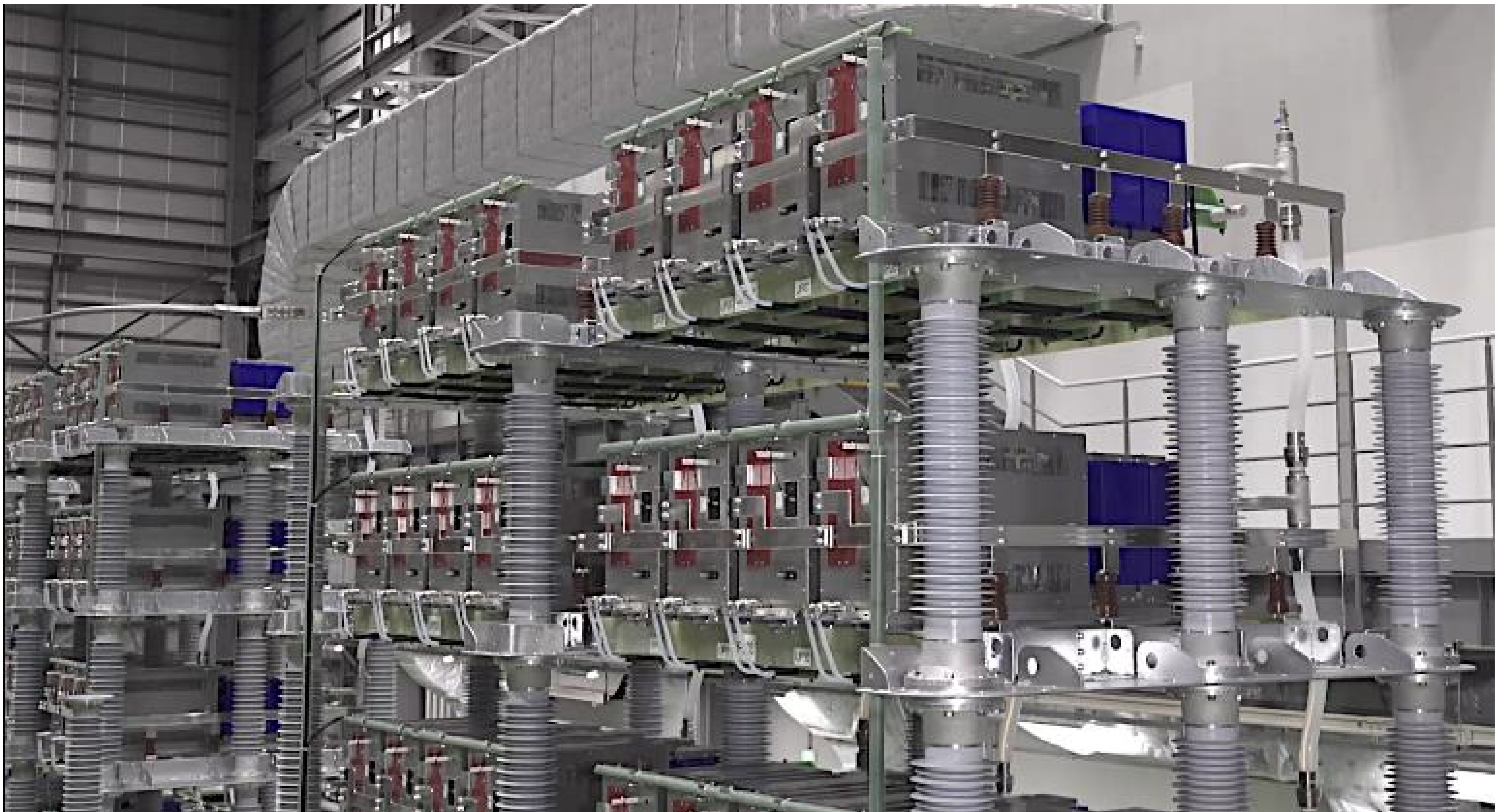
