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Tue-Af-Po2.22-07 [80]: Quench test of a stacked REBCO coil composed of six single pancakes with electrically conductive epoxy resin

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A coil without turn-to-turn insulation, called a no-insulation (NI) coil has been developed. The NI winding technique has been reported to be a promising method of quench protection. In order to apply the NI winding technique to a conduction-cooled REBCO coil, we developed a coil using an electrically conductive epoxy resin. The electrically conductive epoxy resin in which a metal powder was mixed was applied to the edge of the winding. If thermal runaway of the coil is observed, the excessive current could be automatically bypassed through the electrically conductive epoxy resin [1]. In order to confirm the effect of a larger coil with higher stored energy with the electrically conductive epoxy resin, we fabricated and tested a stacked coil composed of six single pancakes whose inner diameter and outer diameter were 500 mm and 554.5 mm, respectively. The detailed features of a stacked coil with electrically conductive epoxy resin and the test results of over-current tests under conduction-cooled conditions will be presented at the conference.

[1] H. Miyazaki, et al: "Over-current Test of REBCO Pancake Coils Impregnated with Conductive Epoxy Resin Under Conduction-cooled Conditions," 5LOR1C-02, 2018 Applied Superconductivity Conference, Seattle, USA, Oct. 28- Nov. 2, 2018

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