

自动化

基于泄漏电流的选择性水轮发电机定子单相接地保护方案

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摘要

为解决扩大单元接线发电机的选择性, 分析了定子单相接地故障前后发电机对地泄漏电流的变化特征: 非故障发电机对地泄漏电流相位滞后零序电压 90° ; 而故障发电机对地泄漏电流超前零序电压 $0^\circ \sim 90^\circ$ 。通过比较各发电机对地泄漏电流的方向判断单相接地点是否在本发电机定子绕组内部。仿真分析结果表明: 该保护方案能可靠地识别出发电机内、外部的定子接地故障, 判断故障发电机, 对判断发电机机端出线侧定子接地故障有很高的可靠性; 该方案构成原理较简单, 具有一定的工程应用前景和参考价值。

关键词 [发电机](#); [定子接地故障](#); [保护](#); [泄漏电流](#); [选择性](#)

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A Leakage Current Based Selective Single-Phase Grounding Fault Protection Scheme for Stator Winding of Hydrogenerator

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Abstract

To improve the selectivity of the protection for generators in enlarged unit connection, the variation features of earth leakage current of generator before and after the single-phase ground fault of stator are analyzed; the phase of earth leakage current of non-faulty generator lags behind the phase of zero-sequence voltage by 90° , however the phase of earth leakage current of single-phase grounded generator leads the phase of zero-sequence voltag in the range from 0° to 90° . By means of comparing the direction of earth leakage current of each generator, it can be judged that the single-phase grounding point locates in which one generator. On this basis a new protection scheme for single-phase ground fault of stator winding is proposed. Simulation results show that the proposed protection scheme can reliably distinguish the internal stator gorundfault from external stator ground fault, and judge which one generator is faulty, thus as for to judge the stator ground fault occurred at outlet side of generatro terminal, the proposed protection scheme is reliable. The principle of the proposed protection scheme is simple, so it could be applied to engineering practice.

Key words [generator](#); [stator grounding fault](#); [protection](#); [leakage current](#); [selectivity](#)

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