

Australian Concern on Algorithms/Functions with IBR Penetration, Mitigations & Requested Work

Concern on Algorithms/Functions :

- There is growing penetration of IBR in Australia/New Zealand
- More concern where there is large proportion of inverter based generation - solar/wind - (South Australia with events highlighting issues)
- Concern and less trust of distance protection and directional protection
- Noticed lack of current infeed to faults
- Noticed instances of inverter control mechanisms that are not helping protections with transient response from IBRs and then current and voltage clamping - not helping protection to respond
- Noticed frequency changes after events and concern over protection frequency response
http://www.aemo.com.au/-/media/Files/Electricity/NEM/Market_Notices_and_Events/Power_System_Incident_Reports/2017/Integrated-Final-Report-SA-Black-System-28-September-2016.pdf

Mitigations & Requested Work :

- Avoid reliance on distance and directional protection functions
- In Australia/New Zealand there is now greater specification and use of communication aided protection – line differential
- North Queensland regulation on required reactive contribution
- Use of non-traditional and less ideal protection functions such as residual voltage and current checks
- Better standards are requested for inverter generator control systems for protections to respond correctly and discriminately
- Also more accurate models are requested.
- Particularly in South Australia inertia is needed so we do not get mal-operations for frequency protection load shedding.

