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AC loss evaluation of a 10T class small REBCO coil with conduction-cooled configuration

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In order to use a REBCO coil with conduction cooling configuration, AC loss of the coil should be quantitatively predicted and designed under the operating conditions. REBCO-coated conductor is a tape shape and is suited to be composed of a stack of single pancake coils for generating high magnetic field. And various research groups measured and evaluated the ac loss of the REBCO tape; however, there were few reports about the ac loss of the coil which were measured at liquid nitrogen temperature. In this report, the ac losses of the REBCO coil composed of a stack of 22 single pancakes with 50 mm in inner diameter, 132 mm in outer diameter and 105 mm in height, which achieved to generate 13.5 T at 10 K [1], were measured and evaluated with conduction cooling configuration. The experimental results will be compared with the calculated results and discussed at the conference.
[1] H. Miyazaki, et al., IEEE Trans. Appl. Supercond., vol. 27, no. 4, 4701705

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