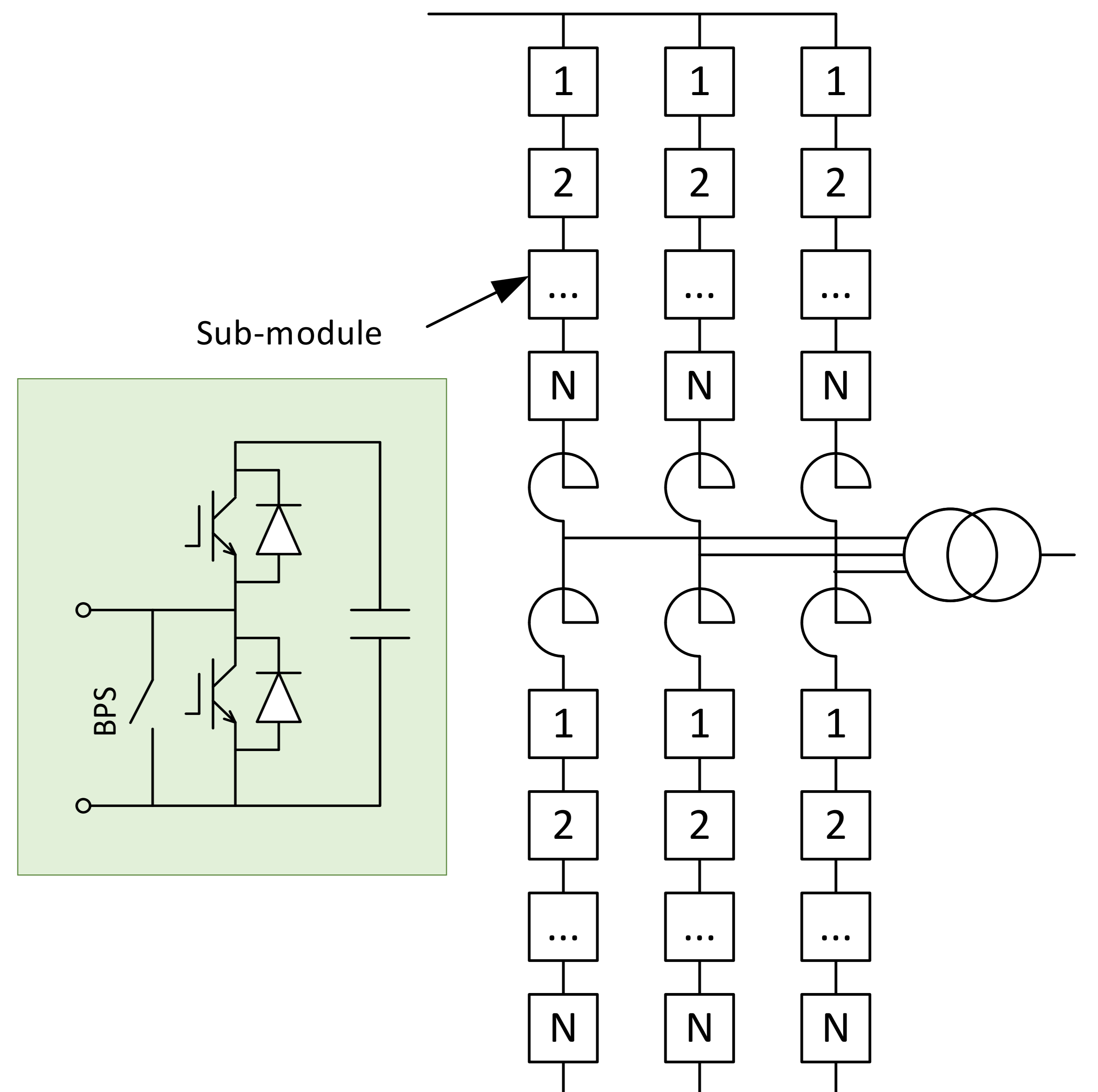


