

智能电网

考虑合理安全原则的大型互联电网在线传输极限计算

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摘要:

传统的重复潮流法传输极限计算模型, 对所考察时段可能出现的运行方式及需要校核的故障集缺乏明确的规定, 使计算结论有较大的不确定性。为弥补该缺陷并保证传输极限值能较好地指导电力生产, 提出用合理安全原则改进重复潮流法。据此形成一种适合于大型互联电网的在线传输极限算法。该算法采用最易失稳的机组调节次序使计算结论有较好的安全性。通过以下措施使计算过程符合大型电网的实际: 针对不同的电网状况采用不同的断面功率增长方式; 用同时控制多断面功率的潮流调整算法考虑相邻断面功率对被研究断面的影响; 用各种安全限制措施约束潮流调整过程; 只校核与断面相关的故障。用实际工程算例证明算法的有效性。

关键词: 在线传输极限计算 合理安全原则 控制多断面功率 机组调节次序 大型互联电网

Calculation of Online Total Transfer Capability in Bulk Interconnected Grid Integrating Rationality and Security Principle

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Abstract:

Dubious conclusion is always drawn out from calculating total transfer capability (TTC) with traditional repeat power flow method, for there is not clear prescript for operation model and fault set in period studied. To make up that limitation and ensure the conclusion can be used to guide electric produce well in bulk interconnected grid, rationality and security principle was used to modify repeat power flow method. Operation order of generators which try to make power system most unstable was taken and the result of calculation can push power grid more security. Four piece of measure following were imposed on process of calculation to adapt to bulk grid. Various ways to augment power on interfaces were taken according with characteristic of grid. Power on transmission interfaces was controlled synchronously to take into account effect from neighbor interfaces. All kinds of security measure were embodied during regulating power flow. Only the faults involved with interface were inspected. The algorithm proposed was validated by real electrical projects.

Keywords: calculating total transfer capability online rationality and security principle control power on interfaces operation order of generators bulk interconnected grid

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