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Wed-Af-Po3.19-08 [53]: Effect of Combination Twisting with Bending Characteristics on Critical Current of Quasi-Isotropic HTS Strand

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The commercial coated conductors (CCs) are at present available in the form of thin strips with high critical current density and excellent mechanical properties. To realize high current carrying capability, several cable conductors were proposed by assembling a large number of CCs. One of them is so called quasi-isotropic strand consisting of four sub-strands by stacking a number of CCs. In the application of conductor and cable, the bending cable is essential and the twisting is an effective technique for uniform current distribution which reduces AC losses of the cable and then improves its stability. In this paper, the strain mathematical characterization of a quasi-isotropic strand (Q-IS) is studied under conditions of bending, twisting and combination of both. The chosen set of Q-IS mechanical parameters satisfies electromechanical limitations and provides feasibility for its practical application.

Key Words: bending, critical current, twisting, quasi-isotropic strand (QI-S)

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