Maximum Power Point Evaluation Of Photovoltaic Modules Under Shading Effect

In this paper, the effect of shading on solar Photovoltaic (PV) modules is evaluated by using a simulation model, which is able to simulate both the I-V and P-V characteristics curves for PV panels with different sizes. Three percentages of shading states (25%, 50%, 75%) and without shading were used as efficiency limitations. The results are extracted and simulated using the Matlab software. One-diode equivalent circuit is applied in order to investigate electrical characteristics of a typical Kyocera 54W and Solara 130W solar modules. The results show that the performance of both models is widely decreased and the models can't charge the batteries if the shading near 75% or more for single panel. The systems with small sizes panels have better performance than these with large panels; the drop voltage due to shading was increased with a bigger size.