

CASE STUDY: CHAIN O'PONDS CREMATORIUM

Summary

Application	Commercial Off-Grid
Location	Collombatti, NSW
System Objective	Provide solar-generated stored energy to run the Chain O'Ponds crematorium facility
Commissioned	February, 2014
Installed PV	27 kW
Useable battery storage	92 kWh
Designed & installed by	Brian England, Self Sufficiency Supplies



Solar panels not visible on the chapel roof as per client's request

Background

In a world-first, the Chain O'Ponds Crematorium near Kempsey on the NSW North Coast is operating via an off-grid power system. Self Sufficiency Supplies was involved in this green field project from the beginning to ensure that the stand-alone power system would be sufficient to run the crematorium facility and the building designs were suited to the proposed installation.

The crematorium is located on a single phase branch line and three kilometres of power line upgrade would have been needed to connect three phase power to the site. This would have been prohibitively expensive, and the other alternative was to operate the facility from a large three phase diesel generator which was a poor option both environmentally and financially. An off-grid power system was a more commercially attractive proposition and had the added benefit of providing world-first 'green credentials' to the crematorium.

Challenges

Being a green field project, there was only a hazy idea of how much power the equipment would consume. An additional complication was the requirement that the solar array should not be seen from the gathering area where mourners congregate. Solar panels were needed on both the roof of the cremator shed and the chapel building. However, the proposed design of the chapel roof would not allow the installation of solar panels.

Solution

The first stage of the solar system installation was to build the cremator shed to include a power room, which would allow 'business as usual' and also provide power to the builders while they constructed the chapel. The power room was located on the eastern end of the building with solar air extractor fans on the roof to ensure the batteries were kept cool. In order to install panels on the chapel roof, Self-sufficiency Supplies designed and manufactured in-house custom framing and had special roof mounting hardware made as there were no suitable and compliant solutions available in Australia.

It became apparent that the loads had been underestimated; however fortunately, flexibility and reserve capacity had been built into the system to handle additional loads. 70-80% of overall power use is during the day and there are days when services and cremations do not occur which allows additional battery capacity recovery time. To minimise use of the generator, battery capacity was oversized and the solar array size is matched to the load.

Outcomes and Benefits

The owner/operator of the Chain O'Ponds Crematorium, Clive Allison, was thrilled with the outcome of this never-before-tried application for an off-grid power system. In the first 10 months of operation the generator had not been used once.

The payback period for this off-grid system is estimated at approximately 4-5 years on fuel savings alone. There are also savings on generator maintenance costs which have been avoided. The Chain O'Ponds project has shown that that an off-grid power system can be both a commercially viable and an environmentally clean proposition.

This installation won the 2015 Clean Energy Council Solar Design and Installation Award for a Stand-alone Solar PV Power System.



System Components

Multi-mode inverter	Selectronic	3 x SP PRO SPMC 1201, 7.5 kW, 120 V
String inverter	KACO	6 x Powador string inverters (3 x 5 kW, 3 x 3.5 kW)
PV Array	Suntech	108 x STP250-20/Wd poly panels rated at 250w
Batteries	BAE	60 x Sealed Lead Acid, 1280 Ah, 2V
Generator	Kubota	SQ3200 remote start three phase 20 kVA diesel generator



Custom built framing on the chapel roof



Cremator shed and power room