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Comparative Study on Current Limiting Characteristics of Transformer Type Superconducting Fault Current Limiters (SFCLs) with Common Connection Point between Two Secondary Windings

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In this paper, the transformer type superconducting fault current limiters (SFCLs) with common connection point between two secondary windings, which was similar structure to the previously suggested transformer type SFCL with two triggering levels, were proposed and their current limiting characteristics were compared. The suggested transformer type SFCLs consist of the primary winding and two secondary windings with common connection point. However, the current limiting operations through two triggering levels, which can be generally adjusted by the winding direction and the number of turns between two secondary windings, are affected by the application position of two high-TC superconducting (HTSC) elements into the transformer type SFCL with common connection point. To analyze the dependence of the current limiting operation on the application position of two HTSC elements, the short-circuit tests for the transformer type SFCL with two different positions of two HTSC elements were carried out and their current limiting characteristics were compared from the point of view of the power burden and the accumulated energy of two HTSC elements comprising each transformer type SFCL.

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