Paris Session 2022

Grid Forming of Offshore AC Grid with Multiple HVDC Connections

SC C4 PS3 Theme 2

Question 17

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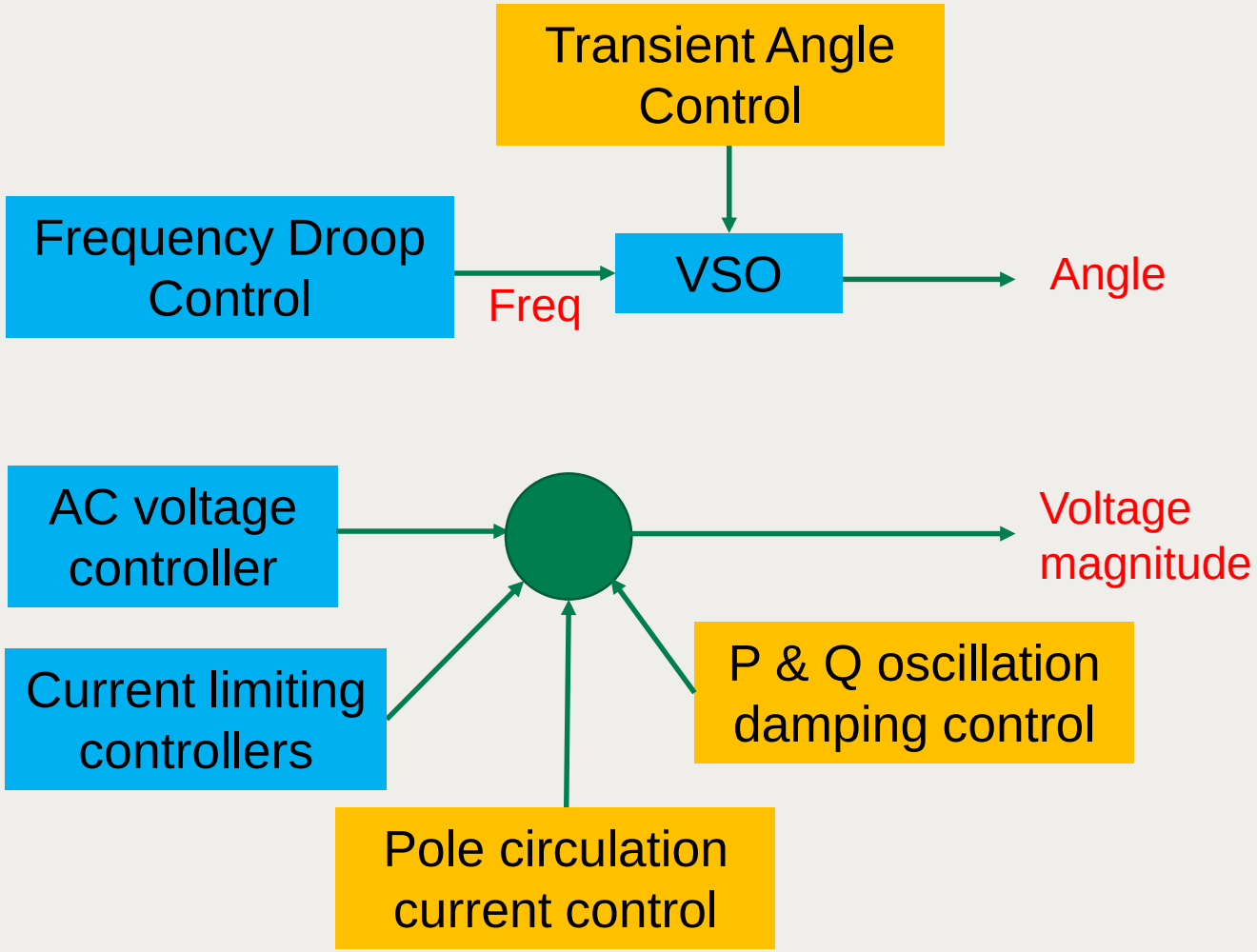
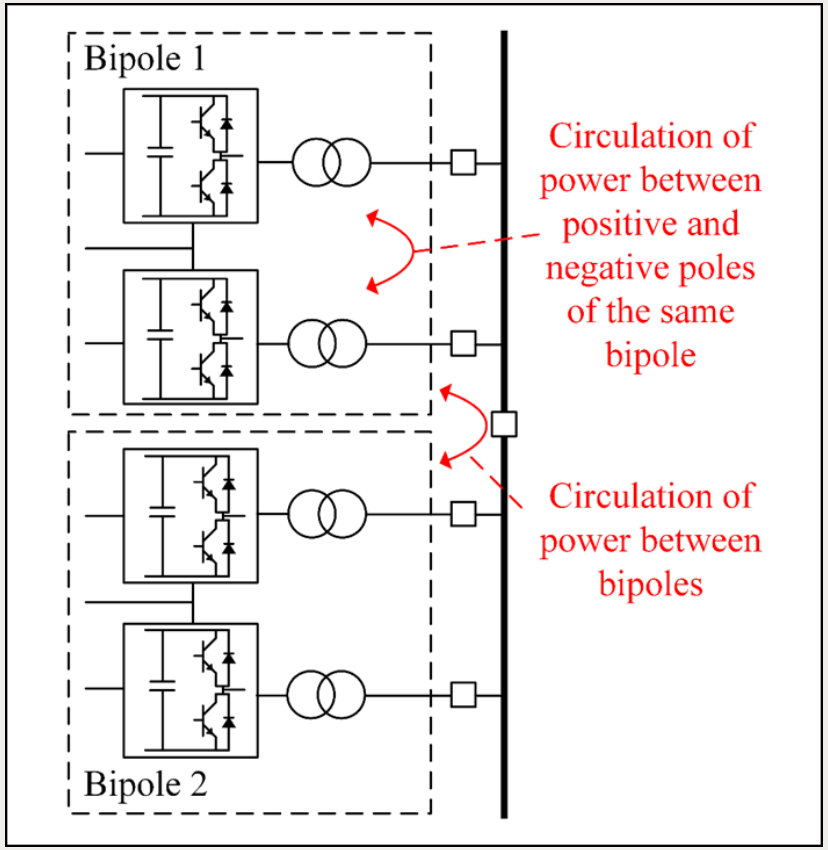
Grid Forming of VSC HVDC Converters Connected to 100% RES Based System – Experience from Offshore AC grids

