

特高压交流输电线路电磁环境研究

黄道春¹, 阮江军¹, 文武¹, 李昊星², 赵全江³, 郑伟³

1. 武汉大学 电气工程学院, 湖北省 武汉市 430072; 2. 华北电网有限公司 电力调度中心, 北京市 宣武区 100053; 3. 中南电力设计院, 湖北省 武汉市 430071

收稿日期 修回日期 网络版发布日期 接受日期

摘要

研究特高压交流输电电磁环境问题对我国特高压工程建设具有重要意义。采用逐次镜像法计算酒杯塔、紧凑型 and 同塔双回直线塔的1000 kV交流输电线路导线表面和线路下方距地面1 m水平线处的电场强度; 计算了3种塔型下特高压交流输电线路的电晕损耗、无线电干扰、可听噪声、导线最低对地距离和走廊宽度; 分析电晕损耗、无线电干扰和可听噪声随海拔变化的情况。结果表明通过选择合适的线路参数可满足特高压交流输电电磁环境指标要求, 电晕损耗随海拔有近似指数增加的变化规律, 无线电干扰随海拔有近似线性增加的变化规律。

关键词 [特高压交流输电; 电磁环境; 逐次镜像法; 电场强度; 电晕损耗; 无线电干扰; 可听噪声](#)

分类号

Study on Electromagnetic Environment of UHV AC Transmission Lines

HUANG Dao-chun¹, RUAN Jiang-jun¹, WEN Wu¹, LI Hao-xing², ZHAO Quan-jiang³, ZHENG Wei³

1. School of Electrical Engineering, Wuhan University, Wuhan 430072, Hubei Province, China;

2. Power Dispatching Center, North China Grid Company Limited, Xuanwu District, Beijing 100053, China;

3. Central Southern China Electric Power Design Institute, Wuhan 430071, Hubei Province, China

Abstract

The study on electromagnetic environment of UHV AC power transmission is of significance for the construction of UHV AC transmission lines in China. By means of successive images method, the authors calculate the electric field intensity at the conductor surface of single circuit 1000kV AC transmission lines which are erected on cup-shaped and compact tower and that of double circuit on the same tower as well as the electric field intensity at the height of one meter above the ground where is beneath the transmission line. The corona loss, radio interference, audible noise, the minimum distance to the ground of conductor and the corridor width of 1000 kV AC transmission line adopting above mentioned types of towers are also calculated, the variations of corona loss, radio interference and audible noise with altitude above sea level are analyzed. Research results show that approximately, the corona loss exponentially increases with the increase of altitude above sea level and also approximately, the radio interference linearly increases with the increase of altitude above sea level, and by means of choosing suitable line parameters the requirement of UHV AC transmission line in electromagnetic environment index can be satisfied.

Key words [UHV AC power transmission; electromagnetic environment; successive images method; electric field intensity; corona loss; radio interference; audible noise](#)

DOI:

通讯作者

作者个人主页 [黄道春¹;阮江军¹;文武¹;李昊星²;赵全江³;郑伟³](#)

扩展功能
本文信息
▶ Supporting info
▶ PDF (397KB)
▶ [HTML全文](OKB)
▶ 参考文献[PDF]
▶ 参考文献
服务与反馈
▶ 把本文推荐给朋友
▶ 加入我的书架
▶ 加入引用管理器
▶ 复制索引
▶ Email Alert
▶ 文章反馈
▶ 浏览反馈信息
相关信息
▶ 本刊中 包含“特高压交流输电; 电磁环境; 逐次镜像法; 电场强度; 电晕损耗; 无线电干扰; 可听噪声” 的相关文章
▶ 本文作者相关文章
· 黄道春
· 阮江军
· 文武
· 李昊星
· 赵全江
· 郑伟