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Characteristics of superconducting coil-type DC Fault Current Limiter to increase stability in DC power system

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This paper presents a superconducting coil-type DC Fault Current Limiter(FCL). It has a combination structure of superconducting coils and DC circuit breaker in series. The superconducting coils operate as current limiting element. It was quenched when the fault is generated and limits the maximum fault current. Mechanical DC circuit breaker operates as interrupting element. It cut-offs the primary limited fault current which is limited by superconducting coils. The EMTDC/PSCAD has conducted to design the simulation power system which was designed similarly to real power system and to achieve the characteristic of superconducting coil-type FCL. Also, our research team has made a real power system based on simulation data. Therefore comparative characteristics analysis has conducted with simulation and experimental data. The results indicated that breaking time has reduced 2-times faster than that of the previously proposed DC circuit breaker. In addition, the burdens on the DC circuit breaker were reduced approximately 1.2-times.

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