

Ambient temperature effect on Amorphous Silicon (A-Si) Photovoltaic module using sensing technology

ABSTRACT

Temperature and solar irradiance are the two dominating cardinals that determine the electrical performance of Photovoltaic (PV) module. In this paper, an experiment is conducted considering Amorphous Silicon (A-Si) PV module in both indoor and outdoor condition to investigate the temperature effect on A-Si module's performance in terms of efficiency and output power through an automatic resistor selection system. The experimental result shows that A-Si PV module has small temperature coefficient effect; however it has higher effect on solar radiation coefficient. A comparison analysis is evaluated with different models to validate the experimental data.

Keyword: Amorphous silicon; Photovoltaic module efficiency; Temperature effect; Module operating temperature