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Thu-Mo-Po4.09-03 [65]: Evaluation of Joint Resistance and Electromechanical Properties in Various Type of Ultrasonic Weld CC Tape Joints

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Various types of coated conductor (CC) joints are required due to current CC tapes fabrication limited lengths and for their coil applications in high field magnets. It is essential that some CC joint fundamentals, including joint resistance, must be a consideration in dealing with such application designs. Also, joint requirements must meet both the conditions of good electrical and mechanical interconnections. In this study, ultrasonic weld (UW) joints of differently stabilized REBCO CC tapes were fabricated. Joint resistance (Rj) and critical current (Ic) measurements of adopted CC tapes depending on UW types/configurations were measured at 77 K. Bending performance of CC bridge joints as a practical evaluation for coil winding application were measured and discussed. The results of different UW joints provide an understanding on the UW type-joint resistance and electromechanical properties relationship. Surface morphologies of the cross-section and joint interface were observed using SEM, EDS, and EPMA.

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