

电力系统

基于蒙特卡罗模拟的含微网配电网可靠性评估

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摘要:

以含微网的配电网可靠性评估为研究内容, 首先对光伏发电和风力发电出力随机特性进行了研究, 建立了分布式电源和储能联合发电系统的可靠性模型。在此基础上, 基于蒙特卡罗时序模拟方法, 提出了含微网的配电网可靠性评估算法。最后采用所提出的模型和算法对IEEE DRTS Bus 4改进系统进行了评估。算例评估结果表明, 微网能有效提高配电系统的供电可靠性。

关键词: 微网 配电网 可靠性 分布式电源 储能

Monte Carlo Simulation Based Reliability Evaluation of Distribution System Containing Microgrids

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Abstract:

To evaluate the reliability of distribution network containing microgrids such as distributed generations (DGs) and energy storage system, at first the stochastic characteristics of power output of photovoltaic generation and wind power generation are researched, and a reliability model of hybrid generation system consisting of distributed generation and energy storage system is built. On this basis and based on Monte Carlo simulation a reliability evaluation algorithm for distribution network containing microgrids is proposed. Finally, the reliability of modified IEEE DRTS Bus 4 is evaluated by the built model and the proposed algorithm. Evaluation results show that microgrids can effectively improve power supply reliability of distribution system.

Keywords: microgrid distribution system reliability distributed generator energy storage

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