

电力系统

多负荷水平下配电网电容器优化配置算法

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摘要: 提出了多负荷水平下的配电网电容器优化配置算法。首先, 在大负荷水平下, 根据节点补偿容量上限确定无功补偿初始解; 然后, 基于各初始解采用解析法求得中小负荷水平下使系统损耗最小的电容器投切容量, 实现了各补偿点电容器在不同负荷水平下的有效配置; 最后应用遗传算法对无功补偿可行解进行迭代优化, 求得最优无功补偿方案。IEEE 33节点系统算例验证了该算法的有效性。

关键词:

An Algorithm for Optimal Configuration of Capacitors in Distribution Network under Multi-Load Levels

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Abstract: An algorithm for optimal configuration of capacitor banks in distribution network under multi-load levels is proposed. Firstly, under high load level the initial solutions of reactive power compensation, including the positions of compensation points and corresponding compensation capacity, are determined; then based on these initial solutions the switching capacities of capacitor banks, which make the network loss minimal under medium- and low load levels, are solved by analytical method to implement effective configuration of each capacitor bank at each compensation point under various load levels; finally, by use of genetic algorithm the feasible solution of reactive compensation is optimized by generation to attain optimal reactive power compensation scheme. Simulation results of IEEE 33-bus system verify the effectiveness of the proposed optimization algorithm.

Keywords:

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