

Optimizing the Maintenance Policy of Offshore Wind Power Systems: A Two-step Approach

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Abstract

Maintenance policy is critical to the efficient and reliable operation of an offshore wind power system. Employing a good maintenance policy may increase the reliability while reducing the maintenance cost of the system. This study proposes a two-step approach for optimizing the maintenance policy of offshore wind power systems. The first stage applies a genetic algorithm to determine the appropriate maintenance threshold of each of the components under consideration. The second stage utilizes a fuzzy multi-objective programming approach to optimize the maintenance threshold of the entire system. Computational study shows that the proposed approach increases the reliability of the offshore wind power system by 1.63% while reducing the maintenance cost of the system by 1.19%.

Keywords

Maintenance policy, fuzzy multi-objective programming, offshore wind power system

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