Analysis of Single and Double Diode PV Cell Model Using Newton-Raphson Method

F. Faisal, M.R. Rashel, M.T. Ahmed, M. Tlemcani
ICT, University of Evora, Evora (d44773@alunos.uevora.pt)

Abstract

In this paper, the single and double diode model is compared to study the characteristics of monocrystalline of PV cell using Newton Raphson method. Due to non-linear behaviour of PV cell's equation this method is used. This work result clearly showed that, both single and double diode performs vary depending on their different ideality factors. Depending on the ideality factor value the cell behaviour is also changing. Using different values of this parameter of PV cell gives different I-V or P-V curves. These curves are important to identify the sensitivity of ideality factor with respect to the model. The curves give the clear idea about the models' performance with the real time PV. This work is focus to improve the understanding of PV cell characteristics through equivalent PV cell circuit model emphasis on the parameter ideality factor. Understanding PV cell's characteristics is important to estimate the PV power. Better understanding gives better knowledge about the system.