

20 April 2023

Increasing renewables on the grid through accurate inertia measurement

On behalf of the Australian Government, the Australian Renewable Energy Agency (ARENA) has today announced \$1.43 million in funding to Reactive Technologies to conduct a trial of its real-time inertia measurement technology Grid-Sonar™ across a number of sites in Victoria.

Accurately measuring the power system's inertia in real-time will help the Australian Energy Market Operator (AEMO) operate the system more securely, while also reducing curtailment of renewable generators and placing downward pressure on wholesale power prices.

The \$3.07 million trial will require testing and targeting a range of operating conditions including high solar generation, high demand, and low demand.

The trial will use Neoen's Victorian Big Battery, which will provide a modulation signal to be detected by Reactive's Extensible Measurement Unit (XMU), a specialised measuring device that collects frequency and voltage data from the grid, across 15 sites in Victoria.

The project is also supported by funding from Victoria's Department of Energy, Environment and Climate Action (DEECA) who are also providing the appropriate sites for the measurement equipment. AEMO, Neoen, and the Melbourne Energy Institute will also provide support.

Inertia is a critical requirement to secure operation of large power systems traditionally provided by gas and coal-fired generators and certain loads which form a natural resistance to sudden changes in electricity frequency in the grid, such as the unexpected loss of an interconnector.

With the closure of coal fired generators and large quantities of wind and solar generators connecting to the National Electricity Market (NEM), minimum inertia requirements will constrain output from these newer types of generators, leading to curtailment of renewable generation at times of peak renewable generation or when demand is low. AEMO currently uses a variety of techniques to estimate inertia including power system simulations and empirical data measured following system disturbances.

Reactive Technologies' inertia measurement tool Grid-Sonar™ will be the first real-time, accurate measurement of inertia in the NEM, providing an improved understanding of the design requirements that would be suitable for long-term commercial operation of real-time inertia measurements, as well as providing improved clarity on its longer-term economic and technical benefits.

ARENA CEO Darren Miller said the technology would help AEMO to manage the power system, reduce the occurrence of inertia shortfalls, and improve overall system security.

"Continuous measurement of inertia will become highly valuable as it will allow improved grid operation and ultimately give us the ability to accommodate more solar and wind generation into our electricity grids."

"Reactive Technologies' measurement tool could change the way the NEM is managed. With real-time data available to AEMO, they could increasingly rely on demand-side sources of inertia in the grid. In the United Kingdom, demand-side equipment has been measured to contribute as much as 30 percent of the total inertia to the National Grid."

Reactive Technologies CEO Marc Borrett said "We are proud to have been awarded this funding from ARENA, and we are eager to show how powerful our technology is when it comes to facilitating a swift and smooth transition to net zero carbon grids without sacrificing reliability or resilience."

"Australia is one of many countries around the world that is taking admirable steps toward accelerating their energy transition, and have rightly identified measurement of inertia as a crucial component of that transition. We applaud the roles the Australian and Victorian governments play in this and look forward to deepening our collaboration with ARENA and other Australian government agencies as we begin our work."

For more information on the project, visit [ARENA's project page](#).

ARENA media contacts:

media@arena.gov.au

For more information
arena.gov.au