

HVDC grid lab implementation



Impact

- The facility offers laboratory scale verification of concepts related to operation and control, converter interoperability, system stability, fault handling, system services, security of supply, thus reducing uncertainty and increasing confidence in product development.
- Industry can get access to laboratory on a project basis

Further development

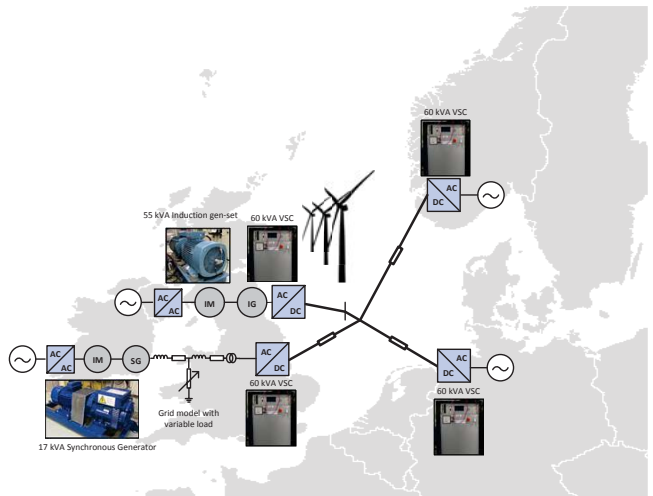
A laboratory refurbishment is presently ongoing. Future HVDC grid experiments will apply modular multi-level converters and can use a new grid emulator to emulate a wide range of grid disturbances.

References

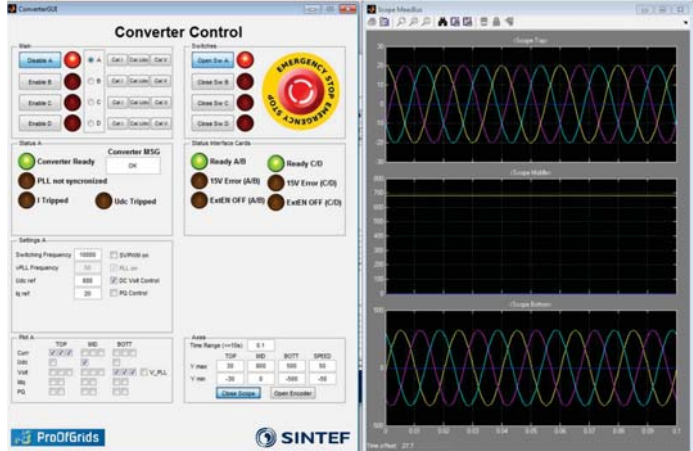
- K Ljøkelsøy, S D'Arco, JO Tande, Energy Procedia 24 (2012), DOI:10.1016/j.egypro.2012.06.105
- <http://www.sintef.no/en/all-laboratories/renewable-energy-system-laboratory/>

Innovation description

A future HVDC grid for connecting offshore wind farms and transnational exchange of power has been implemented in laboratory scale (55 kVA converters) in the the SmartGrid of NTNU and SINTEF Energy Research.



Lab setup representing a North Sea multi-terminal HVDC grid



User interface