



# Orpheus Island Research Station

## Islanded Micro-grid Supporting Research for the Great Barrier Reef

Orpheus island is 11km long and 1km wide and is surrounded by 1,300 hectares of pristine national park and coral reefs. The island is completely vehicle-free and offers an unspoilt encounter with iconic Australian eucalyptus forests, beautiful bush-walks and scenic lookouts.

One of the main sites on the island is James Cook University's Orpheus Island Research station. This scientific resource hub provides educators, researchers, and students access the World Heritage Listed Great Barrier Reef Marine.

### Goals

Orpheus Island Research Station was not connected to the mainland grid supply and has to a diesel power station consisting of 3 x 70kW diesel gen sets for their power. JCU wanted to explore a renewable energy solution which would reduce the cost of electricity generation while ensuring a secure and reliable power supply to support the site's multiple facility requirements. The aim was to eventually 'eliminate the need for fossil fuel power generation on-site'.



Location: Orpheus Island, Palm Island  
Australia QLD 4816 (near Lucinda)

Client: James Cook University  
(JCU) Orpheus Island Research Station

Solution: 70kW PV Solar +  
100kVA/150kWh AC Coupled  
Powercore Energy Storage System

Commissioned: Feb 2019

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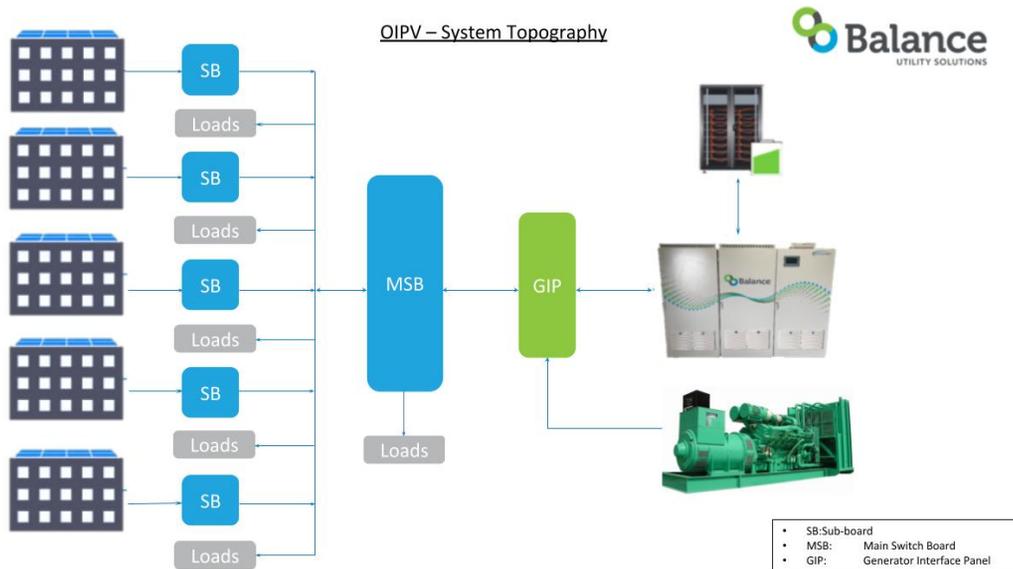
"The smartest energy choice under the sun. Orpheus Island Research Station is now running green energy thanks to its new solar panels!"

James Cook University

## BALANCE SOLUTION

Balance engineered, procured and constructed a microgrid solution designed to optimise PV solar generated electricity consumption, limit diesel fuel usage and manage the battery bank state of charge (SOC). including;

- ✓ 70kWp PV solar array installed across three of the OIRS buildings
- ✓ Three 20kVA SMA Sunny Tripower solar inverters that connects each building's distribution board
- ✓ 100kVA PowerCore with 150kWh Soltaro Li-Ion battery energy storage
- ✓ A power station control room integrating the main switch board and existing generator control system
- ✓ The system is remotely monitored via a dedicated internet connection.



## RESULTS

The key result of this project is to showcase the hybrid systems ability to achieve an autonomous standalone system that produces 100% renewable energy with the use of Solar PV, Lithium based batteries and Generator - with or without a grid.