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不同伞形结构复合绝缘子的交流污闪有效爬电距离

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摘要：

为得出高海拔、低气压下污秽地区不同伞形结构复合绝缘子的爬电距离有效利用率，在大型多功能人工气候室内对高海拔、低气压条件下干弧距离比较接近的4组不同伞型结构的复合绝缘子及一张硅橡胶平板开展了污闪试验研究。根据真实复合绝缘子的污闪梯度与硅橡胶板的污闪梯度之比，可求得复合绝缘子的爬电距离有效利用率k。根据k及爬距与干弧距离之比(dCF系数)，可计算得到电弧中间隙电弧的比例k1。分析了复合绝缘子污闪过程中k、k1的影响因素。结果表明，大小伞形dCF系数为3.55的复合绝缘子在海拔不超过2 500 m 时爬电距离的利用率较高，当海拔升高到4 000 m时，大小伞形dCF系数为3.27的复合绝缘子具有较高的爬电距离有效利用率。爬电距离有效利用率与与盐密、气压均呈幂指数关系。

关键词：

Utilization Coefficient of Creepage Distance of Composite Insulators With Different Umbrella Shape Configurations in AC Pollution Flashover Process

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Abstract:

In order to obtain the utilization coefficient of creepage distance of composite insulator under polluted and high altitude areas, experimental studies on pollution flashover under low pressure were carried out in four configurations composite insulators (the number is five in all) and a same material flat plate. The factors of the utilization coefficient of creepage distance k and ratio of clearance in arc k1 were analyzed. It is concluded from studies that the big-small umbrella configuration composite insulator with 3.55 CF coefficient ((ratio of creepage and dry-arc distance) has the biggest utilization coefficient of creepage distance under 2500 m altitude, but to the 4000 m altitude, the same umbrella configuration composite insulator with the 3.27 CF coefficient has the biggest utilization coefficient of creepage distance. At the same time, there is power function relationships between k and salt deposit density (SDD), air pressure P, in which the characteristic exponents of SDD and P relate with the parameters of composite insulator. There is also power function relationship between k1 and SDD, P, in which the characteristic exponents of SDD and P also relate with the parameters of composite insulator.

Keywords:

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