

Grid-forming inverters for system restoration

SC C2

PS2/ Question 2.2: In what circumstances can grid-forming inverters be relied on to support system restoration plans?

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Black start candidates studied for Australia's Global Power System Transformation (G-PST) research

Synchronous generator

- Inherent inertia and damping
- Higher fault current capability
- Requires a minimum stable load

Grid-forming BESS

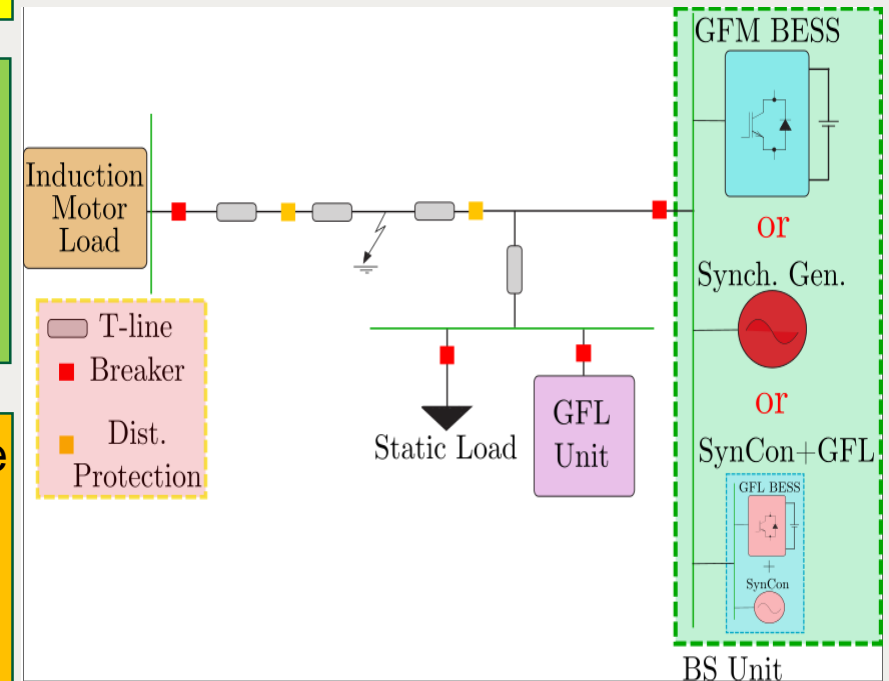
- Emulates most capabilities of a black start synchronous generator
- Faster speed of response
- Comparable or better performance

Synchronous condenser + Grid-following BESS

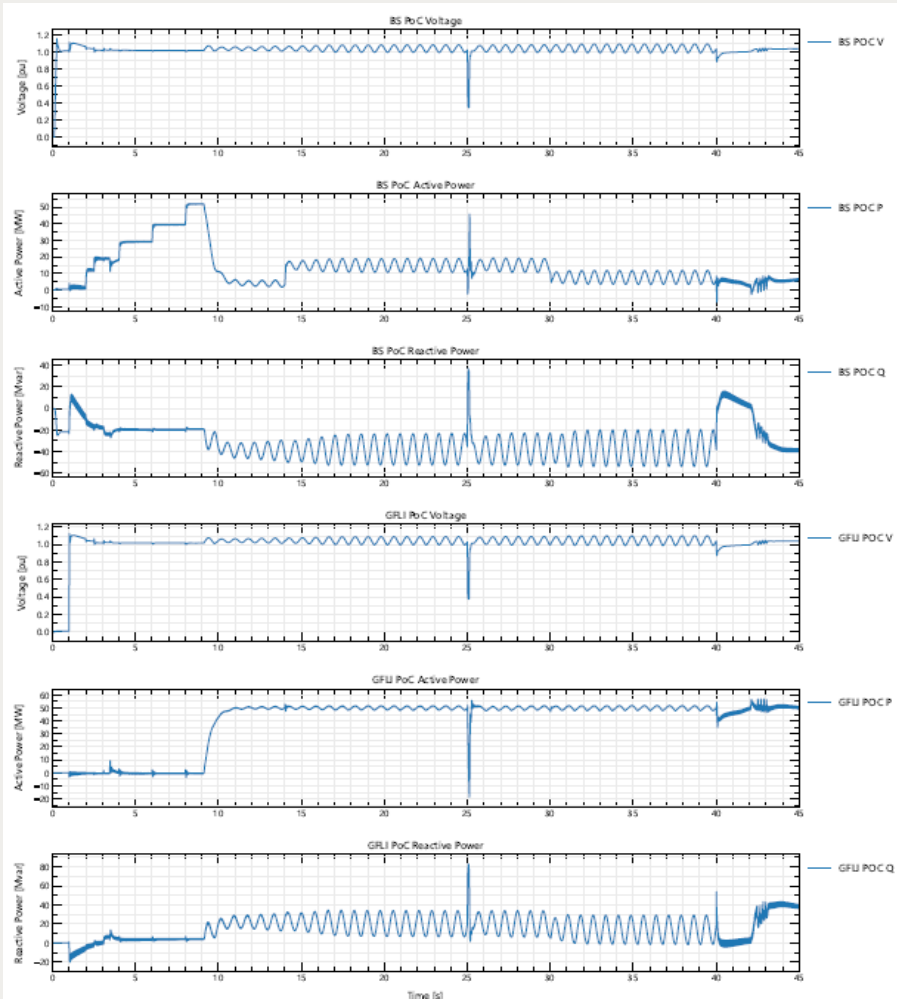
- Synchronous condenser to form the voltage
- Grid-following BESS to control the frequency
- Lower capability than the other two options

