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## Partial-Insulation HTS Magnet for Reduction of Quench-Induced Peak Currents

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The No-insulation (NI) coil's turn-to-turn current paths prevent local heating by forcing the current to bypass into nearby turns when a hot spot appeared in a coil. However, the bypassing current will reduce the magnetic field that generates unwanted induced currents in the adjacent coils in a multiply-stacked HTS magnet. This induced current can temporarily exceed the designed maximum currents in the NI coils, which can damage the magnet. A partial-insulation (PI) coil, in which a single or multiple insulated, with a polyimide-like material, is inserted in the coil to hinder the current paths, can reduce the peak induced currents in the NI HTS coil's current paths. In this paper, we present the results of a simulation study on the peak-induced current upon a quench of the PI HTS magnet with multiple stacks. The study shows that the peak-induced current varies with insulation location, number of the insulated turns, and quench initiation location. We will also briefly discuss the differences in the hot spot behavior of PI and NI.

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