



MT 26
International Conference
on Magnet Technology
Vancouver, Canada | 2019

Contribution ID: 864

Type: **Poster Presentation**

Tue-Mo-Po2.09-10 [72]: Investigation for Thermal Stability of Quasi-isotropic Superconducting Strand Stacked by 2mm Wide REBCO Tapes With Different Sheaths

Tuesday 24 September 2019 08:45 (2 hours)

Abstract– In order to improve the engineering current density of high-temperature superconducting strand, we developed a kind of quasi-isotropic superconducting strand stacked by 2mm wide REBCO tapes. Minimum quench energy (MQE) and quench propagation velocity (QPV) of quasi-isotropic superconducting strands with copper, aluminum and stainless steel sheaths in liquid nitrogen (LN) were investigated numerically and experimentally in this paper. The numerical results are strong textin accord with the experiment, indicating that the developed numerical method can effectively simulate the thermal stability of this kind of strand immersed in liquid nitrogen and it can be applicated in high-current electric power transmission with high stability.

Index Terms–Thermal stability, quasi-isotropic superconducting strand, minumum quench energy, quench propagation velocity

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Session Classification: Tue-Mo-Po2.09 - REBCO Wires & Cables I