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特高压输电

特高压钢管塔主材长细比及径厚比的取值

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摘要：

文章选取1 000 kV淮南—上海(皖电东送)输变电工程的典型同塔双回钢管塔为研究对象，建立其梁杆混合单元的有限元模型，对塔身主材的应力进行了计算。结果表明杆端弯矩对主材应力的影响程度与其长细比密切相关。通过统计分析，给出了长细比与应力的对应关系。通过分析计算结果及对比国内外设计标准，提出了钢管塔压弯主材圆管截面的径厚比取值建议。研究结果可为我国特高压钢管塔的结构优化提供参考。

关键词： 特高压钢管塔 长细比 径厚比 局部屈曲

Value Selection of Slenderness Ratio and Diameter-Thickness Ratio of Steel Tube for 1 000 kV Transmission Steel Tubular Tower Legs

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Abstract:

Taking typical steel tubular tower for 1 000 kV power transmission and transformation project from South Anhui to Shanghai, which adopts the form of double circuit on the same tower, as research object, a finite-element model for beam-rod mixed unit of the tower is established, then the stress of the main material for tower body is calculated. Calculation results show that the impacting extent of bending moment at rod end on the stress of main material is closely related with the diameter-thickness ratio of steel material; by means of statistics and analysis, the correspondence between slenderness ratio and stress is given. Based on the results of calculation and analysis and comparing design standards applied in China and other countries, the suggestion on value selection of cross-sectional diameter-thickness ratio of circular tube used as the main press bending material of the tubular tower is proposed. The results of this research are available for reference to the structural optimization of tubular tower used in 1 000 kV power transmission projects in China.

Keywords: steel tubular tower for 1 000 kV power transmission project slenderness ratio diameter-thickness ratio local buckling

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