

Design Work for a PCM Test of a Small HTS Coil

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It is well known that high temperature superconductors are promising for a magnet application, but it has been almost impossible so far to apply them to the magnet in persistent current mode because of poor qualities of their superconducting joints at higher current as well as their lower index values. In order to get rid of the joints from an HTS superconducting magnet, a wind-and-flip technique for demonstrating the persistent current mode operation of HTS magnet using YBCO coated conductors had been suggested by us. And a prototype pancake coil had been made and tested in liquid nitrogen temperature. In this paper, to improve their magnetic field stability, a design and thermal analysis of another coil with the same technique, but at lower temperature using a cryocooler are presented. The design work includes a PCS coil under the conduction cooling condition. This coil is expected to show better performance than before because of the lower index and smoother cutting process.

Keywords : PCM, magnet, wind-and-flip

This research was supported by a grant from Center for Applied Superconductivity Technology of the 21st Century Frontier R&D Program funded by the Ministry of Education, Science and Technology, Republic of Korea.