

特高压输电

超/特高压输电工程典型间隙操作冲击放电特性试验研究综述

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摘要:

在超/特高压输电工程的设计中, 空气间隙的选择非常重要, 可以影响输电线路中杆塔的尺寸, 以及变电站或换流站中各种带电结构之间的距离。空气间隙的合理设计既关乎系统的安全稳定运行, 又直接影响到工程的造价。一般情况下, 与工频、直流或雷电过电压相比, 耐受操作过电压所需的空气间隙最大, 因此, 杆塔和变电站或换流站中典型空气间隙的操作冲击放电特性是影响输电工程安全性和经济性的重要因素之一, 也是超/特高压交直流输电工程设计的主要依据。操作电压下空气间隙的放电特性与电极的形状、电极间的距离、施加电压的波形等因素有关。通过对国内外空气间隙在操作冲击电压下的试验研究进行综述, 包括各种典型间隙的操作冲击放电特性以及影响该特性的各种因素, 从而为今后更加深入地研究操作冲击放电特性提供借鉴。

关键词:

Summary of Experimental Study on Switching Impulse Flashover Characteristics of Typical Air Gaps in EHV/UHV Transmission Systems

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Abstract:

In the design of EHV/UHV power transmission projects, the selection of air gaps is very important for it impacts on the sizes of transmission towers and distances among various electrified constructional elements within substations or converter stations. Rational design of air gap not only concerns secure and stable operation of power system, but also directly bears up on construction cost of the project. Generally speaking, the air gap to withstand switching overvoltage needs maximum air gap length than those withstanding power frequency overvoltage, DC overvoltage or lightning surge, thus the switching impulse flashover characteristics of typical air gaps of transmission tower, and those in substations and converter stations is one of the important factors impacting on security and economy of transmission projects, and is also the main foundation in the design of EHV/UHV AC/DC transmission projects. The discharging characteristic of air gap under switching overvoltage is related to such factors as the form of electrode, distance between electrodes, the waveform of the applied voltage and so on. To provide reference for more in-depth researches in future in this field, the experimental studies on switching impulse flashover characteristics of air gaps home and abroad are summarized, including various switching impulse flashover characteristics and factors impacting the characteristics.

Keywords:

收稿日期 2010-03-18 修回日期 2010-07-21 网络版发布日期 2011-01-18

DOI:

基金项目:

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