

高电压技术

混合式断路器的IGBT串联均压技术

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摘要:

作为混合式断路器中电力电子换流装置的主要器件——绝缘栅双极晶体管(Insulated Gate Bipolar Transistor, IGBT)单个器件容量的不足限制了其在电力系统领域的应用。对混合式断路器的拓扑结构及工作原理进行了介绍, 对影响串联IGBT均压的因素进行了机理研究和实验分析, 提出了一种闭环控制均压电路。仿真结果表明, 该电路能较好实现串联IGBT动态均压, 具有可快速连续控制, 损耗小、成本低、易安装等特点。

关键词:

Study on Technology of Voltage Sharing in Series for IGBT-Based Hybrid Circuit Breaker

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Abstract:

The insufficient capacity of single insulated gate bipolar transistor (IGBT), which is used as the main device of power electronic current converter in hybrid circuit breaker, restrains the application of IGBTs in power system. In this paper, the topological structure of hybrid circuit breaker and its working principle are presented; based on the research on mechanism of factors affecting the voltage sharing in series for IGBTs and corresponding experimental analysis, a closed-loop controlled voltage sharing current is proposed. Simulation results show that with the proposed voltage sharing circuit, the dynamic voltage sharing in series for IGBTs can be well implemented, besides, the proposed voltage circuit can be continuously controlled, and it possesses following advantages: low loss, low cost and convenient to install.

Keywords:

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