Group Discussion Meeting

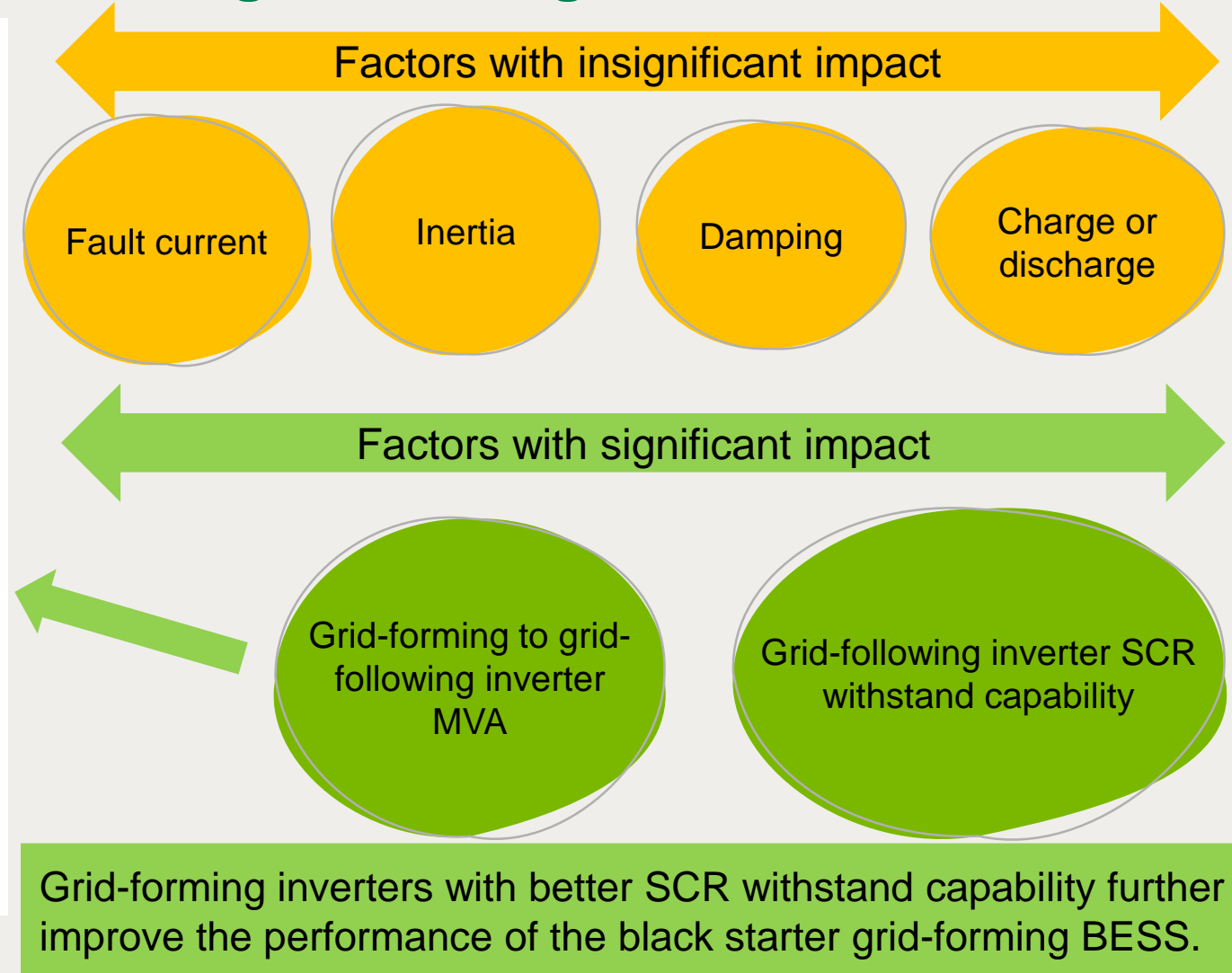
Vendor-specific EMT modelling



Factors influencing the response of grid-forming blackstart BESS



Group Discussion Meeting



Grid-forming inverters with better SCR withstand capability further improve the performance of the black starter grid-forming BESS.