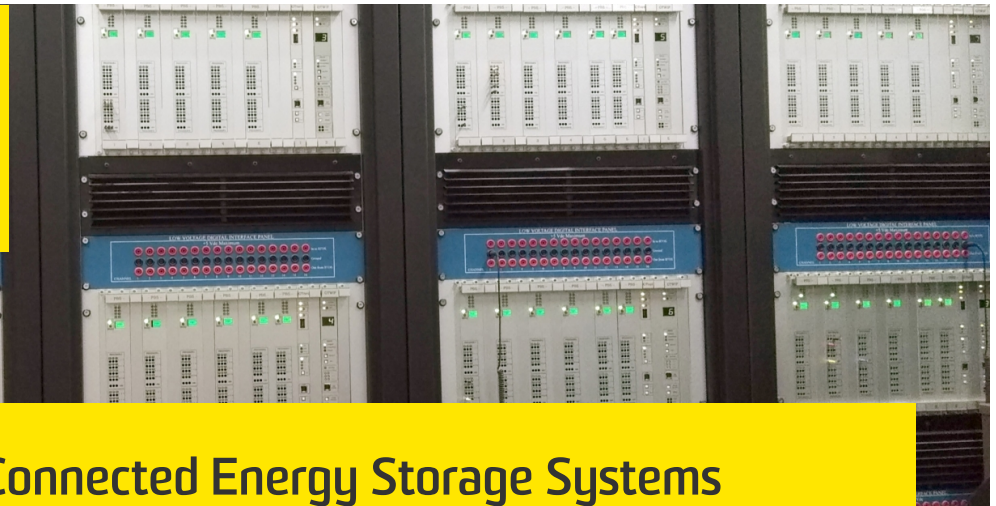




UNSW
SYDNEY



High-Voltage Grid Connected Energy Storage Systems

The development of novel converter topologies and controllers for Energy storage systems.

Competitive advantage

- Novel energy storage technologies that can be customised based on industry/customer specifications, allowing rapid introduction into the market
- Ability to conduct rapid prototyping and real-time verification of advanced power electronic concepts using Opal RT/RTDS, provide fast verification and quick adoption by industry for mass production
- World-class power hardware-in-the-loop capabilities to enable testing at full power

Impact

- From small-scale to large-scale, power electronics is the enabling technology for integration of energy storage systems (ESS) to the grid.

Successful applications

- A cascaded boost inverter-based battery ESS with several advantages over a cascaded H-bridge ESS:
 - Lower number of series connected modules
 - Ability to reduce the second-order harmonic ripple component in the battery current without additional hardware components
 - No input voltage balancing is required
 - Generates a sinusoidal output voltage

Capabilities and facilities

- Hardware-in-the-loop simulation for rapid assessment of control techniques
- Hardware testing capability up to 50kVA, 1kV, 400A
- Arbin battery and supercapacitor tester with environmental chamber

More Information

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