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新能源系统

多微网解列运行模式切换控制方法研究

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作者信息

Research on Switching Control Method for Splitting Operation Mode of Multi-microgrid

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History

摘要

在切换多微网的解列运行模式时,由于对电势差控制不足,导致运行模式切换后的电网频率出现波动、切换不平稳的情况,因此提出多微网解列运行模式切换控制方法。首先对多微网中的逆变器进行下垂状态调整,保证切换后的有功、无功功率平稳。然后用PQ方法来消除下垂控制对电流内环的影响,同时切换多微网的运行模式,以保证电流稳定输出。但使用PQ方法后容易出现输出相位不同步的情况,需要使用相位控制对多微网进行电势差平衡,完成多微网运行时的模式切换控制。最后为了验证研究方法的可行性,使用文献[1]、文献[5]、文献[6]及所提研究方法,分别仿真多微网进行孤岛-并网、并网-孤岛的模式切换,并进行分析。仿真结果显示,研究方法有效地控制了切换时的电网频率,切换平稳,具有一定的可行性。

Abstract

During the switching of the splitting operation mode of a multi-microgrid, the grid frequency will fluctuate after switching and the switching process will be unstable due to the insufficient control of potential difference. Therefore, a switching control method for the splitting operation mode of the multi-microgrid is proposed in this paper. First, the droop state of inverters in the multi-microgrid is adjusted to ensure the stable active and reactive power after switching. Then the PQ method is used to eliminate the influence of droop control on the current inner loop. At the same time, the operation modes of the multi-microgrid are switched to ensure the stable current output. However, after the use of the PQ method, the output phase is likely to be out of synchronization, which is required to use the phase control to balance the potential difference in the multi-microgrid and complete the mode switching control when the multi-microgrid is under operation. Finally, in order to verify the feasibility of the research method, literature [1], literature [5], literature [6] and the proposed research method were used to simulate the mode switching of island-connection and grid-connection-island respectively for multiple microgrids. Analyze it. The simulation results show that the research method can effectively control the grid frequency during switching, and the switching is stable, which has certain feasibility.

关键词

多微网 / 电势差 / 逆变器 / 输出相位 / PQ方法

Key words

multi-microgrid / potential difference / inverter / output phase / PQ method

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