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Mon-Af-Po1.20-04 [77]: Experimental Study of Quench Performance for YBCO Coated Conductors

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When high temperature superconducting (HTS) devices run in the power system, the superconducting tapes may quench due to power system fault. Therefore, quench characteristic is one of the most important characteristics of superconducting tapes. In this paper, in order to obtain the quench characteristics of YBCO coated conductor, we have established an over-current experiment system based on waveform controllable power supply. The voltage and current of YBCO coated conductor sample are measured under over-current with various amplitudes. The variation of quench and recovery performance for YBCO coated conductor samples is discussed. In order to verify the validity of the experiment data, we used the thermal-electrical analogy method to build a computational model. During the over-current process, the transient resistance of YBCO coated conductor sample is greatly influenced by over-current current amplitude and its rate of change. When the over-current current is relatively large, the YBCO coated conductor sample has a recovery process after impact process. The work in this paper may contribute references to design and protection of superconducting fault current limiter (SFCL).

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