

论文

磁饱和型故障限流器的研究与发展

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摘要:

分析了传统故障限流技术的优势和存在的问题, 指出研制性能优良、经济合理的新型故障限流器对电网发展具有重要的现实意义和应用价值. 在给出饱和电抗器的一般工作原理的基础上, 详细介绍了超导磁饱和型故障限流器的拓扑结构及其工程实用化遇到的难题. 比较了永磁饱和型故障限流器的各种拓扑结构及其发展演变过程, 提出了三相永磁饱和型故障限流器的三种物理拓扑结构. 最后结合永磁饱和型故障限流器的结构设计, 阐述了四个关键技术难题.

关键词: 故障限流器 饱和电抗器 磁饱和型 超导 永磁

Advances of saturated iron core fault current limiters

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Abstract:

Both the advantages and disadvantages of traditional fault current limiting technology were analyzed. The analysis indicates that development of a new fault current limiter with economical and technological excellence was significant and urgent for present day power grids. With reference to the general operation principle of the saturated reactor, different topologies, and key obstacles encountered in engineering applications of the super conducting saturable magnetic core fault current limiter (SMFCL) were elucidated. Permanent magnet biased saturated iron core fault current limiters (PMFCL) of various topologies were compared during their evolution process. Further, three novel topologies for three phase PMFCL were presented. Finally, four principal technological issues were raised with relative elucidation with regards of the optimal structure design of PMFCL.

Keywords: fault current limiter saturated reactor saturated iron core superconducting permanent magnet

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