عنوان مقاله:

Optimization of Hybrid PV/Wind/FC System Considering Reliability Indices Using Cuckoo Search Algorithm

محل انتشار:

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خلاصه مقاله:

In this paper, a hybrid system consisting of wind turbines, solar arrays and fuel cells including electrolyzer and hydrogenstorage tank is designed to provide a particular load template. The purpose of designing is to minimize the 20 years costs ofenergy generation system considering the reliability indices. The system costs consist of capital cost, operation andmaintenance cost, replacement cost especially loss of load cost. The considered reliability indices consist of loss of loadexpected, expected energy not supplied, loss of power supply probability and equivalent loss factor. In this study, the datarelated to load, solar radiation and definitive wind speed are considered and are related to the North West of Iran. It isassumed that between the system component, the forced outage probability of the main three components i.e. wind turbine,photovoltaic array and inverter is possible. The cuckoo search algorithm is used to optimize the hybrid system and the resultswere compared with the results presented in some earlier studies. The comparison of results shows that the proposed methodin the optimization of the hybrid system has good performance so that the reliability is improved compared to previousstudies.

کلمات کلیدی:

Solar , Wind , Fuel Cell Hybrid System Reliability , Cost Evaluation Cuckoo Search Algorithm

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