HVDC-Diamond®

A flexible, MMC-based HVDC transmission systems

The development of Voltage-Source Converters (VSC) based technology represents a key breakthrough for the electric power industry. Compared to conventional Line Commutated Converter (LCC) HVDC technology, VSC-based HVDC systems have faster responsiveness, independent control of active and reactive power, and a more compact physical footprint. These advantages have expanded the market for HVDC technology into new applications, such as integrating offshore wind farms, black starting islanded loads, and supplying passive networks.



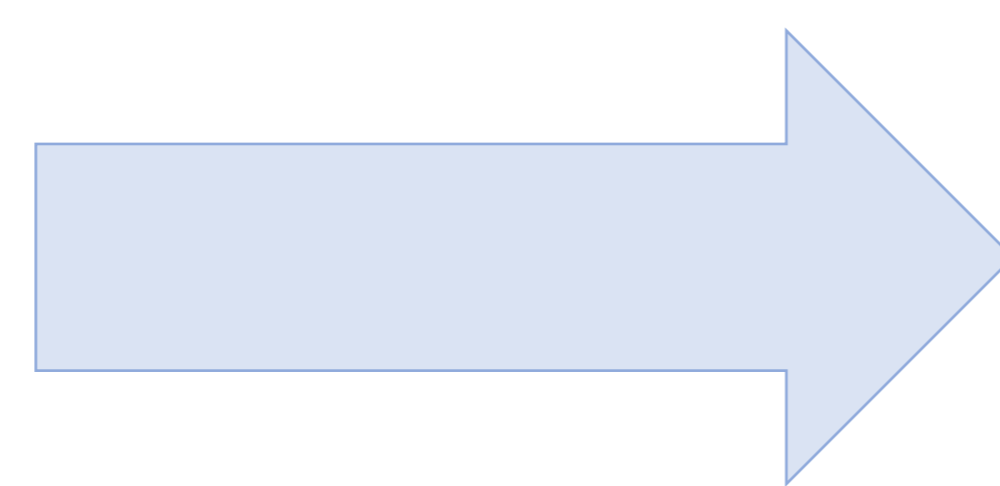
Sub-module Design

Market leading technology

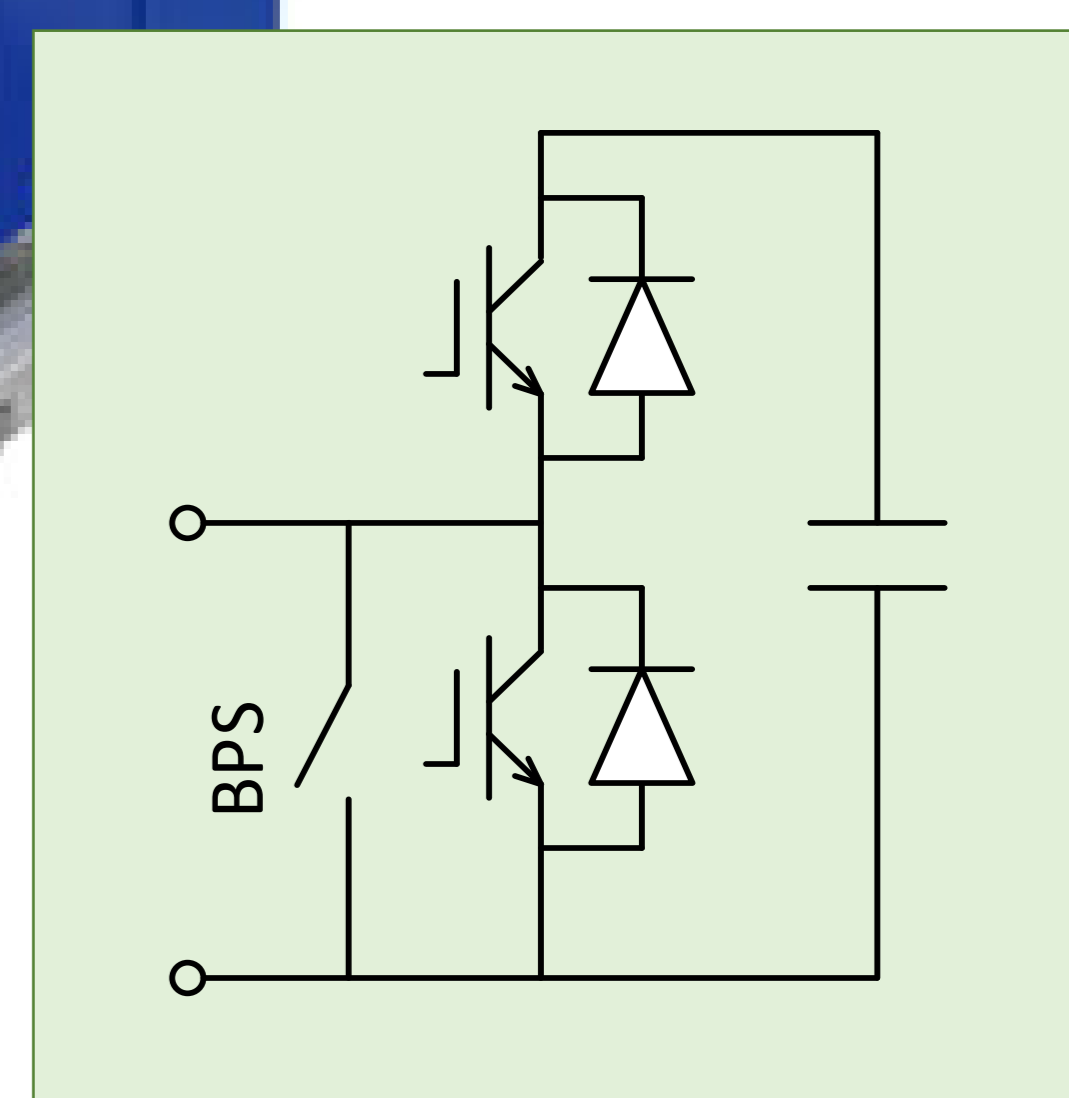
- Mitsubishi Electric 6.5 kV IGBT devices
(seamless integration and improved quality control)
- High reliability ($\text{fit} < 70$)



