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高电压技术

单相及单极多分裂导线起晕电压计算方法

郝战铎1，张剑2，段基梅1，王廷华1，郑亚利3

1．许继电源有限公司，河南省 许昌市 461000；2．四川省电力公司绵阳电业局，四川省 绵阳市 621000；3．输配电装备及系统安全与新技术国家重点实验室(重庆大学)，重庆市 沙坪坝区 400044

摘要：

为研究单相/单极分裂导线的起晕电压特性，采用手册法和模拟电荷法相结合，建立了分裂导线起晕电压的计算模型。考虑到分裂导线所在位置不同和子导线表面位置不同会引起导线上电晕放电的差异，采用手册法确定起晕时子导线表面的场强分布，然后用模拟电荷法得到了分裂导线起晕电压。理论计算结果与试验数据吻合较好，表明了该方法的有效性。最后，利用该方法讨论了分裂导线的几何尺寸，如分裂间距、子导线半径和子导线数目等对起晕电压的影响；仅从电晕特性的方面考虑，推荐了导线选型的最优方案。

关键词：

A Method to Calculate Corona Inception Voltage of Single-Phase/Monopole Multi-split Conductors

HAO Zhanduo1, ZHANG Jian2, DUAN Jimei1, WANG Tinghua1, ZHENG Yali 3

1. XJ Power Co. Ltd., Xuchang 461000, Henan Province, China; 2. Sichuan Electric Power Corporation Mianyang Branch, Mianyang 621000, Sichuan Province, China; 3. State Key Laboratory of Power Transmission Equipment & System Security and New Technology (Chongqing University), Shapingba District, Chongqing 400044, China

Abstract:

To research corona inception voltage characteristics of single-phase/monopole bundled conductor, combining charge simulation method with manual-consulting, a mathematical model to calculate corona inception voltage of bundled conductor is built. Considering the difference of conductor's corona discharge due to different positions where the bundled conductor is located and the different positions of sub-conductor surfaces, the electric field intensity distribution of sub-conductors' surfaces are determined by manual- consulting method, and the corona inception voltage of bundled conductor is obtained with charge simulation method. Calculation results of the proposed approach well conform to the test data, so it is shown that the proposed method is effective. Finally, using the proposed method, the influences of geometric dimension of bundled conductor, such as bundling spacing, radius of sub-conductor and number of sub-conductors on corona inception voltage are discussed with the proposed method, thus optimal scheme to select the type of bundled conductor is obtained.

Keywords:

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通讯作者: 郝战铎

作者简介:

作者Email: zhanduoh@xjgc.com

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