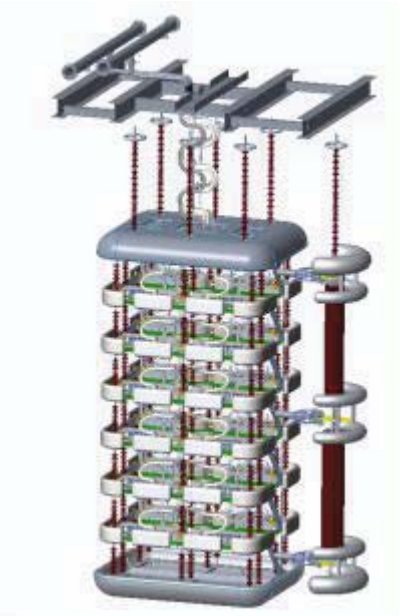
PCS-8600

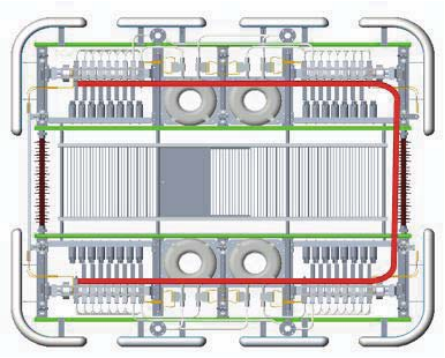
LCC-HVDC Converter Valve

The most important and major component of HVDC converter station is the converter valve, which represents the core technique of LCC-HVDC transmission.

PCS-8600 converter valve is based on twelve-pulse converter topology structure. Each converter comprises several valve towers and each valve tower consists of several valve layers, where each valve layer is composed of two valve modules and each valve module consists of two valve assemblies. Finally each valve assembly consists of a certain number of thyristor-levels and a saturated reactor in series, and each thyristor-level is mainly comprised of thyristor, radiator, damping resistor, damping capacitor, DC voltage-sharing resistor, thyristor control unit (TCU), etc.



Valve Tower



Valve Layer

Figure 1 Converter Valve

VCU (Valve Control Unit) is the bridge between control & protection system and converter valve. Its main function includes receiving CPs (Control Pulse) from the control & protection system, converting the CPs to FPs (Firing Pulse) and transmitting them to TCUs, meanwhile receiving IPs (Indication Pulse) from TCUs and transmitting them to the control & protection system.

Features

- Guaranteed performance by multi physical field analysis platform, including heat field, electric field and force field analysis.
- High reliability due to separate design of hydraulic and electrical circuit and variable-PWM technology
- Enhanced safety due to fire resistance materials up to UL94-V0
- Comprehensive valve monitoring and protection function
- Quick fault location by high speed fault record function
- Built-in platform in converter valve for easy maintenance

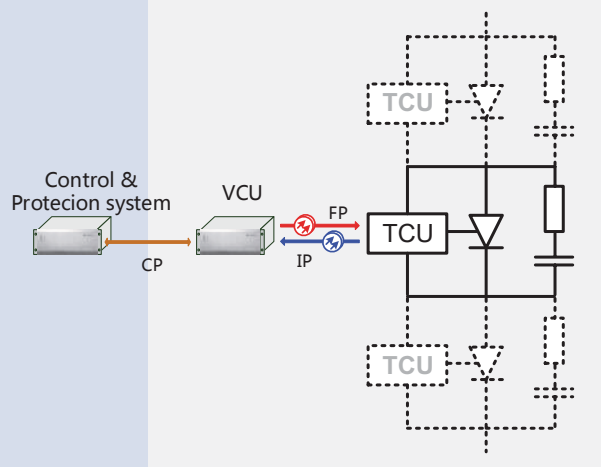


Figure 3 Schematic Diagram of Valve Control Unit

Figure 2 ±800kV Converter Valve Hall