IGBT



Sub-module



400 kV valve tower

Verification Facility

Full-scale components

Rating	Value
Active Power	± 50 MW
Nominal DC Voltage	± 21 kV
Nominal DC Current	± 1190 A



- Mitsubishi Electric has constructed our HVDC-Diamond® verification facility, located in our Amagasaki Factory, Japan (close to Osaka).
- The HVDC-Diamond® verification facility is designed to perform rigorous testing, such as performance, heat-run, protection and control, etc.



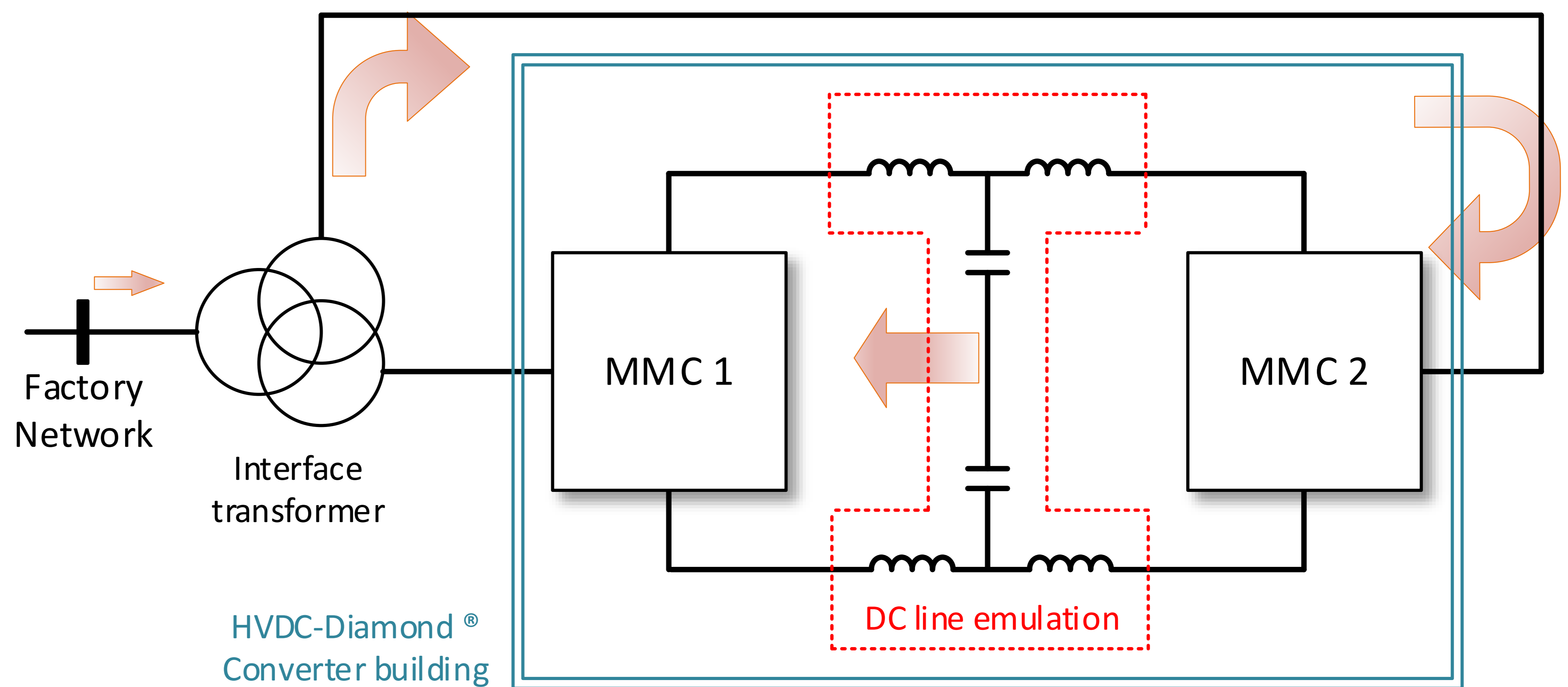
HVDC-Diamond® Verification Facility

Verification Facility (1)

