



# Simulated Annealing Modeling and Analog MPPT Simulation for Standalone Photovoltaic Arrays

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## Abstract:

This paper proposes a method for modeling and simulation of photovoltaic arrays. The method is used to obtain the parameters of the array model using its datasheet information. To reduce computational time, the input parameters are reduced to four and the values of shunt resistance  $R_p$  and series resistance  $R_s$  are estimated by simulated annealing optimization method. Then we draw I-V and P-V curves at different irradiance levels. Low complexity analogue MPPT circuit can be developed by using two voltage approximation lines (VALs) that approximate the maximum power point (MPP) locus. In this paper, a fast and low-cost analog MPPT method for low power PV systems is proposed. The Simulation results coincide with experimental results at different PV systems to validate the powerful of the proposed method.

## Keywords:

PV module, simulated annealing, MPP, VAL.

## Published In:

International Journal on Power Engineering and Energy (IJPEE) , vol. 4, no. January , 353-360