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中国电机工程学会电磁干扰（EMI）专委会年会优秀论文

上海地区典型220 kV架空线线下场强的研究

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摘要：

针对上海地区条件，基于模拟电荷法对多种220 kV架空线下的电场强度进行了计算，包括同塔双回路、220 kV四回路、220 kV/110 kV 四回路等不同相序排列情况下的线下场强值，并考虑了邻近存在超高压线路时对线下场强的影响。通过对不同条件架空线下场强的仿真计算，评估了现有220 kV架空线对环境的影响，并提出了降低场强可采取的措施。另外，探讨了采用屏蔽线对220 kV线路线下工频电场的影响，指出架设屏蔽线能够起到降低线下场强的作用。通过现场实测数据对计算结果进行了验证，计算及实测结果均表明，目前上海地区的220 kV架空线线下场强一般不会超过标准限值。

关键词： 架空线 线下场强 同杆双回路 同杆多回路

Research on Electric Field Strength Below Typical 220 kV Overhead Transmission Lines in Shanghai Region

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Abstract:

According to concrete condition of Shanghai region, the electric field strengths below various kinds of 220 kV overhead transmission lines, including double 220 kV circuit on the same tower, four 220 kV circuit on the same tower and four 220 kV/110 kV hybrid-circuit on the same tower, under different arrangement of phase sequence are calculated by charge simulation method, while the influence of adjacent UHVAC transmission line on electric field strength below 220 kV transmission line is taken into account. By means of simulation of electric field strengths below various kinds of 220 kV overhead transmission lines with different conditions, the impacts of existing 220 kV overhead transmission lines on environment are evaluated and the adoptable measures to reduce electric field strength are proposed. Besides, the influence of adopting shield wire on electric field strengths below 220 kV overhead transmission line is analyzed and it is pointed out that adopting shield wire can take effect of reducing electric field strengths below overhead transmission line. The calculation results are verified by on-site measured data, and both calculation results and measured results show that at present the electric field strengths below 220 kV overhead transmission lines in Shanghai region will not exceed the specified limit value in specifications.

Keywords: overhead transmission line electric field strength below transmission lines double circuit on the same tower multi-circuit on the same tower

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