

特高压输电

1000 kV单回特高压交流输电线路的绕击防雷保护

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摘要

风雨在空中的漂移和空气中不均匀介质的存在使闪电的轨迹呈不规则曲线形。考虑自然闪电轨迹的随机性和雷电主先导与次先导并存现象等因素, 有必要引入动态防雷保护角概念, 建议特高压交流线路中地线(针)对导线的实际保护角形成的角平分线应与雷电先导的来向一致, 并应计及垂直档距和水平档距的比值和风速的影响。根据杭州1962-1988年220 kV新杭I线雷击统计结果, 认为特高压线路防雷绕击分析应结合塔头和档内中央线路两处的防雷情况, 并分别进行了防雷保护角计算与比较。

关键词 [单回特高压交流线路](#) [动态防雷保护角](#) [风速](#) [塔头处绕击](#) [档内中央绕击](#) [高电压技术](#)

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Lightning Shielding Failure Protection for 1000 kV Single Circuit UHVAC Transmission Line

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Abstract

The drift of wind and rain in the air and the existence of inhomogeneous medium make the locus of lightning behaving as irregular curve. Considering the factors such as randomness of natural lightning locus and the coexistence of primary and secondary leaders, it is necessary to lead in the concept of dynamic lightning protection shielding angle. It is suggested that the angular bisector of practical protective angle formed by ground wire or earth pin in UHVAC transmission line and conductor should be aligned with the direction of lightning leader as well as the ratio of vertical span to horizontal span and the impact of wind speed should be considered. According to the statistical results of lightning stroke for a certain 220kV transmission line in Hangzhou region from the year of 1962 to 1988, the authors consider that the lightning shielding failure analysis should combine with the lightning protection conditions at both tower head and mid-span, and calculate and compare the shielding angles respectively.

Key words [single circuit UHVAC line](#) [dynamic lightning protection shielding angle](#) [wind speed](#) [tower head shielding failure](#) [midspan shielding failure](#) [high voltage engineering](#)

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