



Contribution ID: 355 Contribution code: WED-PO2-723-09

Type: Poster

Persistent current mode operation of a cryocooler-cooled joint-less HTS magnet

Wednesday 17 November 2021 10:30 (20 minutes)

A joint-less winding method uses second-generation (2G) high-temperature superconductors (HTS) to make an HTS magnet for persistent current mode operation without superconducting joint. Starting with simple double pancake HTS coil wound, we have tried to make and test various types of the joint-less HTS coils. Most recently, a prototype of a concentrically arranged joint-less magnet was made and confirmed that the persistent current mode operation is possible for more than 18 hours at 77 K. In this paper, we proposed a 1 T class concentrically arranged joint-less HTS magnet. They have oxygen free copper bobbin for the conduction cooling with GM cryocooler. It was magnetized with a persistent current switch and operated in persistent current mode at the temperature of below 20 K. We also performed field mapping of the joint-less HTS magnet and verified the possibility of a high field HTS magnet. We also tried passive shimming installed in the room temperature bore in the center of the magnet to improve the quality of the magnetic field.

Acknowledgement

“This research was supported by Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Science and ICT (2019R1F1A1063397)”

“This research was supported by Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Education(2019R1I1A3A01063158)”

Primary authors: Ms YOON, Miyeon (Korea Polytechnic University); KIM, Woo-Seok (Korea Polytechnic University)

Co-authors: LEE, Ji-Kwang (Woosuk University); CHOI, Kyeongdal (Korea Polytechnic University)

Presenter: Ms YOON, Miyeon (Korea Polytechnic University)

Session Classification: WED-PO2-723 Moel Coil II & Test Facilities