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溪洛渡和向家坝特高压直流输电换流站接地极型式的研究

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摘要
分析了直线形、星形和圆环形3种常见水平接地极的特点，结合溪洛渡、向家坝直流换流站初选东阳和万寿极址的地形资料，对标准3圆环接地极的环径比例选择、各子圆环的埋深特性及采用该电极型式的可行性进行了分析研究。模拟计算表明：溪洛渡换流站接地极应优先考虑3圆环接地极型式，当其环径比例为0.7、布置型式采用同心非等深布置时，东阳极址在额定条件下可满足系统运行要求，且可获得较高的安全裕量；对于万寿极址，标准3圆环电极不能满足系统运行要求，如采用跑道式环形电极，则经济性很差，因此不宜作为换流站接地极址。

关键词 特高压直流输电；直线电极；星型电极；圆环电极；埋深；绝缘

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Research on Types of Grounding Poles for HVDC Converter Stations Located in Xiluodu and Xiangjiaba

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Abstract
The features of three frequent types of level grounding poles, i.e., the linear type, star-like type and toroidal type, are analyzed. According to topographic information of Dongyang and Wanshou which are tentatively chosen as the sites to assemble grounding poles, the selection of d/D ratio, namely the ratio of radius of two adjacent toroids, of standard triple toroidal grounding poles, the burial depth characteristics of each sub-toroids and the feasibility of adopting such type of poles are researched. Simulation results show that for Xiluodu converter station the priority should be given to triple toroidal type of grounding poles, when the d/D ratio is equal to 0.7 and the arrangement of toroids are concentric and laid out with different depth, under rated conditions the pole site in Dongyang can meet the requirement of system operation and larger security margin can be obtained; for the pole site in Wanshou the standard triple toroidal grounding poles cannot meet the requirement of system operation, and the economic index would not be satisfied while the track-like toroidal grounding poles were adopted there, so Wanshou is not an appropriate site for grounding poles.

Key words UHVDC；linear electrode；star-like electrode；toroidal electrode；burial depth；insulation

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