etc can pinpoint exactly what information is useful and what can safely be ignored. This information can be used to detect faults, make recommendations, and detect possible problems before they occur. The information picked up by connected sensors enables to make smart decisions based on real-time information, which helps save time and money.

IV. CONCLUSION

This method has continues tracking of solar energy weekly, monthly and daily analysis becomes simple and economical additionally by this analysis it is potential to observe any fault occurred at intervals power station because the generated power might show some irregularity in information of sun powered energy plant. Non-customary type of energy which can be perpetually savored by measure. The sun powered exhibit voltage age is one among the higher answer for clean energy creation by perception and controlling the voltage generated by our planned system. This technique contains a low operating cost and finds its application in remote areas and additionally reduces man power.

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