

SOLAR CASE STUDY: KANGAN INSTITUTE AT THE AUTOMOTIVE CENTRE OF EXCELLENCE



Over 100 solar panels installed on the Kangan Institute's Automotive Centre for Excellence are helping reduce energy bills and environmental impacts.

The Kangan Institute's Automotive Centre of Excellence campus in the Docklands, features a 119 panel solar array capable of producing almost 30MWhr each year.

The system is helping Kangan Institute control energy costs and bolster its credentials as a proactive leader committed to reducing its environmental footprint.

Features:

The Automotive Centre of Excellence (ACE) is a 20 metre high building (equivalent to four levels) and has approximately 5400m² of roof area. The 22kW system was installed as part of an integrated suite of environmentally sustainable design initiatives aimed at reducing the greenhouse gas emissions of the building.

Overall the system is expected to reduce annual CO₂ emissions by 40 tonnes per year.

Funding model and business case:

The solar array was integrated into the original design of the ACE building, with the panels added to the structure in 2011. The entire building is designed for energy efficiency and was supported through the Greener Government Buildings initiative.

The solar array complements the energy efficiency aspects of the building, and helps keep demand for grid energy down and reduces electricity bills.

Location:

Docklands, Melbourne

System Size:

22 kW

Estimated Annual Production:

30 MWh

CO₂ Avoided Annually:

39.5 tonnes

Levelised cost:

\$0.25 per kWh

Solar inverter:

2 x SMC 6000 TL

3 x SB 3800 Inverters

Solar panels:

119 x 185W Schott Solar mono PV panels

Mounting system:

Unirac PV Module

Payback period:

~7 years

Funding model:

Greener Government Buildings program

Installation date:

September 2011

Installer:

Going Solar

Facilities Operations Coordinator, Chris Fisher says, “Solar has given us some protection from sky-rocketing energy costs”.

The payback period on the initial installation cost is calculated at seven years. Energy reductions achieved through the building’s design will deliver further cost savings.

“We believe solar will provide substantial cost savings to Kangan Institute, while reducing our carbon footprint”, says Chris. Kangan Institute recently installed a second array on their Broadmeadows campus.

Key challenges:

The design and location of the building, due to restrictions imposed by state and local government, presented the greatest challenge to the project. The array was located over the atrium and needed to balance day lighting requirements and shading impacts alongside the size of the structure.

To overcome this and successfully design an energy efficient building that incorporated solar, the architects visited automotive manufacturing buildings overseas to learn how to incorporate all the desired features into the building. Daylight modelling was used to optimise the geometry of the atrium. The solar installation was then designed around the needs and space allowance of the atrium.

Chris’ advice to others exploring solar options is to first reduce the demands for heating, cooling, ventilation and lighting in your building, then install the most effect systems you can to satisfy those demands. “It’s usually cheaper to save energy than produce it,” he says.

The ACE building’s solar installation has now been operating two years and continues to help Kangan Institute reduce demand for grid energy and its carbon footprint.

melbourne.vic.gov.au/solar