

FEM Analyses of AC Loss of an HTS Coil by the Changing Frequencies and Directions of the Applied Field

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Abstract- In this work, the influence of the amplitude for four frequencies and directions of the applied field on the AC loss of an HTS pancake coil is extensively investigated by the finite element method in COMSOL Multiphysics software with an AC/DC module. The number of the coil turn is 10, and the radius is about 60 mm. The superconducting layers width and height in the simulations are 12 and 1 mm, respectively. The critical current density of tapes is taken as 300 A. The calculation is presented how to change the AC loss inside a superconducting region by the changing frequencies and direction of the applied field.

Keywords- Superconductivity, Finite element method, Superconducting coil, AC loss

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