

A Review on Photovoltaic Array Behavior, Configuration Strategies and Models under Mismatch Conditions

Hussein M. Hamada and Mushtaq N. Ahmed Ali M. Humada, Mohd Herwan Bin Sulaiman, Mojgan Hojabri

Abstract: A review of the algorithms for pursuing the PV configuration methods within non-uniform conditions is implemented in this study. As has been exposed, there are many methods of distinguishing and PV alignment techniques that strive for mitigating the effect of mismatch conditions (which include the rapid and unbalance changing of the weather conditions like the radiation and temperature) on the PV system. Nonetheless, in this research they are grouped as Series Parallel (SP) interconnection, Total Cross Tied (TCT) interconnection, and finally Bridge Linked (BL) interconnection technique. In contrast to the BL and SP, in the TCT there is a substantial reduction in mismatch losses that occur due to partial shading, beside to it has greater reliability comparable with others interconnections. Furthermore, the focus of this research is also to review modeling the PV arrays under mismatch conditions. A way to decrease the mismatch effect on the PV modules discussed in this study. Also, the challenges might face these reconfiguration methods and PV modeling has been illustrated and presented. Finally, this study can be considered as a valuable indication for those who are interested in PV modeling and reconfiguration.