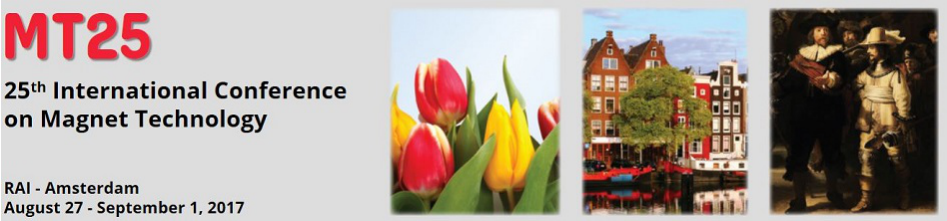

Contribution ID: **865** Type: **Poster Presentation of 1h45m**

Design, Assembly and Use of a Device to Eliminate Earth Faults Caused by Foreign Metallic Debris in the LHC Main Dipole Circuit

Thursday, 31 August 2017 13:45 (1h 45m)

The superconducting dipole magnets of the Large Hadron Collider operate in a superfluid helium bath at 1.9K. As a part of the magnet quench protection system, each dipole magnet is equipped with a by-pass diode located in the helium bath. The connection between the superconducting magnet and the cold by-pass diode is made through a clamping system called "half-moon", located at the lowest point of the cold-masses. This area is prone to receiving metallic debris residual from the assembly technological processes. The metallic debris might move and create an earth fault during helium flows that occur not only during the flushing of the cryogenic installation but also during magnet quenches at high currents. In the case of appearance, the earth fault is detected by the protection system of the circuit and the current is ramped down to zero as a consequence. Subsequently, with the circuit current already at zero, the fault can be eliminated using a device denominated Earth Fault Burner (EFB). The fault elimination must follow a strict procedure as it is not fully risk-free. This paper describes the details of such an earth fault elimination, including preliminary diagnostics and necessary hardware. Two examples from the LHC operation are described and discussed.

Submitters Country

Poland

Primary author: BEDNAREK, Mateusz Jakub (CERN)

Co-authors: SIEMKO, Andrzej (CERN); RODRIGUEZ MATEOS, Felix (CERN); STACHON, Krzysztof (CERN); PIETRZAK, Pawel (AGH University of Science and Technology (PL)); BALAMPEKOU, Stavroula (National Technical Univ. of Athens (GR)); PEMBERTON, Stephen (CERN)

Presenter: BEDNAREK, Mateusz Jakub (CERN)

Session Classification: Thu-Af-Po4.01

Track Classification: A1 - Superconducting Accelerator Magnets