MT 26
International Conference
on Magnet Technology
Vancouver, Canada | 2019

Contribution ID: **1034** Type: **Poster Presentation**

Mon-Af-Po1.11-01 [1]: Experiment and simulation of the magnetic field produced by the HTS magnet magnetized by the flux pump

Monday 23 September 2019 14:30 (2 hours)

Stacks of high temperature superconducting (HTS) tapes magnetized by pulsed fields have been demonstrated a way for the development of the HTS magnet capable of trapping high field. A novel structure of the flux pump was proposed to magnetize the HTS magnet stacks of RE (RE= rare earth) Ba-Cu-O annular plates in this paper. Prototypes of the flux pump constructed of two types of the solenoidal coil with or without the iron core and pulsed triangular waveform current source were tested in the HTS magnet excitation system at 77 K (LN2 bath). The experiment and simulation analysis of the HTS magnet magnetized by two different structures of the flux pump was reported. There is good qualitative agreement between simulation and experiment. It can be noted that the induced magnetic field of the HTS magnet excited by flux pump with iron core in comparison to flux pump without iron core has considerable efficiency of generating high magnetic field.

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Session Classification: Mon-Af-Po1.11 - HTS Magnets II