Weather Forecasting for Optimising Energy Storage Systems

Renewable energy power plant performance is maximised using an advanced suite of weather and climate-based optimisation and control strategies for hybrid systems that incorporate energy storage. Risk mitigation strategies are developed that can be used by operators to ensure generation is secure and optimised and ensures maximum returns in the competitive energy market.

Competitive advantage

- Extensive expertise in advance weather forecasting strategies across fundamental research to industrial-scale applications delivering:
- Integration of new forecasting models with the latest insights on the impacts on output from grid events and charge/discharge regimes for energy storage in hybrid systems
- Development of key insights into the impacts of weather events on wind and solar operation, particularly extreme weather events, as well the interplay of different battery technology performance in system response
- Interrogation, development and strategies and integration of new technologies into industrial-scale applications

Impact

- Development of novel approaches to energy storage control in hybrid RE systems using a combination of weather forecasting and machine learning.

More Information

Dr Merlinde Kay

School of Photovoltaics and Renewable Energy

T: + 61 (0) 2 9385 4031
E: m.kay@unsw.edu.au

Associate Professor Stephen Bremner

School of Photovoltaics and Renewable Energy

T: +61 (0) 2 9385 7890
E: stephen.bremner@unsw.edu.au

UNSW Knowledge Exchange

knowledge.exchange@unsw.edu.au

www.capabilities.unsw.edu.au

+61 (2) 9385 5008

Successful outcomes

- Optimisation of battery size and type for hybrid systems based on weather forecasting

Capabilities and facilities

- 30 kW/130 kWh commercial VRB system in Tyree Building for energy storage and micro-grid research.
- Dedicated computation laboratories for advanced simulation modelling and associated facilities for validation studies.
- Climate controlled chambers for evaluating effects of environmental parameters on energy storage system performance.

Our partners

- Fraunhofer ICT