عنوان مقاله:

Probabilistic Reliability Evaluation of Hybrid Wind-Photovoltaic Power Systems

محل انتشار:

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خلاصه مقاله:

As a matter of course, the utilization of renewable energies (REs) for energy generation is growing at a high rate as a direct consequence of serious environmental concerns. Inthis context, wind and solar energies are of the most successfully utilized. In reliability evaluation, the conventional thermal units are described with a two-statemodel. Because the wind speed and solar radiation have random nature, the two-state model is not suited formodeling this type of energy resources. Despite more complexities and larger computational burden, a multi-state model is much more practical in this case. In addition to the randomness of the renewable primary energies, the forced outage rate (FOR) associated with conversion devices such aswind turbine generators (WTGs) and solar cell generators (SCGs) affects the availability of their output energy. This paper considers the aforementioned factors to calculate thereliability of hybrid Wind-Photovoltaic power systems and proposes the application of revised capacity outageprobability table (RCOPT) for this type of generation units.Two case studies are conducted to justify the effectiveness ofthe proposed method. Simulation results reveal that the suggested method behaves well in hybrid power system's reliability evaluation

کلمات کلیدی:

Power system reliability, probability, wind power, solar cell