



Contribution ID: 469

Type: Poster

## Sat-Mo-Po.05-09: Quench behavior of graded REBCO tapes after heat treatment

*Saturday 5 July 2025 09:30 (1h 45m)*

REBCO tapes are promising material for the construction of high field magnets because of large engineering critical current densities at high field, however, the slow normal zone propagation velocity (NZPV) makes the protection against quenches a critical issue. Stability margin of REBCO cables is two or three orders of magnitude greater than that of lowtemperature superconducting cables, which leads to a much slower quench propagation in REBCO cables. On the other hand, heat treatment is a key process to ensure stability of the high temperature superconductor (HTS) cable. Thus, the main aim of this article is to analyse the quench behaviors of graded REBCO tapes with different critical current after heat treatment. To control the critical current of graded REBCO tapes precisely, heat treatment is taken for 4-mm-wide REBCO conductors under different temperature gradients while maintaining the same heating time in a vacuum tubular furnace and tested them to get the relation between heating time and critical current in 77 K. Besides, NZPV of these tapes with various critical current was investigated at the same current margin (80%  $I_c$ ) the finding is that it was more affected by the transport current than the margin. When heated for 60 minutes, the NZPV of the tapes was 1.2 times larger than that of without heat treatment, independent of the temperature. Afterwards heating time has changed, realizing the velocity was positively related to heating time. A conclusion is drawn that the reason of this tendency is the change of the interlayer resistance of the tape by heating.

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**Session Classification:** Sat-Mo-Po.05 - Quench Detection and Protection IV