

电网建设

塌陷区输电铁塔的可靠性评估

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摘要:

以某塌陷区上输电线路为对象, 分析了输电线路经过地区的煤炭开采状况, 对塌陷区地表变形进行了预计分析。采用数值分析方法, 分析了地表变形对输电杆塔结构内力和变形的影响规律, 研究表明, 除了单支座施加竖向位移荷载, 其他工况可以认为在支座位移为根开的5‰以内, 杆件均不会达到屈服荷载; 可以利用出现Q235材料屈服时的支座位移作为判断塔架是否安全的标准, 即当预测的地表变形小于Q235材料屈服时的支座位移时, 认为塔架处于安全状态。

关键词: 塌陷区 地表变形 输电铁塔 可靠性评估

Reliability Assessment of Transmission Tower in Mining Subsidence Area

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Abstract:

Against the background of transmission line erected on a certain mining subsidence area, the coal-mining situation at this area where transmission line passes through is analyzed, and the deformation of ground surface in the subsidence area is estimated and analyzed. Using numerical analysis, the impacting rule of ground surface deformation on structural internal force and deformation of transmission towers is re-researched. Research results show that except the downward displacement load exerted on single support abutment, it is reputed that the abutment displacement is within 5‰ of the foot distance of a tower under other working conditions when the yield load of bars will not be achieved; it is possible to taken the abutment displacement that appear when the material Q235 begin to yield as the criterion to judge whether the tower is safe, i.e., when the estimated ground surface deformation is smaller than the abutment displacement under the yield limit of the material Q235, the transmission tower can be considered as in safe condition.

Keywords: mining subsidence area ground surface deformation transmission tower reliability assessment

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