PCS-9590

Series DC De-Icer

Heavy ice coating can damage transmission lines and towers, ultimately leading to a power supply outage in partial or the entire grid network. To guarantee the safe operation of the power system in severe weather, NR Electric provides consumers with the PCS-9590 fixed DC de-icer and the PCS-9591 relocatable DC de-icer for the protection of transmission lines. The DC output voltage is adjustable. Different DC short-circuit currents can be supplied according to the conductor's diameter and length. In addition, the de-icer device can also be used as SVC to quickly compensate reactive power, stabilize system voltage and improve power quality.

Fixed DC De-Icer

The fixed DC de-icer can be used for long transmission lines with high voltage level. The power supply of PCS-9590 is normally fed by a LV AC bus. The PCS-9590 fixed DC de-icer includes:

- Two standard containers: one is used to install valve banks and water cooling system, the other is equipped with phase switching disconnector and control panels.
- Converter transformer: to offer voltage transformation and commutation reactance

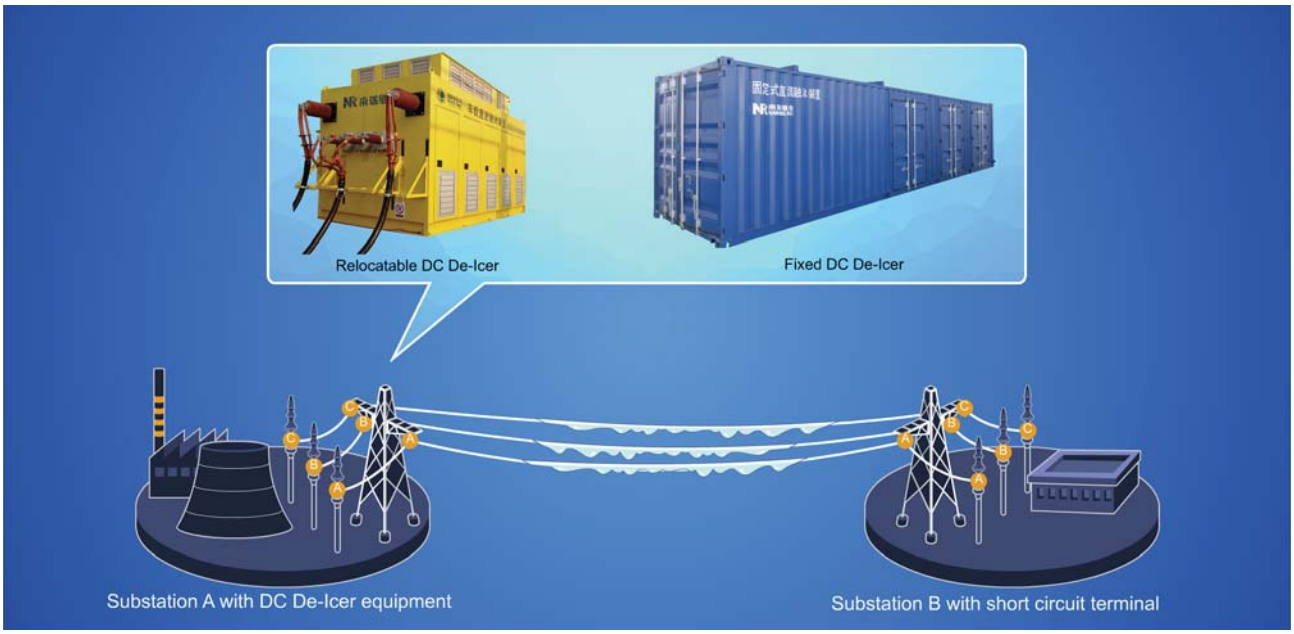

Figure 1 Melting Configuration with DC De-Icer

- 12-pulse conversion valve banks: to convert AC current to DC current.
- Water cooling system: including indoor forced water cooling and outdoor forced air cooling.
- Phase switching disconnector: to select the target AC line and realize balanced de-icing of AC lines.
- Control and protection system: to provide supervision and protection of whole DC de-icer device.

Relocatable DC De-Icer

The relocatable DC de-icer device can be utilized in short- distance lines with low voltage levels. The PCS-9591 relocatable DC de-icer includes:

- One standard container: to install all equipment.
- 6-pulse conversion valve: To convert AC current to DC current.
- Cooling system: including indoor forced water cooling and outdoor forced air cooling.
- Phase switching disconnector: to select the target AC line and realize balanced de-icer of AC lines.
- Control and protection system: to provide supervision and protection functions for the whole DC de-icer device.

Features

- The use of thyristor rectifiers can reduce the impact on the power system during ice melting and ease the switch-over operations.
- The DC de-icer device supports large current and large angle continuous stable operation. It is applicable to transmission lines with different conductor diameters and lengths.
- The PCS-9590/9591 DC de-icer can adopt container type installation and valve hall installation, effectively reducing land occupation, shortening the site construction time frame and easing the equipment transportation.
- The device adopts reliable and compact structure with a water cooling or air cooling system and compact valve banks.
- The PCS-9590/9591 is equipped with 6 phase switching disconnectors enabling the automatic switchover among various ice melting modes and realizing the balanced ice melting for AC lines.
- NR Electric also provides the high performance control and protection system for DC de-icing.
- Primary system of DC ice melting device requires only very small number of operations to realize SVC function.

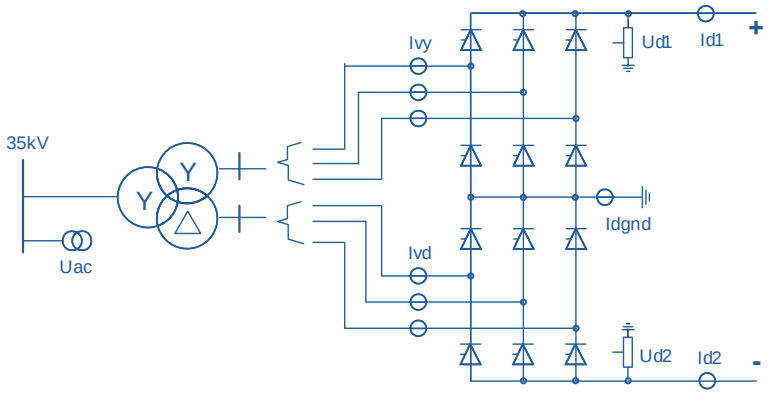

Figure 2 Fixed DC De-Icer Topology

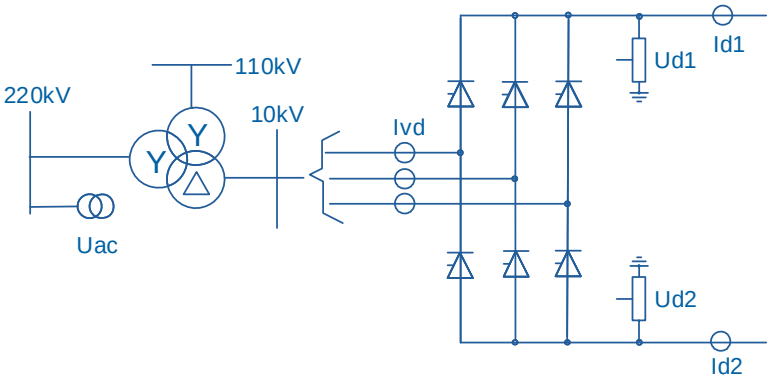

Figure 3 Relocatable DC De-Icer Topology