

Simulated onshore-Fault Ride Through of Offshore Wind Farms Connected through VSC HVDC

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Abstract

Effective Onshore-Fault Ride Through was demonstrated by simulation for a Fixed Speed Induction Generator (FSIG) offshore wind farm connected through a Voltage Source Converter HVDC link. When a terrestrial grid fault occurs, power through the onshore converter reduces and the DC link voltage increases. A control system was then used to block the offshore converter. The offshore AC network voltage was reduced to achieve rapid power rejection. Reactive power at the onshore converter was controlled to support the AC network voltage according to the GB Grid Code requirements. Two cases, a 200 ms terrestrial fault and a 50% retained voltage fault of duration 710 ms, at the grid connection point were studied. The simulation results show that power blocking at the offshore converter was effective and the DC link voltage was controlled.