



(1)

Simulated Annealing Modeling and Analog MPPT Simulation for Standalone Photovoltaic Arrays

Mohamed EL-Hendawi, G.El-Saady and El-Nobi A.Ibrahim

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.

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(2)

Supervisory Controller for Power Management of AC/DC Microgrid

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Abstract:

This paper proposes a hybrid AC/DC micro grid to reduce the processes of multiple conversions in an individual AC or DC micro-grid. The hybrid grid consists of both AC and DC networks connected together by a bidirectional AC/DC converter. Wind generator, AC loads, and utility are connected to the AC bus whereas PV system and DC loads are tied to the DC bus. The coordination control algorithms of supervisor controller are proposed for smooth power transfer between AC and DC links and for stable system operation under various generation and load conditions. In this paper, a flexible supervisor controller is developed for a hybrid AC/DC microgrid, where the power flow in the micro-grid is supervised based on demanded power with maximum utilization of renewable resources. A small hybrid micro-grid has been modeled and simulated using the Simulink in the MATLAB. The simulation results show that the system can maintain stable under load variations.

Keywords:

Hybrid AC/DC micro-grid; supervisor controller; BIC; MPPT; PV system; wind generation

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(3)

Control and EMS of a grid \square connected microgrid with economical analysis

El-Hendawi,M., Gabbar,H.A., El-Saady,G., Ibrahim,E.N.A

Abstract:

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Keywords:

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(4)

Enhanced MG with optimum operational cost of pumping water distribution systems

El-Hendawi,M., Gabbar,H.A., El-Saady,G., Ibrahim,E.N.A

Abstract:

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Keywords:

NULL

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