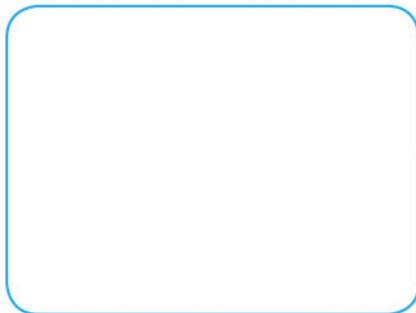


Case study

Off-Grid Energy Australia

Remote operations station – PV/storage/hybrid mini-grid power system
AUSTRALIA



The company

Off-Grid Energy Australia (OEA) is a designer, manufacturer and installer of renewable stand-alone power solutions across Australia, Asia and the Pacific. OEA utilises the latest in PV, storage and inverter technology to deliver customised power solutions to remote locations.

The challenge

The requirement for a renewable power solution for the project location was primarily to reduce the on-going diesel fuel consumption and maintenance costs of the remote operations centre and accommodation facility. In addition, the promotion of clean and sustainable energy sources was a factor in the choice of the renewable system investment. The property has a maximum winter energy demand of 110kWh per day, with a peak power demand of 30Kw over three phases. Property loads included pumps, workshop and office equipment, cooking equipment, fridges/freezers, and lighting.

Opportunities for renewables

The remote site is located in almost desert-like conditions, with low rainfall and very high solar irradiance. The use of a reliable and robust PV array was chosen to maximise the large amount of available solar energy. The site encounters extreme heat conditions, commonly above 45°C in summer. The batteries and enabling equipment were carefully designed and housed to reduce the effects of this heat on the equipment, prolong life and improve performance.

Renewable solution

OEA first visited the site to conduct an energy review and obtain specific data required to make informed choices about the renewable power solution options to be provided. The entire mini-grid system (not including solar array) was pre-assembled and tested off-site prior to being delivered to the project location. This improved system quality control sped up the commissioning process, reduced time onsite and potential installation issues. An ongoing monitoring system was installed so that both the end user and OEA can remotely monitor system performance proactively. The time-frame from initial discussions to full system commissioning was around nine months.

Project financing and costs

The project was funded by a private investment trust as the end user is a not-for-profit organisation. The Australian Government provided solar incentives for the installation. The total project cost was \$180,000 and is expected to save around \$50,000 per year in diesel fuel and on-going maintenance costs. The project was solely designed, assembled and commission by OEA with technical support from SMA, Battery Energy Australia and Tindo Solar.

Project outcome

At peak occupancy, the property accommodates 40 people. Apart from the long-term financial and environmental benefits of the renewable mini-grid system, the property is now much quieter with reduced noise pollution removed, and cleaner with less fuel and oils kept on site.

This system design is scalable up to 300Kw peak demand with the appropriate storage and a PV/wind-/hybrid or combination energy sources. The designed unit is easily replicated for other applications due to its containerised housing, and full off-site assembly and testing. Further refinement of space utilisation and ventilation will be considered with future projects of this nature. The diesel fuel savings from the installation of the system will have a payback of roughly 4 years.

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