



Rottnest Island Water and Renewable Energy Nexus Project

Location: Rottnest Island, Western Australia
Client: Rottnest Island Authority
Role: Advisor, Turnkey contractor



Background

Located off the south-west coast of Western Australia, Rottnest Island is a popular holiday destination, welcoming over 500,000 visitors per year.

Rottnest Island has 5 GWh of annual customer demand, peaking at 1.1 MW. The community emphasises sustainable practices and conservation.

By integrating renewable resources with the island's desalination plant and water storage facilities, the Rottnest Island Water and Renewable Energy Nexus Project (WREN) will deliver electricity and clean water at a lower cost, and with lower emissions. The hybrid system is capable of displacing 45% of the annual diesel fuel, through innovative use of renewable energy and smart control of load. The project was supported by the Australian Renewable Energy Agency and the Rottnest Island Authority.

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Hybrid Energy Solutions

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Demand side management desalination plant



600 Kw DC solar farm

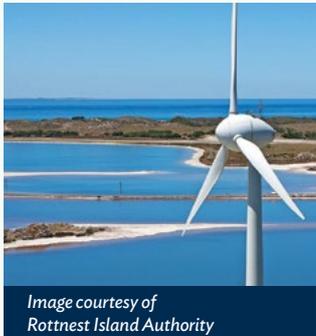
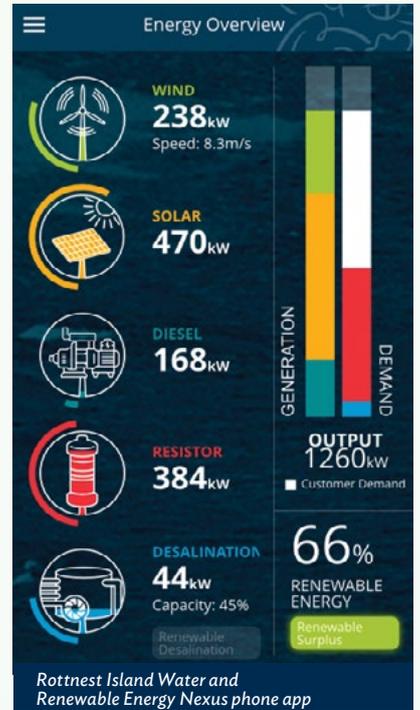
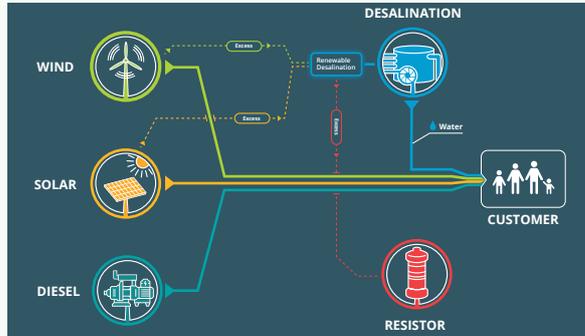


Image courtesy of Rottneest Island Authority



Solution

Hydro Tasmania has been engaged as the turnkey contractor to install and integrate a 600 kW solar array energy into the existing power system, which includes an existing 600kW wind turbine, to boost and diversify the renewable energy capacity in the system.

Hydro Tasmania's Hybrid control system was deployed, along with a dynamically controlled resistor, to maximise use of renewable energy. The Hybrid control system is integrated with the desalination plant and water storage facilities for automated demand side management capability, switching on the plant and pumps when renewable generation outpaces demand on the island.

Our Services

Hydro Tasmania's involvement started in the preliminary investigation phases of the project and included the study of development options, solar farm design, enabler selection, demand side management design, assistance with business case preparation and capital cost estimation and assistance with community engagement and development applications.

As a turnkey contractor Hydro Tasmania is responsible for design, procurement, installation, commissioning and tuning of all equipment and the overall power system.

This includes the 600kW solar array installation and distribution connection, diesel station hardware upgrade, dynamic resistor provision and installation and Hybrid control installation and commissioning.

Outcome

The WREN project provides significant operational cost savings in power supply through providing the ability to utilise a high degree of renewable generation and through running the water treatment and desalination plant preferentially on renewable energy rather than diesel.

The project is commissioned and operational and more information can be found by downloading the Rottneest Island Water and Renewable Energy Nexus Phone App.

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