

高电压技术

低气压下XP-160型绝缘子覆冰交直流闪络特性比较

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摘要:

低气压、污秽及覆冰共存的环境下绝缘子的电气性能将大为降低, 国内外在该领域已进行了较多的研究, 但是关于该环境下绝缘子在交、直流电压下闪络特性差异的研究却鲜见报道。作者在大型多功能人工气候室对7片串XP-160盘形悬式绝缘子进行人工覆冰闪络试验, 研究了固体涂层法和覆冰水电导率法2种染污方式下气压和污秽对绝缘子串覆冰闪络电压的影响, 得出了两者影响覆冰闪络电压的特征指数并对其进行分析。结果表明: 气压对50%交流冰闪电压影响的程度大于直流, 且不同染污方式下气压影响冰闪电压的特征指数略有差异; 气压与污秽对冰闪电压的影响互相独立; 污秽对交流冰闪电压的影响程度大于直流。

关键词: 气压 绝缘子串 覆冰 交流闪络特性 直流闪络特性 染污方式

Comparison of Flashover Performances Between AC and DC Ice-Coated XP-160 Insulators Under Low Atmospheric Pressure

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Abstract:

In the environment of low atmospheric pressure and pollution coexisting with ice-coating, the electric performances of insulators evidently deteriorate and a lot of research results in this field are reported home and abroad, however, the research results related to the differences between AC and DC flashover performances of insulators in this environment are seldom reported. The flashover tests of artificially ice-covered insulator string consisting of seven pieces of XP-160 cap and pin type suspension insulators are performed in large-scale multifunctional artificial climate chamber; the influences of atmospheric pressure and pollution on flashover voltage of ice-covered insulator string under two defiling ways, i.e., the solid-coating and the water conductivity of ice-coat, are researched, and the characteristic exponents, which characterize the influences of the atmospheric pressure and pollution on flashover voltage of ice-covered insulator string, are obtained and analyzed. Research results show that the impacting extent of atmospheric pressure on 50% AC icing flashover voltage is greater than that on DC icing flashover voltage, and the characteristic exponents characterizing the influence of atmospheric pressure on icing flashover voltage are slightly different under different defiling ways; the influence of pollution on AC icing flashover voltage is greater than that on DC icing flashover voltage.

Keywords: atmospheric pressure insulator string ice-coating AC flashover performance DC flashover performance defiling ways

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