

## Transport AC Loss Measurements in Superconducting Coils

Jae-Ho Kim, Chul Han Kim, Gopal Iyyani, Jozef Kvitkovic, and Sastry Pamidi

**Abstract** - Transport AC loss measurements were performed on several Second Generation (2G) High Temperature Superconducting (HTS) pancake coils. A good agreement was observed between the AC loss values of the coils obtained using two separate techniques. Self-field critical current density of the tape did not have direct effect on the AC losses in coils. Relative orientation of the tapes in 2-tape stack affects AC losses in coils using the stacked conductor. Losses scale with maximum perpendicular field seen by the conductor in the coil suggesting that the magnetization loss is the predominant component of coil losses. Absence of frequency dependence of the losses indicates that the eddy current losses are not significant in the coils up to 400 Hz.

**Index Terms** - AC loss, Stacked tape, Pancake

IEEE/CSC & ESAS European Superconductivity News Forum (ESNF), No. 15, January 2011

The published version of this manuscript appeared in *IEEE Transactions on Applied Superconductivity* 21, Issue 3, 3269 - 3272 (2011)