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新能源与分布式发电

双馈感应风电机组异常脱网及其无功需求分析

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摘要：

分析了双馈感应(doubly fed induction generator，DFIG)风电机组因转子回路撬棒保护动作诱发机组脱网的过程，撬棒保护动作远快于定子并网接触器动作，因而机组脱网前存在短时鼠笼异步运行状态的现象。建立了双馈感应发电机DFIG正常运行状态及鼠笼异步运行状态的数学模型，分析了双馈感应风电机组脱网时对电网的无功需求，总结了机组异常脱网时的转差－无功特性。最后提出了风电场无功补偿措施，如配置无功补偿设备等。

关键词：

Analysis on Abnormal Disconnection of Doubly Fed Induction Generator Wind Turbines From Power Grid and Its Demand on Reactive Power

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Abstract:

The abnormal disconnection process of doubly fed induction generator (DFIG) wind turbines from power grid, which is caused by the action of crow bar protection for its rotor ciucuit, is anlayzed. Due to the fact that the action of crow bar protection is much faster than the action of the switch connecting the stator with power grid, thus there is a short-term of squirrel cage asynchronous operation. The mathematical models for normal operation and squirrel cage asynchronous operation of DFIG are built respectively, and the demand on reactive power of DFIG from power grid during the period of squirrel cage asynchronous operation is analyzed, then the characteristic between the slip and reactive power of DFIG during its abnormal disconnection is summarized. Finally, related reactive power compensation measures for wind farm are proposed.

Keywords:

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