

新能源与分布式发电

含风电场的电力系统电压控制分区方法

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摘要:

将风电出力概率分布离散化为多个场景, 选取其最具有代表性的期望场景, 在基于无功源控制空间的基本思想的基础上, 求得该场景对应的全维电压/无功灵敏度矩阵, 采用基于传递闭包的模糊聚类方法, 得到一种含风电场的电网电压控制分区方法。该方法采用概率的方法将风电场出力变化纳入分区算法中, 合理地解决风机出力的随机性与系统运行要求尽量稳定的矛盾; 并考虑了风电场电源与系统各节点之间的相互影响, 能够一次性对整个系统各节点分区, 优于以往算法或多或少需要人工介入部分节点归类的弊端, 为实现在线实时分区提供了条件。

关键词:

Voltage Control Partitioning for Power Containing Grid-Connected Wind Farms

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Abstract:

Discretizing probability distribution of wind farm output into multi scenarios and selecting the most representative expected scenario in them, then based on the basic idea of control space of reactive power sources the full-dimensional voltage/reactive-power sensitivity matrix is solved, and then adopting fuzzy clustering analysis based on transitive closure a voltage control partitioning approach for power grid containing grid-connected wind farms is achieved. Adopting probabilistic method, this approach brings the output variation of wind farms into partitioning algorithm to rationally cope with the contradiction between the randomness of wind turbine output and as possible stable operation of power grid. This approach takes the interaction among wind farm power sources and all nodes in the grid into account, so the partitioning of all nodes in the grid can be implemented once only, so the proposed approach is better than existing algorithm, which need manual intervention for the classification of partial nodes more or less, therefore, it provides conditions for the implementation of real-time on-line partitioning.

Keywords:

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