

特高压输电

±800kV特高压直流换流站绝缘配合方案分析

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摘要:

换流站绝缘配合是±800kV特高压直流输电工程实施中的关键技术之一。基于向家坝—上海和云南—广东2项±800kV特高压直流输电工程,从平波电抗器分置和换流站避雷器配置2个角度分析了特高压直流换流站绝缘配合的特点。重点分析了平抗分置方式在特高压输电中的经济技术优势,指出平抗分置将是特高压换流站平波电抗器的首选布置方式。给出了2个换流站的避雷器布置方案,描述了各个避雷器的保护功能,最后分析了特高压工程采用并联避雷器对直流极线平波电抗器的端对端保护功能,以及2个工程对最高端Y/Y换流变阀侧所采用的不同保护方式的优缺点。

关键词: ±800kV特高压直流输电 绝缘配合 平抗分置 避雷器布置

Analysis on Insulation Coordination Scheme for ±800kV DC Converter Station

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Abstract:

Insulation coordination of converter substation is one of key technologies in the implementation of ±800kV DC power transmission project. Based on two ±800kV DC power transmission projects being constructed in China, i.e., the DC power transmission project from Xiangjiaba to Shanghai and that from Yunnan to Guangdong, the features of insulation coordination for UHVDC converter substations are analyzed in the aspects of separate arrangement of split smoothing reactor and the configuration of lightning arresters. The economic and technical superiorities of the separate arrangement of split smoothing reactor in UHVDC power transmission are emphatically researched, and it is pointed out that the separate arrangement of split smoothing reactor will be the preferred arrangement of smoothing reactor in UHVAC converter stations. The arrangement of lightning arresters for above-mentioned two converter substations are given, and the protecting function of each arrester is described. Finally, the end-to-end protecting function of smoothing reactor connected with pole bus by parallel arresters, which is adopted in UHVAC projects, as well as the merits and defects of different protection modes adopted for at the valve side of wye-wye connected converter transformer in above-mentioned two UHVDC projects are analyzed.

Keywords: ±800kV DC power transmission insulation coordination separate arrangement of split smoothing reactor arrangement of arrester

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