- Lack of inertia
- Wind turbine is the only rotating mass in the offshore system but is decoupled by the inverter in a Type-4 system
- Swing based VSM control philosophy may not be necessary
- Power output from wind parks defined by their power plant controllers
- HVDC systems must be designed to absorb the power determined by wind parks
- Lack of damping from conventional loads

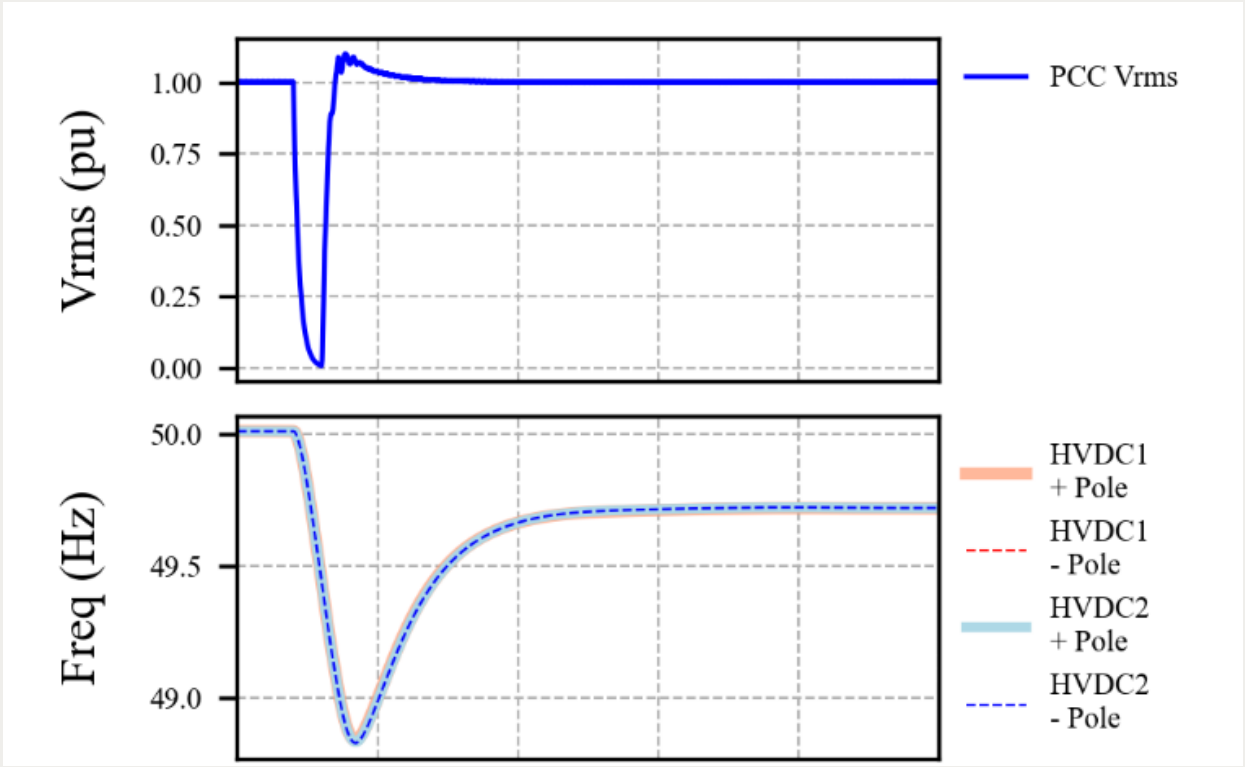
Grid Forming Concept Tested for NSWPH configuration

