Paris Session 2022

Operational experience of grid-forming batteries

System Operation and Control
PS 2 / Q 2.3 , In what circumstances are supporting technologies, such as BESS, needed to complement the capabilities of power electronic interfaced resources? How are control interactions being managed to improve power system technical performance?

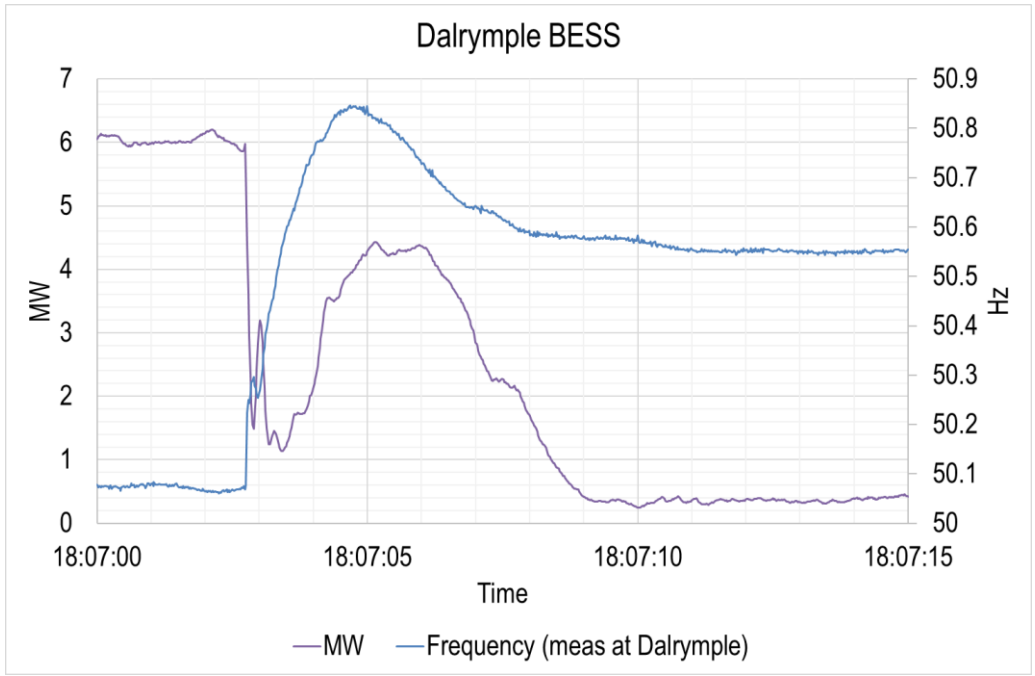
Nilesh Modi (Australia)

Transmission connected grid-forming batteries in Australia

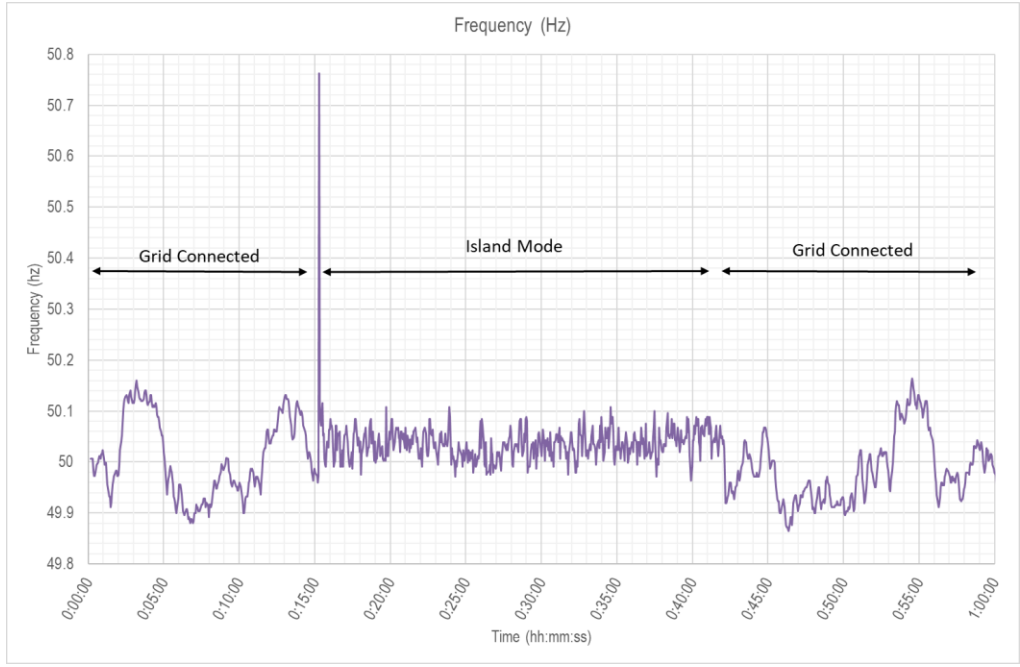
- Dalrymple Battery Energy Storage System
  - 30 MW / 8 MWh, Grid-forming BESS
  - Demonstrated capabilities
    - Operation at very low SCR
    - Seamless transition from grid-connected to island mode during planned and unplanned events
    - Synthetic inertia response
    - Short term overload capacity
    - Participation in SIPS (RAS)
    - Black-start
- Hornsdale Power Reserve (‘Tesla’ Battery of SA)
  - 150 MW / 193.5 MWh
  - Two inverter trial, Virtual Machine Mode (VMM)
  - Demonstrated capabilities
    - Inertial response

Dalrymple Battery Energy Storage System

Response to a region separation event



Islanded operation



Hornsdale Power Reserve

- Response is largely driven by the rate of change of frequency
- Maximum MW at max/min frequency vs max RoCoF