

含电动汽车的多微网系统的协调控制方法研究

摘 要

随着能源危机的加剧，多微网系统加入大电网为解决能源危机提供了一种有效手段。含电动汽车的多微网系统的协调控制目标是实现各子微网的稳定运行，并与外部电网实现合理有效的功率交互。而电动汽车的无序充电让多微网负荷增加，导致其供电不稳定。因此，本文将峰谷电价引入含电动汽车的多微网协调控制策略中，使电动汽车根据电价信息有序充放电，在高峰时可放电来削峰，在低谷时以充电来填谷，达到削峰填谷的效果。最后，通过 MATLAB 仿真验证所提控制策略的正确性和有效性。

关键词：峰谷电价；电动汽车；多微网；协调控制；功率平衡

Abstract

With the intensification of the energy crisis, the addition of multi-microgrid system to the large electric network provides an effective means to solve the energy crisis. The goal of the coordinated control of the multi-microgrid system including the electric vehicle is to realize the stable operation of each sub-microgrid and achieve reasonable and limited power interaction with the external power grid. The disorderly charging of electric vehicles increases the load of multi-microgrid, which causes its power supply to be unstable. Therefore, this paper introduces peak and valley electricity price into the multi-microgrid coordination control strategy containing electric vehicles, so that electric vehicles according to the electricity price information orderly charge and discharge, at peak discharge to cut peak, at the low point to charge to fill the valley, to achieve the effect of peak filling. Finally, the correctness and effectiveness of the proposed control strategy are verified by MATLAB simulation.

Key Words: Peak-valley price; Electric vehicles; Multi-microgrid; Coordination control; Power Balance

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