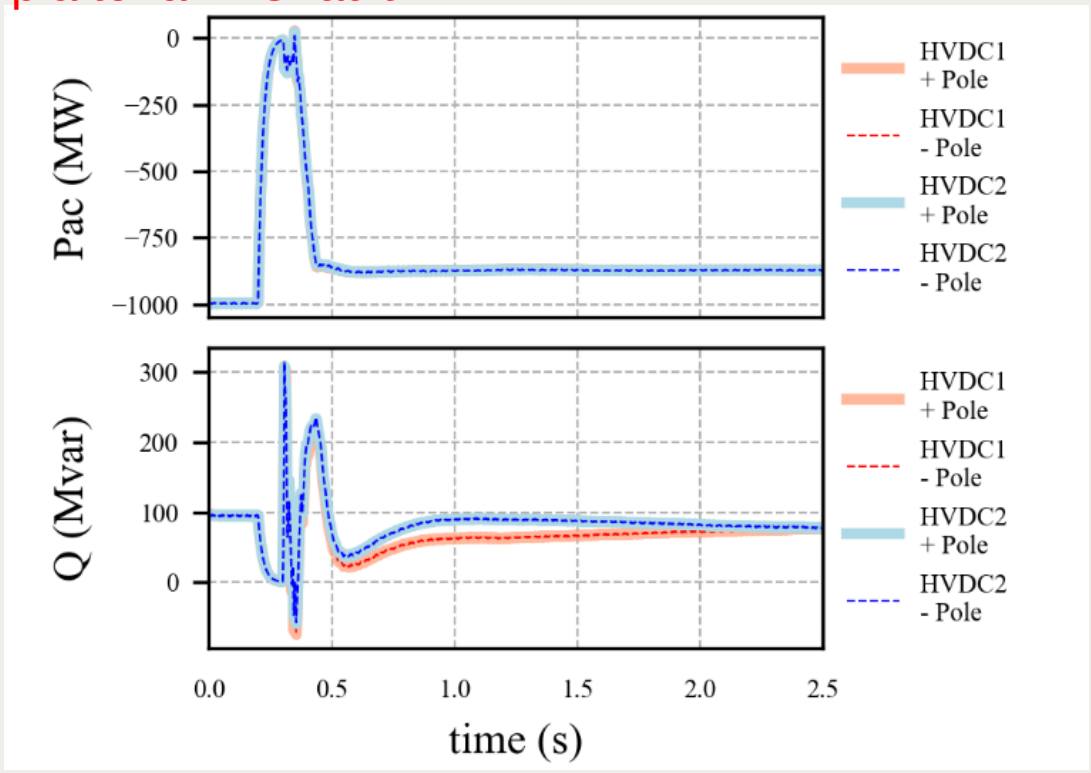




Grid Forming Concept Tested for NSWPH configuration

500 MW wind farm trip after an AC fault





Lesson Learnt: It is very important to test multiple grid forming converters together to identify the possible interactions!