

水轮发电机定子短路故障形式分析及其算法设计

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摘要

水轮发电机定子内部故障破坏性强, 研究有效的主保护配置方案尤为必要, 而主保护配置方案的优化设计又以发电机可能发生的内部短路故障形式分析为基础。目前大型水轮发电机定子绕组普遍采用多分支双层波绕或叠绕的结构, 文章针对这2种绕组结构, 详细分析了发电机内部可能发生的所有故障形式特点, 设计了可形成各自故障集的通用算法, 并介绍了该算法在三峡左岸Alstom电机(波绕)和柘溪电站扩建工程发电机(叠绕)定子故障形式分析中的应用。

关键词 [水轮发电机; 定子绕组结构; 故障形式分析; 算法设计; 主保护](#)

分类号

Short-Circuit Fault Modality Analysis of Hydraulic Generator Stators and Design of Corresponding Algorithm

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Abstract

Due to the serious damage caused by internal faults in hydraulic generator stators, it is particularly necessary to research effective configuration scheme of main protection for them, and the optimized design of main protection configuration scheme is based on the fault modality analysis of internal short-circuit that may occur within the generator. At present multi-branched wave winding structure or lap winding structure are adopted in high capacity hydraulic generators, the authors analyze the features of all fault modality that may occur within the generators with these two kinds of stator windings in detail and design a versatile algorithm that can generate respective fault sets. The applications of the designed algorithm in the stator fault modality analysis of hydraulic generators (with wave winding) located in left bank of the Three Gorges power station as well as hydraulic generators (with lap winding) located in extension project of Zhexi power station are presented.

Key words [hydraulic generator; stator winding structure; fault modality analysis; algorithm design; main protection](#)

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