CASE STUDY
August 2020

yurika
Part of Energy Queensland

Integrated solar farm and rooftop panel solution with unique control capability

The Client

Our client, the Department of Natural Resources, Mines and Energy (DNRME), is a government body with the ambition of increasing the penetration of renewable energy throughout the State. This included Yurika working jointly with DNRME and local councils for the installation of new renewable energy systems into four of the State's remote indigenous communities. The project was formally known as the Queensland Government's Decarbonising Remote Communities program, and it seeks to generate savings, create jobs, increase energy independence and realise the environmental benefits of reduced emissions.

The Challenge

To meet its objective, our client required a renewable energy solution across multiple sites that could integrate seamlessly with the local power station, without compromising the reliability of electricity supply for the first community that benefited from this project.

The solar systems needed to be curtailed to regulate how much solar power was exporting back into the microgrid to ensure it remained in balance at any given time. If too much solar was exported into the microgrid when electricity demand was low, the diesel generators would trip, cutting power to the entire community.

For the solution to work, the solar systems had to communicate in real-time with the power station controller so it could continuously balance the inputs into the microgrid, monitor the amount of solar being produced and the performance of the diesel generators against the community's demand for electricity. Importantly, the communication solution had to be cost-effective whilst meeting stringent cyber-security requirements to protect the system from being compromised externally.

In remote communities, trouble-shooting and maintenance can be difficult, particularly during the cyclonic wet season. Our client wanted to ensure the systems included remote monitoring and alarming in order to maximise solar generation and ensure any problems were actioned in a timely manner.

Finally, the project was a pilot for other remote communities, so it was important that the technology was cost-effective and scalable, built local capability and jobs and was able to expand if required, incorporating other components such as batteries.

The Solution

To realise the objectives of the project, Yurika led the development of ground-breaking technology, equipped with a 3G/4G communications solution, that allowed the diesel and solar systems to work together and provide live monitoring of solar generation within the microgrid. The control system dynamically coordinates generation from multiple solar sites in response to the local power station's requirements, regulating the flow of solar into the microgrid. This allows the generation to fluctuate in line with power demand, maximising the use of solar energy over diesel.

The communications system was secured with firewalls and additional cyber-security measures to strengthen system security and protect the power station from being exposed to malicious activities.

To provide the remote monitoring capability, Yurika leveraged its Smart Connected Solar dashboard and alert system, ensuring any problems could be identified and actioned quickly. In addition, the dashboard allowed the local Council to monitor generation from its rooftop sites.

Yurika's control-enabled, Smart Connected Solar solution has supported an increase in the amount of renewable energy available for use within the community. An additional 409kW of solar power has been installed, consisting of a 304kW expansion of the ground mounted solar farm and the addition of 105kW of rooftop solar on four Council buildings.

The Outcome

The integrated renewable solution is fully operational and has delivered many benefits to the community. The initiative delivers savings of approximately $30,000 per annum for the next 20 years in electricity costs to the Council. This means the Council will be able to invest the savings back into the community in areas such as education, health and well-being.

With the additional 409kW of solar installed during this project, the total solar supply into the community now totals 673 kilowatts, over 15% of the town's total power supply. This community now has more solar than any remote community in the State. The innovative control configuration has created a microgrid that can be deployed into other remote communities and will encourage greater renewable energy adoption in the future.

For more information, please contact us at yurika.com.au or phone 1300 792 611.

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