

新能源与分布式发电

风力发电机组可靠性建模与维修策略优化

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摘要:

风力发电的快速发展使得风电机组结构越来越复杂, 故障率也随之提高。为了提高风力发电机组的可靠性, 提出了一种风力发电机组的可靠性优化策略。以双馈风力发电机为例, 运用马尔可夫过程数学模型和可靠性理论建立风力发电机组的可靠性模型, 在此基础上构造风电机组老化、故障和维修的网络结构图, 从而得到风电机组可靠性最优时的维修策略。

关键词: 风力发电机组 可靠性模型 可靠性优化 维修策略 马尔可夫过程

Reliability Modeling and Maintenance Strategy Optimization for Wind Power Generation Sets

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Abstract:

The rapid development of wind power generation makes the structure of wind power generation sets more and more complex, correspondingly the failure rate of the sets increases. To improve the reliability of wind power generation sets, a reliability optimization strategy of wind power generation sets is proposed. Taking doubly fed wind power generator for example, based on mathematical model of Markov process and reliability theory a reliability model of wind power generation set is built. On this basis, a structure chart of ageing, faults and maintenance for wind power generation sets is constructed to obtain the maintenance strategy of wind power generation set under its optimal reliability.

Keywords: wind power generation sets reliability model reliability optimization maintenance strategy Markov process

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