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DC Fault Current Limiting Characteristics of Flux-Lock Type SFCLs with Parallel and Series connection between Two Coils

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In this paper, DC fault current limiting characteristics of the flux-lock type superconducting fault current limiter (SFCL) with parallel and series connection between two coils were analyzed.
The flux-lock type SFCL with parallel connection between two coils was composed of two windings connected in parallel and one superconducting module (SM), which was connected in series with the secondary winding. The flux-lock type SFCL with series connection between two coils was composed of two windings connected in series and one superconducting module (SM), which was connected in parallel with the secondary winding. These flux-lock type SFCLs with parallel and series connection between two coils in the DC system are thought to perform the similar fault current limiting operation to AC system. However, since the transient period after the resistance in SM approaches into the constant value, its fault current limiting characteristics in the DC system are expected to be different from one in the AC system as well as its recovery characteristics after the fault removes.
To analyze its DC fault current limiting and recovery characteristics, DC short circuit tests were performed and the different operations of the flux-lock type SFCL in DC system were investigated from the test results.

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