



Contribution ID: 1115

Type: **Poster Presentation of 1h45m**

## Quench protection of an MgB<sub>2</sub>-based MDS magnet system

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

This paper discusses the design of the quench protection for a conduction-cooled MgB<sub>2</sub> magnet system that will be used for magnetic density separation (MDS). First, an extensive literature review is made of currently available quench detection and - protection methods, which are discussed in a structured way in terms of merits and challenges. Next, the measured normal zone propagation velocity and minimum quench energy of MgB<sub>2</sub> wire produced by Columbus SpA are reported and used as input for pseudo-analytical modeling of the maximum hotspot temperature and coil voltages. These simulated quench characteristics are then combined with the literature review to select the most adequate quench detection and - protection strategies.

The work is part of the research programme “Innovative Magnetic Density Separation for the optimal use of resources and energy“ with project number P14-07, which is (partly) financed by the Netherlands Organisation for Scientific Research (NWO).

### Submitters Country

Netherlands

**Primary author:** DHALLÉ, Marc (University of Twente)

**Co-authors:** ZHOU, Chao (University of Twente); Dr GRASSO, Giovanni (Columbus Superconductors SpA); Prof. TEN KATE, Herman (University of Twente); KOSSE, Jaap; Prof. TER BRAKE, Marcel (University of Twente); TROPEANO, Matteo (Columbus Superconductors, SpA); Mr KÜHLKAMP, Wouter (University of Twente)

**Presenter:** Mr KÜHLKAMP, Wouter (University of Twente)

**Session Classification:** Thu-Af-Po4.09

**Track Classification:** G1 - Quench Detection and Protection Systems