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Operating characteristics of Arc-induction type DC circuit breaker

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AC CB(circuit breaker) at the fault occurred in the existing AC distribution system is limiting the fault-current through zero crosspoint. But, DC CB does not have zero crosspoint. Therefore, arc occurred by on-off operation of DC CB is very huge. Nowadays, many research team are studying the way to decrease breaking time which is one of the essential conditions in DC CB. We suggested novel arc-induction-type DC CB in this paper. The proposed arc-induction type DC CB is composed of the mechanical Arc-ring and DC CB. We confirmed the operation of arc-induction DC CB through the Maxwell 3D simulation program and performed the experiment for operation characteristics. Results showed that arcing time of the arc-induction-type DC CB by using induction ring was faster about two times than existing mechanical DC CB. On the transient system, we confirmed stable operation characteristics of the arc-induction-type DC CB through the simulation and experimental results. We expect that the proposed arc-induction-type DC CB technology is will go to stay ahead of the existing DC CB technology.

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