Abstract

Extensive works exist in literature about modeling solar power generation by photovoltaic cell. However, some fundamental aspects of the design making it flexible and exploitable for other research works remain difficult and unclear under Matlab Simulink. This work proposes an understandable model of PV cell, suitable for upgradability and further use for other designs. After dealing with a sound analytical model on the PV cell, the paper presents a clear modeling under Simulink. The model is designed to take excitation from three inputs including temperature, irradiance and voltage. Simulations were run and results in terms of peak power and current were analyzed. In total the similarities were quite satisfactory as compared to previous works. However, some little differences in the responses of the model to various inputs were observed. These results, further confirm the novelty of the proposed model.

Index Terms

Computer Science  
Applied Sciences
Keywords
Photovoltaic Effect  Solar Cell Modeling and Simulation  Irradiance  Temperature.