Cabling Method for High Current Conductors Made of HTS Tapes

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Abstract - A small-scale test of a twisted stacked-tape conductor made of coated YBCO tapes was performed using four-tape cable. The critical current degradation and current distribution of this four-tape conductor was evaluated by taking account the twist-strain, the self-field and the termination resistance. The critical current degradation for the tested YBCO tape may be explained by the perpendicular self-field effect solo. The critical currents of the twisted stacked-tape conductor with four-tape cable have been confirmed not to degrade up to 120 mm twist pitch length. This type of conductor design is proposed to make it possible to fabricate highly compact, high current cables from multiple flat HTS tapes.

Index Terms - HTS, twist, cable, critical current, self-field.

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