

# Remotely Monitoring the Condition Of Solar Power System Using Arduino

By

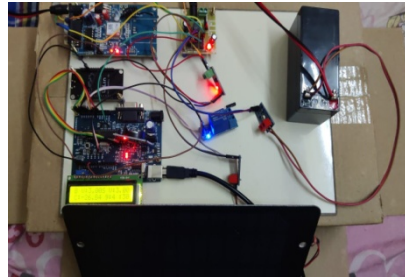
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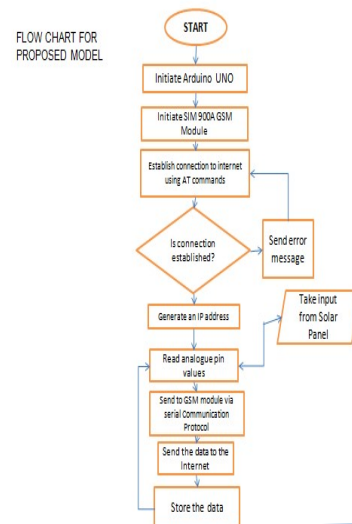
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## Introduction

- Using the Internet of Things Technology for Monitoring solar power generation can significantly increase the performance and maintenance of the solar panel.
- This Project is based on implementation of new cost actual methodology based on IoT to remotely monitoring a solar plant for performance evaluation. This will smooth the way of preventive maintenance, fault detection of the solar panel in addition to real time monitoring.
- Wireless monitoring of energy efficiency of SPV system using the state of the art instrumentation through IOT AND Arduino will help the users in taking various preventive steps by which consistency on increased energy efficiency can be maintained.
- This monitoring is done through Arduino using Web server. Smart Monitoring displays daily usage of renewable energy.
- This helps the user to study of energy usage. Analysis impacts on the renewable energy usage.
- The influence of contact thermal resistances is evaluated by the Open-Circuit Voltage (OCV) method used for the Maximum Power Point Tracking (MPPT).
- MPPT or Maximum Power Point Tracking is algorithm that included in charge controllers used for extracting maximum available power from PV module under certain conditions. The voltage at which PV module can produce maximum power is called maximum power point (or peak power voltage) and Open-circuit voltage is the difference of electrical potential between two terminals of a device when disconnected from any circuit.



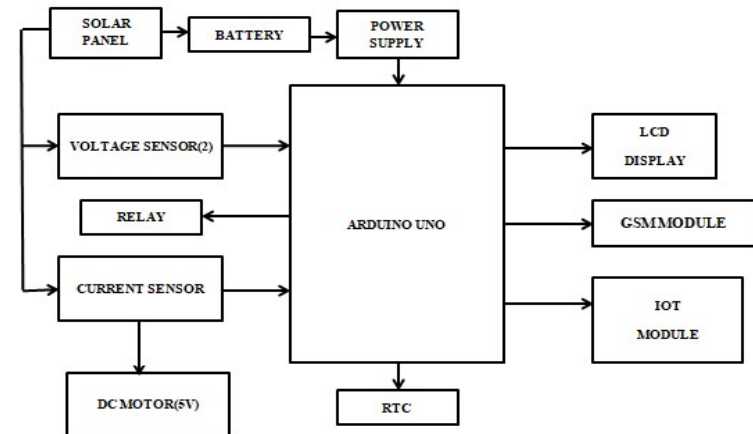
## METHODOLOGY



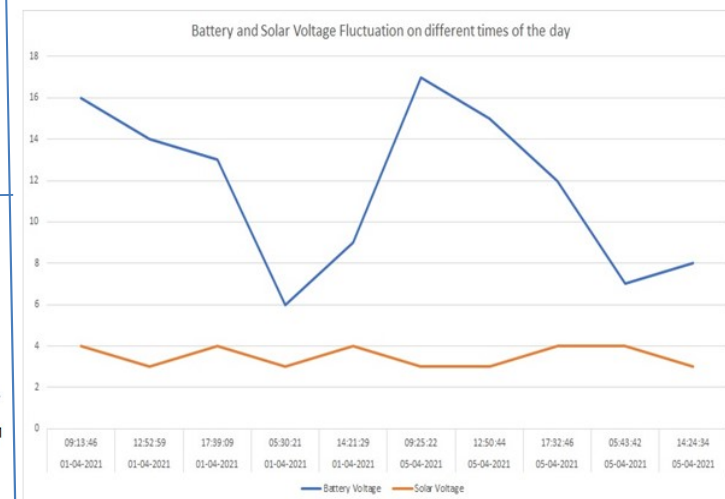
## PROBLEM STATEMENT

- In traditional, to manage a lot of solar panels in green power plants is very difficult and inefficient.
- Because one panel set needs a digital power meter, it is very expensive to use the panel to collect all data.
- To cope with this problem, we proposed a remote monitoring system of solar panels via Arduino, in which the parameters of environment and panel voltage would be sent to the Smart Analysis Database System.
- Then we can monitor the health of the Solar Plant by using the GSM platform anywhere and anytime.
- The administrator not only can use a mobile device to maintain the solar plant via GSM Network through IOT, and also receive the message immediately when the status of solar panel is abnormal.

## System / Architecture Diagram



## OUTPUT GRAPH:



## NOVELTY

EXISTING SYSTEM	PROPOSED SYSTEM
<ul style="list-style-type: none"><li>Monitoring system is not implemented.</li><li>Manually checking the output values of the solar panel through older techniques like multimeter (digital meter).</li><li>No real time comparison</li><li>No control for the user wirelessly</li></ul>	<ul style="list-style-type: none"><li>Monitoring system is implemented using MPPT (Maximum Power Point Tracking) Algorithm and OCV (Open Circuit Voltage)</li><li>Sensors are used to check the output values of the solar panel to know the life.</li><li>Real time comparison along with and low efficiency indication is given.</li><li>Provides wireless control</li></ul>
<p>Drawbacks</p> <ul style="list-style-type: none"><li>Maintenance is difficult.</li><li>Life of the solar panel is decreases eventually.</li></ul>	<p>Advantages</p> <ul style="list-style-type: none"><li>Maintenance is easy.</li><li>Increases the life of the solar panel.</li></ul>