



Contribution ID: 269

Type: **Poster Presentation of 1h45m**

A Compact Test Bed for Critical Current Evaluation on High Temperature Superconducting Tape Samples

Wednesday, August 30, 2017 1:15 PM (1h 45m)

A compact test bed was developed for the critical current evaluation for the High Temperature Superconducting (HTS) tape samples under transverse magnetic field. The test bed is composed of a conduction-cooled superconducting magnet and an insert dewar which HTS short sample is hold in liquid nitrogen. The superconducting magnet, which can provide 3.5T horizontal magnetic field in its vertical bore, is integrated with two pairs of coaxial NbTi coils in a split magnet structure. A HTS short sample holder inside the insert dewar is designed in a way to fit changeable magnetic field direction. Electromagnetic and thermal analyses on the test bed are discussed and test results are presented.

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Session Classification: Wed-Af-Po3.03

Track Classification: C3 - HTS Insert and Model Magnets