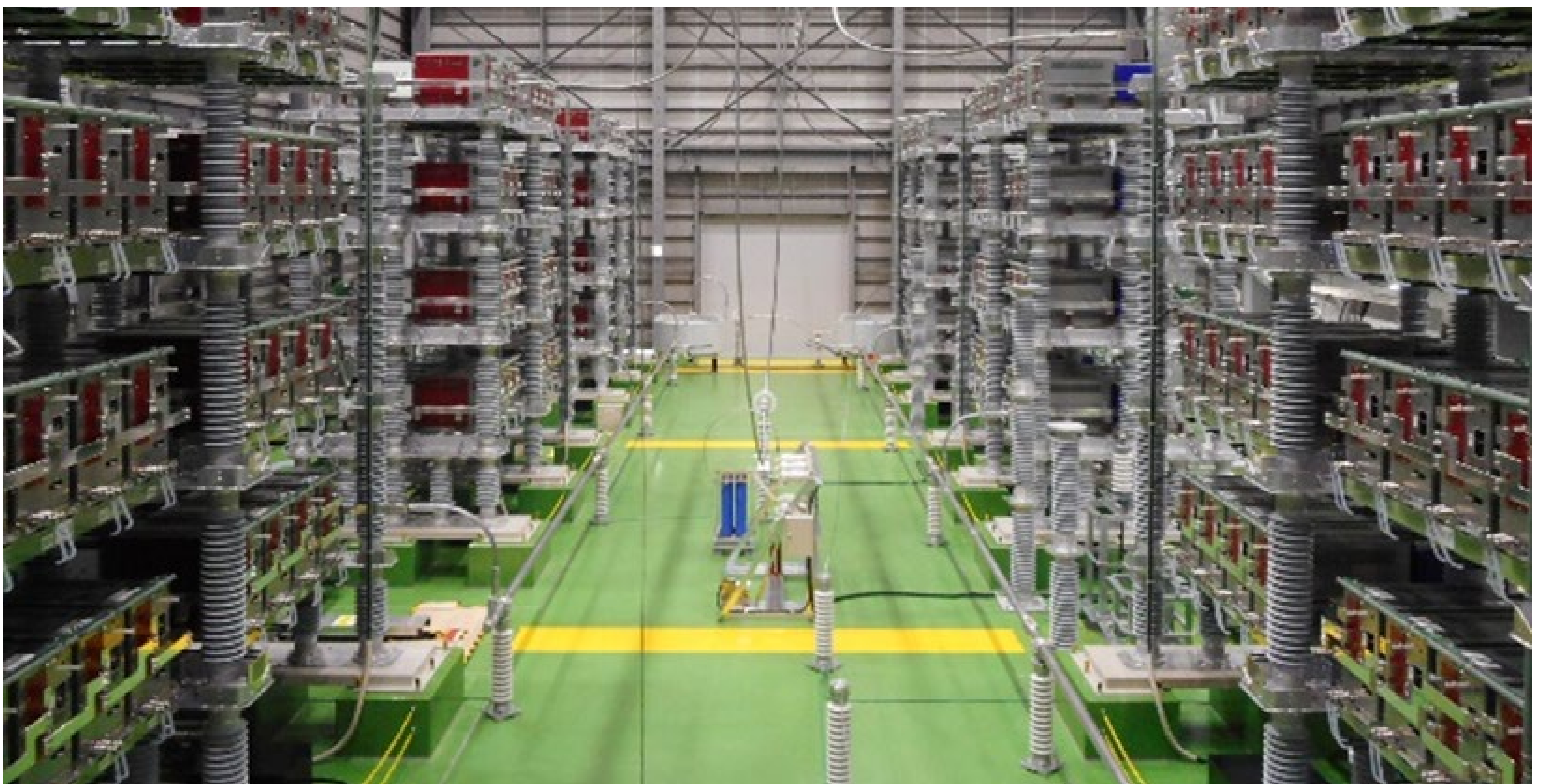
Full functionality for technology de-risking

