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Mon-Af-Po1.12-05 [12]: AC loss evaluation of a novel 2G HTS narrow-stacked wires with 1 mm width

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As a novel structure of second-generation high-temperature superconducting (2G HTS) tapes, narrow-stacked HTS wire with 1 mm width was proposed to reduce AC loss. Its fabricated processes are to cut the HTS tapes into 1 mm wide ones mechanically and stack them into one wire through the soldering furnace. In our previous work, compared with the traditional 5 mm wide HTS conductor, the remarkable AC loss reduction effect by narrowing the HTS tapes has been confirmed to be about 80%. Thus, the narrow-stacked wire is suitable to help the 2G HTS electrical device overcome the energy dissipation caused by AC loss. However, the effect of different HTS tapes stacking number on AC loss is not clarified in the narrow-stacked wires yet. To meet the requirement of the practical HTS applications, we evaluate AC loss of the narrow-stacked wires with different tapes stacking structure. Moreover, an HTS coil is wound with the narrow-stacked wire composed of two HTS narrow tapes and one same wide copper tape. The related AC loss analysis is carried out for further understanding the influence of tapes stacking.

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