



UNSW
SYDNEY



Wind Energy Grid Integration and Planning

Research into wind technologies to analyse the impact wind energy has on electricity markets, develop models, and assess the technical impacts of integrating it into the grid.

Competitive advantage

- World-leading improvements in the understanding the impacts of different loads, generation sources and energy storage on system security
- Expertise in the optimal planning of offshore wind farm electrical layout
- Innovative optimal dispatching tool for wind energy integration through multi-terminal VSC-HVDC grids
- Experience in grid planning and co-optimisation of electricity and gas networks
- Expertise in industrial standard software and in-house tools

Impact

- The creation of advanced planning and operating tools to ensure a stable and reliable power supply, and defer capital investment
- Large-scale wind farms with energy storage will allow increased use of renewable generation within the network

Successful applications

- Future Grid project aiming to develop the nation's capacity to plan and design the most efficient, low-emission electricity grid for Australia
- Hongkong Electric Company's off-shore wind farm design project that covers wind resource modelling, prediction, grid impact studies, dispatch and energy storage options

Capabilities and facilities

- Cross-platform modelling tools for grid studies of the impacts of loads, generation sources and energy storage on system security
- Grid planning and operations incorporating wind, solar and storage
- Hardware-in-the-Loop testing bed for energy storage systems with programmable grid simulations on real time digital simulators (RTDS)

More Information

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