عنوان مقاله:

Modeling of Satellite Electric Power System Using Neural Networks and Hybrid Modular Modeling

محل انتشار:

چهاردهمین کنفرانس مهندسی برق ایران (سال: 1385)

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خلاصه مقاله:

A hybrid modular modeling approach is proposed and demonstrated for the steady state and transient simulations of satellite electrical power system. The nonlinear, radiation and temperature-dependent characteristics of solar arrays are modeled based on neural network and a fuzzy logic controller is used to capture their maximum power during different modes of satellite operation. A newly developed charge-current dependent nonlinear model is used for the electrochemical behavior of rechargeable batteries. Steady state and transient simulations of DC/DC converters are performed using average-value and circuit models, respectively. Finally, the Matlab/Simulink environment is used to interconnect the interdisciplinary components and to perform overall analysis for typical power point tracking and direct energy transfer configurations of SEPS. Simulation results show good agreements with those generated by the conventional energy-balanced approach and measurements performed on the constructed prototype SEPS .configurations

کلمات کلیدی: