

Design and manufacturing of $\pm 200\text{kV}$ HVDC submarine power cable in Zhoushan flexible dc transmission project

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Zhoushan multiterminal flexible DC transmission project in Zhejiang province, China is the world's first five-terminal DC transmission project, in which 103 km $\pm 200\text{kV}$ submarine fiber optic composite power cable linking Dinghai and Daishan is supplied by ZTT transmitting capacity of 400 MVA with conductor cross section of 1000 mm^2 . This paper demonstrates the simulation verification design of the insulation thickness and electric stress of the $\pm 200\text{kV}$ HVDC cables for this project and proves that the electric stress at any point of insulation complies with the performance of insulation material. Manufacturing process of cable and factory splice is also introduced together with the relevant tests carried on the submarine composite cable including DC voltage test according to CIGRE TB 496 and mechanical test that verifies the reliability of the power cable factory splice and optical fibers.