

Offshore connections – loss of infeed risks

NETS SQSS working group GSR013 summary

The NETS SQSS criteria for the connection of offshore generation allow for generation capacities up to the defined Infrequent Infeed Loss Limit¹ by a single radial cable. Consideration is currently being given to extending the offshore criteria so that they are applicable to an offshore interconnected network.

With more and more future offshore wind generation are likely to connect to the system through HVDC, an issue has been raised on how existing infeed loss risk criteria should be applied to the HVDC system: whether particular events leading to an infeed loss, such as a converter fault and a cable fault, should be considered as infrequent risk or normal risk, and whether the current infeed loss limits are appropriate.

Another issue is to investigate the likelihood of multiple cable faults within a short time, and whether this leads to requirements for cable separation. Whilst offshore cable faults are relatively rare, there is a possibility of several cables suffering faults at similar times due to an anchor dragging. Such an event may cause a loss of generation above the Infrequent Infeed Loss within a short period time and trigger the system defence mechanism like low frequency load shedding.

The working group has taken into account the following areas to address the aforementioned issues:

- HVDC converter fault rates from around the world
- Offshore cable fault rates from around the world
- Current views on what is “normal”, and what is “infrequent”
- The impacts on security and costs of a higher number of infrequent losses
- The impacts on security and costs of losses greater than the infrequent limit
- Cable fault mitigation measures – their costs and benefits
- HVDC converter fault mitigation measures – their costs and benefits

And the main conclusions are:

- The HVDC converter fault remains at a frequency which should be covered down to the Normal Infeed Loss Risk and current SQSS remain valid. Accordingly, no drafting changes to SQSS are proposed in this area.
- It is also noted that the monopole configurations of greater than 1320 MW is not expected to be compliant with SQSS clauses 7.8.2.1 and 7.13.2.1.

¹ The Infrequent Infeed Loss Limit will increase from 1320MW to 1800MW from April 1st 2014; Normal Infeed Loss limit will increase from 1000MW to 1320MW from April 1st 2014; this review will only consider the increased limits.

- There is no significant value for SQSS to specify the offshore cable separation to mitigate the risk of multiple cable failure due to anchor damage. Hence no drafting changes to SQSS are proposed in this area.