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Port Gregory wind, solar and battery hybrid plant to power mine

Second-hand wind turbines, solar and a battery will combine to power a remote mine in Western Australia, in a first-of-its kind project supported by the Australian Renewable Energy Agency (ARENA).

On behalf of the Australian Government, ARENA is providing \$3 million funding to Port Gregory Wind Farm (PGWF) Pty Ltd to build grid-connected wind, solar and lithium-ion battery project in Port Gregory, near Kalbarri.

The project will consist of a hybrid 2.5 MW wind farm, 1 MW solar farm and a 2 MW / 0.5 MWh battery that will provide power to a garnet mining and processing operation run by GMA Garnet Pty Ltd (GMA).

The \$11.2 million project will see the wind and solar farm located adjacent to the garnet mine, providing up to 70 per cent of GMA's electricity needs. The project was developed by Perth based Advanced Energy Resources (AER), a renewable energy developer, generator and electricity retailer. After developing this project for 13 years, AER will build, own and operate the site, due to be commissioned in December.

ARENA CEO Darren Miller said the project could provide a clean energy alternative for other mines in remote locations at the fringe of Western Australia's electricity grid.

"Fringe-of-grid communities in mid-west Western Australia suffer from network outages, so this is a great step forward in creating a template for other electricity users in similar conditions, to replicate and reduce electricity costs and improve reliability and stability," he said.

In an Australian-first, this project will also use wind turbines from northern Germany which were decommissioned and refurbished in Australia by AER.

"In Europe, there is a significant market for refurbished wind turbines, as wind farms increase their capacity by upgrading smaller turbines for larger, more powerful ones. Now, AER has brought experience from the European market to enable them to give these turbines a second life in Western Australia," he said.

The project will also use a novel approach to resolving the challenges of connecting large amounts of renewable energy to weak, fringe-of-grid locations by using 'back-to-back inverter topology', a design that decouples the load and renewable energy generators from the grid via a DC link.

"This grid connection design will overcome challenges associated with connections to weak grids, providing backup power, and facilitating high penetrations of customer-side renewable generation. Effectively, this approach allows the solar and wind to operate in a microgrid with the battery and inverters, which avoided the need to upgrade the network," Mr Miller said.

AER Managing Director Luca Castelli said that the project will build on its 13 year history in owning and operating wind and solar generation assets by demonstrating an alternative approach to renewable energy project development that will commercialise projects previously deemed unfeasible for technical or commercial reasons.

"With ARENA's support, AER will showcase an innovative way of delivering low cost, reliable renewable energy to large energy users in fringe of grid areas in a project that delivers several Australian-first ideas," he said.

"By thinking outside the box, we've been able to commercialise a new approach to energy storage and renewable energy project delivery which will change the way that renewable energy generators are delivered in weak, fringe of grid areas and by customers who are unable to commit to long term power purchase agreements," he said.

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