MiaSolé

CUSTOMER CASE STUDY

BlueScope Building Integrated PV Thermal Hybrid Roofing System

CUSTOMER PROFILE

BlueScope is the leading manufacturer of steel roofing products for the Australian market, producing a range of roof products for building and construction, manufacturing and automotive applications. In 2014, BlueScope installed the first prototype of its Building Integrated PV Thermal (BIPV–T) hybrid roofing system as part of a major renovation undertaken by the prominent architect, Tone Wheeler, on his property in the inner city Sydney suburb of Glebe. This new technology integrates new COLORBOND® Steel roofing with thin-film photovoltaic panels and draws air through the two skins of the roof through a plenum to provide warm or cool fresh air for the home.

In BlueScope's BIPV–T design, a patented profile of the metal roof forms both the air plenum and a flat surface for the installation of photovoltaic (PV) modules. The solar modules generate electricity, while the air inside the channels is warmed by the sun then drawn into the building for heating in the winter months. During clear summer evenings, the steel roof cools below ambient temperature and the air is then drawn into the building for night-time cooling. A thermostat controls whether warm or cool air is drawn into the building.

BlueScope chose MiaSolé FLEX modules for this prototype BIPV–T installation due to their compatibility with the roofing system design. The dimensions of the solar modules and their slim-line nature integrate into the overall roofing design in an aesthetically pleasing way.

PROJECT DETAILS

Tone Wheeler's single–fronted Victorian-styled terrace has a small north–south facing roof, which was completely replaced with the new BIPV–T roofing system. The northern side of the roof was covered with MiaSolé FLEX modules of system capacity of 1.3kW. The system is grid–connected, so any excess electricity generated by the solar modules is fed back into the electricity grid. The thermal system provides warm and cool air to a room in Tone's house to compliment his existing heating and cooling system.

BlueScope engaged specialist roofing and solar installers to measure and design the roof and solar system layout in line with Australian standards, regulations, and building code requirements. BlueScope fabricated the roofing system and then laminated the MiaSolé FLEX modules to the roofing material using an in-factory process.

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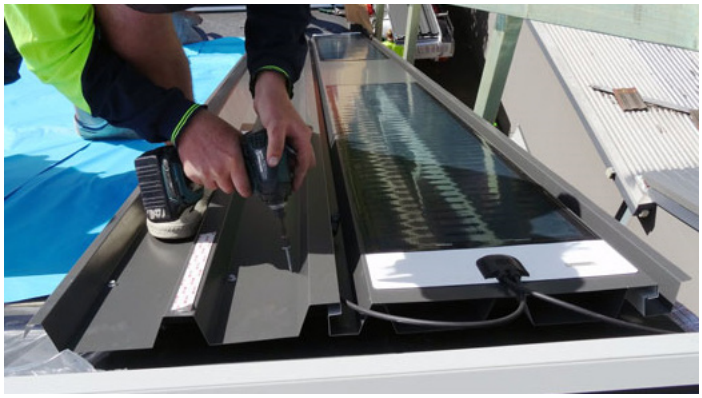
CUSTOMER CASE STUDY – BLUESCOPE BIPV-T

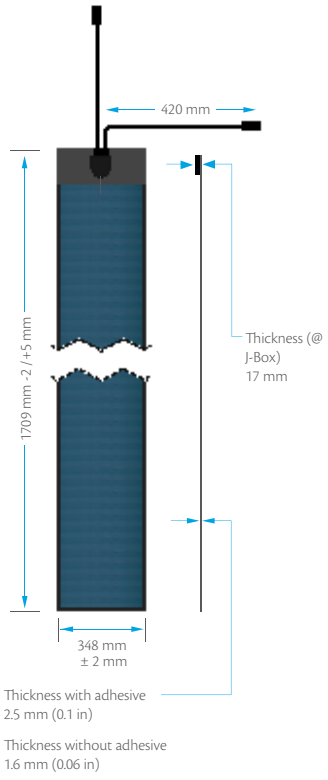


The old roof was removed and a builder prepared the underlying roof structure for the new roof to be installed. The installation of the BIPV–T roof took two days. The roofers laid the roofing sheet while the accredited solar installer began connecting the cables, covering them in protective conduit and installing the other components like isolators, cables and inverter so the electricity generated by the system could be used by the household. In parallel, an air conditioning contractor connected the thermal components of the system to duct the warm and cool air into the house.

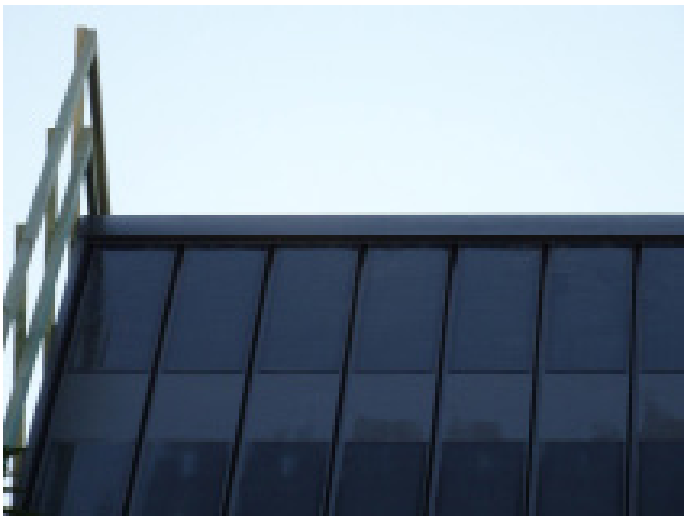
When the installation of all the components was complete, the PV system was connected to the grid and the home owner was contacted by his energy supplier so he could change his tariff and begin being paid for any excess electricity that he provides to the grid.

RESULTS

The customer is happy with the aesthetic and performance of the product. Billed by ARENA chief executive Ivor Frischknecht as "an exciting new renewable energy solution that combines steel roofing with cutting–edge thin film solar modules," the Sydney rooftop is seen as the first of its kind to really commercialize the two technologies, and it is hoped it can pave the way for future installations of this type. "The old corrugated steel roof on this house in Glebe has been completely replaced with the first building integrated PV / solar thermal hybrid system in Australia, generating reliable renewable energy for the residents," added Frischknecht.



The thin, flexible and lightweight MiaSolé module provides excellent resistence to high wind and seismic events.



The MiaSolé FLEX module blends into the new BIPV–T roof.

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