



Contribution ID: 25

Type: **Oral presentation (15min)**

Filamentary MgB₂ wires for AC applications

Thursday, 10 July 2014 14:30 (15 minutes)

Thermally stabilized filamentary MgB₂ wires with variable barriers (Nb, Ti, NbTi and C) and not magnetic sheaths (SS and GlidCop) have been made by in-situ PIT process. Critical current densities, J_c , and AC losses of wires and cables with different barriers and twist pitches have been measured and compared. AC loss of MgB₂ wires exposed to the external AC magnetic field perpendicular to the wire axis was measured at temperatures between 18 K and 40 K by apparatus utilizing calibration free method. External AC magnetic field up to 70 mT in RMS and different frequencies from 2.3 Hz up to 1152 Hz were used. It was found that barrier material (its resistivity) has a direct effect to coupling AC losses. A strong coupling effect was found in non-twisted 30-filament wire with Ti barriers and also for cable made from 30-filament strands. The reduction of coupling losses with twist pitch was studied and related to the transport currents and an optimal twist pitch was found. The minimal AC losses and no transport current reduction were measured for cables made from single-core MgB₂ strands.

Primary author: Dr KOVÁČ, Pavol (Institute of Electrical Engineering of SAS)

Co-authors: Mr HUŠEK, Imrich (Institute of Electrical Engineering of SAS); Dr SOUC, Jan (Institute of Electrical Engineering of SAS); Mr KOVÁČ, Ján (Institute of Electrical Engineering of SAS); Mr KOPERA, Lubomir (Institute of Electrical Engineering of SAS); Mr MELÍŠEK, Tibor (Institute of Electrical Engineering of SAS)

Presenter: Dr KOVÁČ, Pavol (Institute of Electrical Engineering of SAS)

Session Classification: Thu-Af-Oral Sessions 15

Track Classification: M-04: MgB₂ processing and properties