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Current Limiting Characteristics of Transformer Type Superconducting Fault Current Limiter (SFCL) due to Winding Direction of Additional Secondary Winding

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In this paper, the transformer type superconducting fault current limiter (SFCL) with additional secondary winding, which could limit the fault current through twice quench operations, was suggested. The suggested SFCL includes one primary winding, two non-isolated secondary windings wound on the same iron core, and two high-TC superconducting (HTSC) elements connected with each secondary winding. The advantage of the suggested SFCL is that it can perform the twice current limiting operations due to the transient amplitude of the fault current. Among its designed parameters, the winding direction of two non-isolated secondary windings is expected to affect the current limiting characteristics of the SFCL with twice quench operations. To analyze the dependence of the current limiting operation on the winding direction of the two non-isolated secondary windings, the fault current limiting tests were performed with the suggested SFCL and the current limiting characteristics of the SFCL were discussed.

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