



Contribution ID: 401

Type: **Contributed Oral Presentation**

## Magnetization losses in MgB<sub>2</sub> wire matrix material

*Monday 29 June 2015 17:30 (15 minutes)*

Magnesium diboride conductors are considered for use on fully superconducting wind turbine generators and, as a result, being able to quantify the AC losses in MgB<sub>2</sub> wound stators is paramount. AC losses were measured on several MgB<sub>2</sub> conductors based on NiCu matrix material. The measurements were done calorimetrically at about 15 K and at applied magnetic fields up to 100 mT and frequencies up to 400 Hz. The AC losses measured are consistent with magnetization losses in magnetic materials and not with classic AC losses (magnetization, coupling and eddy). As previously reported in literature, the matrix material composed of NiCu alloys, while non-magnetic at room temperature, might present magnetic properties at cryogenic temperature. This paper deals with the characterization of the matrix material of several MgB<sub>2</sub> conductors from different manufacturers through the measurement of the susceptibility with respect to temperature and the measurement of the major hysteresis loop showing the saturation field and the maximum energy dissipated per cycle. The results are then used to correlate the AC losses measurements.

**Author:** MASSON, Philippe (University of Houston)

**Co-author:** Dr LECLERC, Julien (University of Houston)

**Presenter:** MASSON, Philippe (University of Houston)

**Session Classification:** M1OrC - Superconductor Stability and AC Losses

**Track Classification:** ICMC-08 - Superconductor Stability and AC Losses