

# Broome Gateway Accommodation Off-Grid Solar System

## Case Study



### PROJECT AT A GLANCE

**Project type**

18kW Off-Grid Solar System

**Location**

Broome, Western Australia

**Product**

- Conext Inverter Charger, 6kW, 48V DC, 230V AC
- Conext Solar Charge Controller, 80A, 600V DC
- Conext ComBox
- Conext System Control Panel
- Conext Auto Generator Starter

### CUSTOMER BENEFITS

- Reliable Power
- Lower OpEx
- Diesel Offset
- Remote Monitoring



Broome is a pearling and tourist town located in the Kimberley region of Western Australia, 2,100km north of Perth. The permanent population is under 15,000, growing to over 45,000 per month during the tourist season. Broome has a semi-arid climate and like most parts of the tropics it has two seasons, a dry season and wet season. Average daytime temperatures vary from 30°C in the dry season to 35°C in the wet season, but temperatures as high as 44°C have been recorded. Average rainfall is 600mm with annual sunshine hours in excess of 3,500 hours.

### The Challenge

When the current owner purchased the property, it consisted of a homestead and workshop. The original equipment comprised a 10kW power conversion unit, 108V battery bank with 24 BP 80W solar modules installed on two trackers.

The owner made the decision to develop the property into a caravan park and along with it a significant increase in power use. To supplement the solar power, a generator was added, consuming between 30 and 40 litres of diesel fuel per day. But after 12 years of operating this way, the cost of running the diesel generators and the fact that the batteries had reached their end of life, necessitated an upgrade. WA Solar Supplies, a premium dealer of Schneider Electric, was commissioned to design and build the solar solution.



### The Solution

At the onset, WA Solar Supplies carried out a site survey and analysis of energy use to determine the load profile, and the load profile was found to be 200kWh per day with a peak load of 16kW. Following the site survey, the design could commence.

The new solar system comprised three Conext Inverter Chargers, each with a continuous rated output of 6kW @ 40°C as well as four Conext Solar Charge Controllers, each with a charging capacity of 80A and maximum operating voltage of 600V DC.

The solar array was upgraded with 60 Sungrid 250W Solar Modules fitted onto a cyclone-rated fixed ground-mount system rated at 200km/h wind speed. A high component of PV was added to minimise the use of the diesel generator. The battery bank featured three parallel 48V DC, 1320Ah tubular plate LA Magnum deep-cycle batteries (electrically balanced) and recharging is supplemented by a 35kVA Perkins Diesel Generator to complete the solution.

The equipment was housed in a cyclone-rated enclosure featuring a tropical roof to shield the equipment from extreme high temperatures. Three high-volume industrial extraction fans were fitted within the equipment room linked to thermostats to cater for extreme high-ambient temperatures, but also to minimise condensation with Broome experiencing high levels of humidity during the wet season.



Cyclone rated enclosure

### Remote Monitoring

Remote monitoring has been fitted at this site via a Conext ComBox linked to the Loco Wi-Fi antenna network that transmits back to the manager's house, 100m away. It then links into the Wi-Fi modem and 3G service back to Broome. Currently, the customer is working with Telstra to set up the fixed IP address through the 3G service.

### Maintenance

The system is set up for full automatic control and minimal maintenance. However, to ensure optimum performance and uptime, a maintenance programme was designed for this site.

After severe cyclones or thunderstorms, all buildings, footings and solar array frames are checked for damage, and any damage is repaired or replaced. Buildings and the battery room are checked for water and infestation ingress.

Fire and white ant bait is laid every three months around the equipment, while the wet cell batteries are checked every four months and topped up with distilled water. Finally, the oil and air filters on the diesel generators are replaced every 200 hours.