عنوان مقاله:

Techno-economic design of a stand- alone hybrid power system basedon battery storage with LPSP reliability index

محل انتشار:

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خلاصه مقاله:

In this paper, techno-economic design of hybrid solar-wind-diesel power system with battery storage for a rural area in the northwest of Iran (Ardabil) is presented. In this method a new evolutional algorithm based on, socio- political human behavior is used considering Loss of Power SupplyProbability (LPSP) index for reliable load providing, with cost minimization in the site. In order to reach the least expenditure and best combination, the costs of winddiesel, solar - diesel and solar – wind – diesel systems are compared. In this paper, first, the mathematical model of variousparts of hybrid system is presented. Then the purposed algorithm is used. Finally, simulation results (number of PV panels, number of wind turbines, number of battery storages, number of inverters, system total cost ,power diagram of hybrid power system components and reliability diagram) for solar- diesel , wind- diesel and solarwind-diesel systems is presented, also the cost saving in fuel consumption due tousing the hybrid systems is present.

کلمات کلیدی:

renewable energy, techno-economic analysis, reliability Imperialist competitive algorithm, stand- alone power system