

## Power and Efficiency of Photovoltaic Module: Effect of Cell Temperature

**Authors :** R. Nasrin, M. Ferdows

**Abstract :** Among the renewable energy sources, photovoltaic (PV) is a high potential, effective, and sustainable system. Irradiation intensity from 200 W/m<sup>2</sup> to 1000 W/m<sup>2</sup> has been considered to observe the performance of PV module. Generally, this module converts only about 15% - 20% of incident irradiation into electrical energy and the rest part is converted into heat energy. Finite element method has been used to solve the problem numerically. Simulation has been performed by considering the ambient temperature 30°C. Higher irradiation increase solar cell temperature and electrical power. The electrical efficiency of PV module decreases with the variation of solar radiation. The efficiency of PV module can be increased if cell temperature is reduced. Thus the effect of irradiation is significant to enhance the efficiency of PV module if the solar cell temperature is kept at a certain level.

**Keywords :** PV module, solar radiation, efficiency, cell temperature

**Conference Title :** ICAM 2018 : International Conference on Applied Mathematics

**Conference Location :** Bangkok, Thailand

**Conference Dates :** February 08-09, 2018