

HV/MV Equipment

HVDC Disconnectors



HVDC Disconnectors

Disconnectors (DSC) for HVDC applications are designed to specific constraints and requirements typical for DC applications, that are quite different compared to AC applications. They are requested to withstand DC voltage open gap and to ground to ensure safety for the people in the substation and to permit proper and safe layout configuration. In some cases, like for filter applications, they are requested to break a sum of harmonic currents at a certain voltage (amply smaller than the rated voltage of the disconnector) due to the ripple created by harmonics on the reactances.

All these DC disconnectors take benefit of huge experience and installed base of AC disconnector technology delivered worldwide in regards to design technology and quality e.g. supplier qualification, assembly processes or ISO conformity.



Knee Type Disconnector up to 800 kV

GE's knee type disconnector SPO/SPOL has been designed with one rotating and two fixed insulators. Thanks to its folding arm design (knee), it requires limited overhead clearance and a very short phase-to-phase distance. The outstanding gap factor allows a relatively short air gap and a lighter arm. No electrodes are needed in the middle.

The center of gravity is quite low, with great advantages for balancing, seismic withstand and operating torque. The low operating torque permits sure operation using a motor drive mechanism as well as easy manual operation and it does not stress the rotating insulator. The design is contact rebound free resulting in very smooth movement and a relatively fast operation (about 10÷15 s for a 550 kV disconnector).

L-Contact

The main contact can be of the L- type, the solution patented by GE helping to ensure highest protection against air pollution and ice. The L-Contact is also maintenance free and therefore represents the best technical choice for DC applications.



Center Break Disconnecter up to 245 kV

The center break disconnector type S2DA is the most commonly used and economical disconnector, but requires an increased phaseto-phase distance. In the center break design the two arms rotate and the disconnector opens in the center.



Vertical Break Disconnecter up to 800 kV

The vertical break disconnector has one rotating and two fixed insulators. The double movement of the blade ensures excellent performance in terms of ice breaking and short-circuit withstand. The vertical break requires a minimal phase-to-phase distance and the main contact can be of the L-type.

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Valve Hall Earthing Switch up to 800 kV

The valve hall is an important component of the HVDC system. The grounding of a valve hall's elements is ensured by highly customized earthing switches.

Two different earthing switch designs have been developed by GE:

- Wall mounted "grasshopper"
- Floor mounted "semi-pantograph"



Key Features

- Self protected design of contacts (L-type contact) preventing pollution deposit and hot spots
- HVDC design of post insulators
 - High value of minimum creepage distance enforcing height
 - Dedicated shed profiles
- Specific layout design (also 2 or 3 post insulators for each contact side)
- High seismic performances
- Special design of anti-corona rings