The system is designed to circulate power between two converters, so that the factory network is only required to supply the system loss. A wide-range of testing is possible, enabling all core sub-systems to be verified, such as:

- Control, protection and communication systems
- Long-term heat-runs
- Cooling systems
- Start-up and shut-down procedures



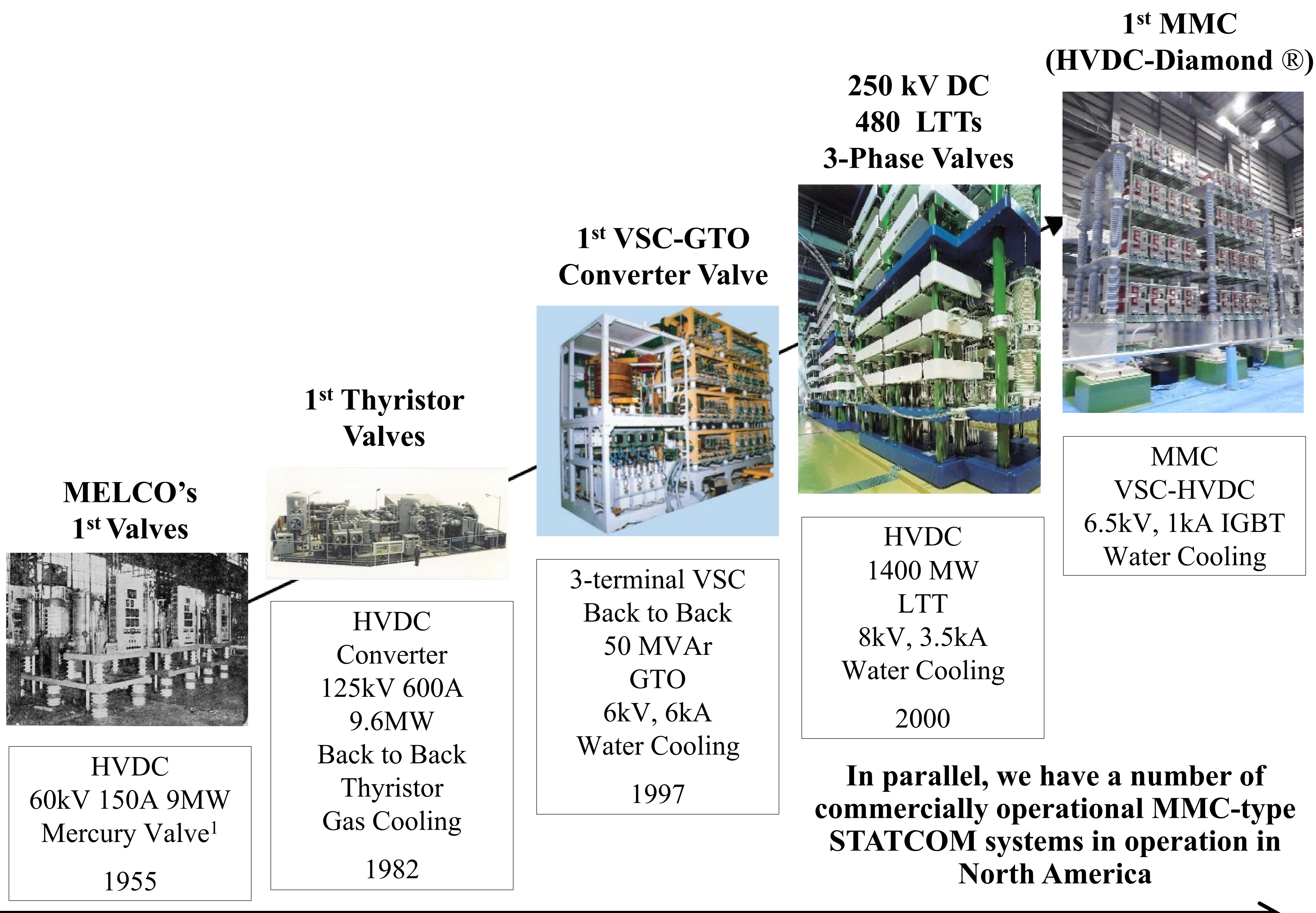
Valve Hall



HVDC Development History

A proven track-record and world firsts

Technical capabilities



Ref *1: Ichiro Mikami, Journal of Institution of Electrical Engineers of Japan Vol. 75 Issues 807 (1955)

Year

