

عنوان مقاله:

A Dynamic GA-Based Approach for Optimal Short-Term Operation of a Micro-Grid

محل انتشار:

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خلاصه مقاله:

This paper presents a dynamic non-linear model of a micro-grid and then applies the GA algorithm to optimally manage the short-term operation of the studied micro-grid. The original calculus of variations method has been modified and augmented with GA-algorithm to solve non-linear optimal control problems, such as the optimal short-term operation of a micro-grid with nonlinear dynamics. To validate the proposed dynamic model of theselected micro-grid and to evaluate the accuracy and performanceof the developed GA-based optimization algorithm a simulation case study is presented and the obtained results are analyzed andcompared with the simplified LQR problem using the Lagrange Multipliers (LM) theory(where the nonlinearity of the micro-gridmodel is ignored).The simulation results clearly show the superiority of the proposed method in this paper versus the original LQR modeling and optimization using the LM theory

کلمات کلیدی:

calculus of variation, genetic algorithm, microgrid modeling, LQR, optimal short-term operation, frequency and voltage control

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