



Contribution ID: 160

Type: Poster

Wed-Af-Po.03-02: Development and testing of REBCO racetrack model coils at CERN

Wednesday 2 July 2025 14:30 (2 hours)

One of the goals of the High Field Magnet (HFM) Programme at CERN is to explore High-Temperature Superconducting (HTS) magnet technology for accelerator applications that go beyond the limits of low-temperature superconductors and offer a pathway for the development of more sustainable particle accelerators operating at temperatures above 1.9 or even 4.5 K. As a stepping stone to achieving these goals, CERN has launched the development of model coils in racetrack geometry that can be scaled up for use in common coil-type magnets. The model coils were used to validate winding tooling, newly developed cable insulation technology, instrumentation placement, conductor performance and other key design choices with a short iteration cycle that allows for rapid development.

We detail the coil electromagnetic design and several lessons learned during the progression from single-layer to double-layer coils with a layer jump that allows for a modular magnet design approach. Additionally, the results from liquid nitrogen tests and preliminary findings from liquid helium testing are discussed.

Authors: SABA, Aisha (CERN); Dr BASKYS, Algirdas (CERN); Dr BALLARINO, Amalia (CERN); Dr BARTH, Christian (CERN); PERINI, Diego (CERN); MANGIAROTTI, Franco Julio (CERN); WILLERING, Gerard (CERN); MAZET, Jacky (CERN); GAL, Norbert (CERN)

Presenter: Dr BASKYS, Algirdas (CERN)

Session Classification: Wed-Af-Po.03 - High Luminosity LHC and FCC