

Analyzing Hybrid PVT system through Low-Cost Embedded System

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Forecasting about the nonlinear system in real time is challenging. Hybrid PVT is a nonlinear system that is dependent on the ambient variables of the environment, mainly irradiation, temperature and wind.

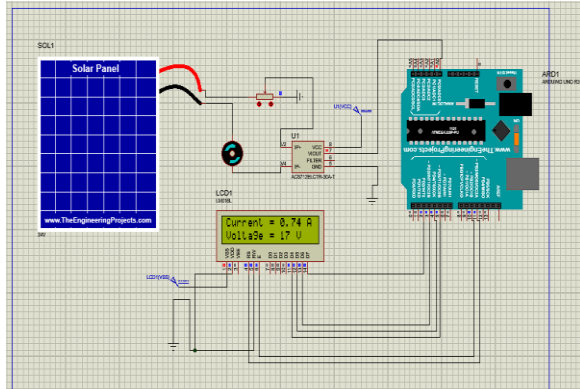


Fig.1 Low-cost Embedded System

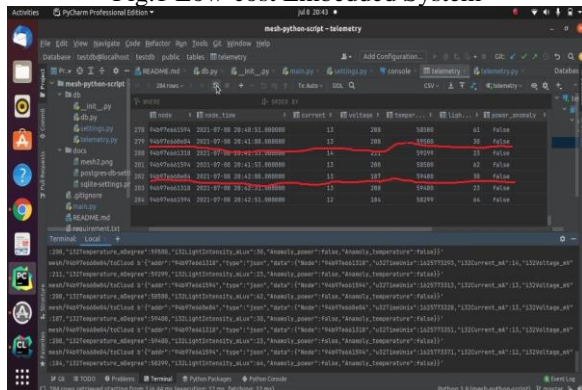


Fig. 2 Real time monitoring data from hybrid PVT.

Hybrid system is having huge potential to increase the performance of photovoltaics and provide thermal energy for household system or other use. This article develops a low-cost embedded system that monitors it in real-time and extract thermal energy from the module to obtain the maximum output from the system [1]. A temperature sensor is included in the system to sense the temperature and control the overall system to cool down the panel and on the other hand receive the thermal energy to utilize them for domestic or industrial use based on the system placement. It is already proved that reducing the temperature of a PV panel, always increase the performance of overall power generation. The monitoring system is directly connected with a cloud server where all the information is gathered and analyzed. The information from the system is sent to the central cloud server to receive instant update about the system. All the data is going through Machine learning method to identify faults in the system and also train the system in real time. It has also an alert system that triggers during emergency situations. Machine learning system assists to classify the faults and suggests to specific problematic situation [2-3].

The proposed method assists to improve the performance of solar panel and include the real time monitoring system. It is going to support the

system about forecasting the power generation from hybrid PVT. This will help to get more thermal power for domestic and industrial use which will reduce the cost of additional thermal power generation. Additionally, this monitoring system helps to build smart grid that predict the power generation in advance.

Keywords: Hybrid PVT, Embedded System, Real-time Monitoring System, Low-Cost Sensors

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