

Paris Session 2022



EirGrid considerations for battery design and control parameters

C4-PS3- Q20

What are the key design and control parameters of the battery and associated inverter to optimise the collective provision of system services such as frequency control, inertia, and system strength in a power system planning horizon?

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May-21 Event

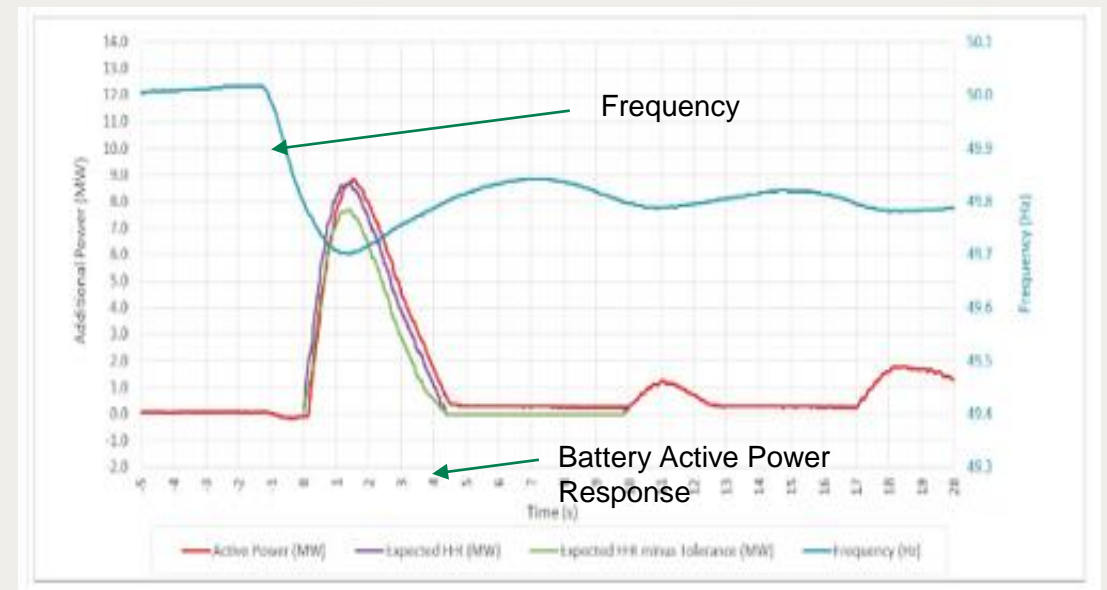
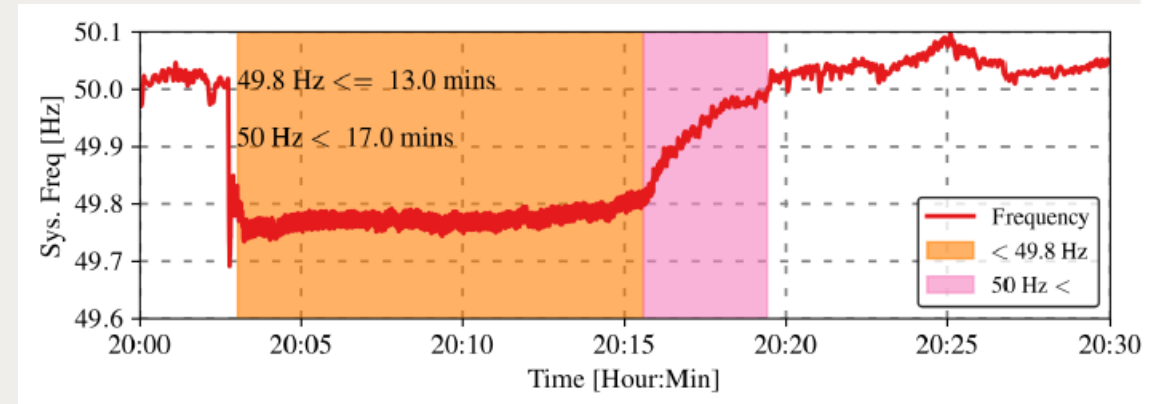
- The system frequency decay was initiated by a loss/tripping of a generation unit.
- Frequency remained below 50 Hz for almost 17 minutes.
- Frequency remained below 49.8 Hz for almost 13 minutes (15 minutes is the limit).

Batteries Response

- A battery provided almost 9 MW of support (at peak) and
- It was set to a discharging mode three times within 20 seconds to cater for different frequency dips within this period.

Frequency Quality vs BESS parameter study

- We performed studies on battery control parameter settings vs the frequency quality mainly focusing on frequency trigger and droop settings.



Group Discussion Meeting

Our study findings

- Trigger frequency settings have significant effect on frequency nadir.
- Trajectory settings have effects on both frequency nadir, nadir occurrence time and frequency recovery time.
- There are concerns that batteries can be fully discharged with higher frequency thresholds and lower trajectory settings.
- Danger of discharging batteries completely to get the frequency back above 49.8 Hz. Too demanding f triggers and low trajectory settings might 'drain' batteries very quickly. (even though corresponding frequency decay is not that severe).

After this study, some of batteries control setting were changed to trigger frequency of 49.9 Hz and higher droop gain. Also, EirGrid plan to do similar study in future to co-ordinate batteries with different settings.

Group Discussion Meeting

