

分布式储能接入对配电网的影响研究与实现

摘 要

随着配电网用电需求的增加与分布式储能技术的日趋成熟,越来越多的分布式储能并网。分布式储能接入电网后,电网结构将发生翻天覆地的变化由大电网与分布式储能相结合,工作的方式也将随着分布式储能不能持续稳定供电的问题而有所改变,进而对配电网产生一些不好的影响,如可能会引起频率的偏差、电压波动、电压闪变、谐波畸变污染和直流注入等一系列问题。所以研究和改善分布式储能接入对配电网的影响是解决地球与人类共存这一重大问题的突破口。

本文利用 MATLAB 仿真研究了分布式储能在不同位置接入后对配电网电压稳定的影响,结果表明分布式储能接入电缆线末端相当于就近供电,减少了线路末端上的流过的电流,也自然也减小线路上流过的功率,降低了线路上的电势降落,减小了网络损耗,减小电压稳定 L 指标,提高系统电压稳定性。

关键词: 分布式储能, 配电网, 电压偏移, 网络损耗, 电压稳定性

ABSTRACT

With the increase of power demand of distribution network and the maturity of distributed energy storage technology, more and more distributed energy storage are connected to the grid. Distributed energy storage connected to the electricity grid, power grid structure will be earth-shaking changes by large power grid and the combination of distributed energy storage, the way of working will also with the problem of distributed energy storage can not stable power supply change, and then some bad influence on power distribution network, such as may cause frequency deviation, voltage fluctuation, voltage flicker and harmonic distortion and dc injection a series of problems such as pollution. Therefore, research and vigorously develop the impact of distributed energy storage access on the distribution network to solve the major problem of earth and human co-existence.

This paper studies the distributed energy storage in the influence of different location after access to distribution network voltage stability, the results show that the distributed energy storage access to the end of the cable is equal to the nearby power supply, reduce the end of the line on the flow of electrical current, and can also reduce lines through the power, reduces the potential landing on the line, reduce network losses, reduce the voltage stability index of L, improve system voltage stability.

Keywords: Distributed Energy Storage; distribution network; Voltage offset; power loss; voltage stability

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