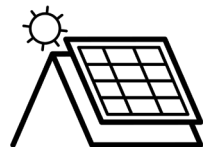




Case Study — EV Charging Station Carport

PVKIT® & CorruBracket™ 500T PV



At-A-Glance

Project Name

EV Charging Station Carport

Location

Smart Energy Lab, Moora Moora, Australia

General Contractor

Tallan Colliver

Solar Installer

Anne Wilson

Module Manufacturer

LONGi Solar

Inverter Manufacturer

Ingeteam

Roof Profile

Colorbond Corrugated Iron

Industry

Residential

Situation

An off-grid, mountain-top community required a safe and reliable charging station for their electric vehicles, equipped with rooftop solar PV suitable for a lightweight structure, such as a carport.

Result

The PVKIT solar solution paired with the CorruBracket 500T PV provided a low-profile mounting system specifically for corrugated iron roofing, allowing the maximum use of space and a clear run of water from the roof.

Project Stats

- Roof Dimensions: 11m x 6m
- Roof Pitch: 5 degrees
- Project Size: 9.5kW
- Products Supplied:
 - PVKIT EdgeGrab (20)
 - PVKIT MidGrab (30)
 - CorruBracket 500T PV with sheet screws (50)

Additional roofing component

40 cm of rail to mount DC isolators



The Project

Nestled among the Yarra Ranges, 67 kilometres east of Melbourne, Australia, Moora Moora is a co-operative community hosting 30 solar-equipped, off-grid homes, 70 people and three electric vehicles (EVs). Reaching freezing temperatures in winter and scorching heat in summer, the community's residents required shelter to protect their EVs from the elements while charging.

To provide such protection and also fast-charge their vehicles, a shared community carport was constructed, purpose-built for rooftop solar photovoltaics (PV). The carport features a corrugated iron roof with a 9.5kW solar array. Twenty LONGi solar panels are mounted in landscape position to the roof using the **PVKIT®** rail-less solar mounting solution along with the **CorruBracket™ 500T PV**.

The EV charging station allows for an extra 10kW of charge for the community's EVs, in addition to the solar power provided by each of the homes. With residents planning to purchase another six EVs, this project provides a place for the residents to protect their investment and charge their additional vehicles.

The Challenge

Since EVs are so energy-intensive, it was crucial to ensure full utilisation of the limited rooftop space for mounting the solar panels, whilst staying within 200 mm of the edge zones in order to meet Australia's wind load standard.

In addition, the lightweight of the carport meant every bracket, panel and screw had to be taken into account to ensure the structure could comfortably withstand the weight and wind load of this mountain-top carport.

With the need to install as many panels as possible, the challenge was to find a mounting system that would not confine the positioning of the modules to the screw lines of the roof battens. By using the CorruBracket 500T PV, every corrugation on the roof became a potential mounting point. In the initial system design, it was evident that a conventional rail-based mounting system would only allow for around half as many solar panels as the S-5! brackets.

Environmental factors also required careful consideration. Given the lightweight structure, snow in winter and high ultraviolet rays in summer, the challenge was to ensure a clear path for melting water, a leak-free solution and one that could withstand Australia's harsh sun.

The Solution

Using the CorruBracket 500T PV allowed solar panels to be laid in landscape position, maximising the space and providing additional charging capacity for the community.

This top-fixed bracket sits high on the roof to provide optimal airflow above the valley of the corrugation. It marries well with the PVKIT providing a 1" gap so the bracket can be adjusted. The landscape mounting of the panels, combined with the absence of rails, means the passage for a clear flow of snow, water and debris is virtually obstruction-free.

Without rails, the weight load of the carport also allowed for additional panels. The CorruBracket 500T PV is a lightweight solution and comes with factory-applied, EPDM rubber gasket material already in the base so there's no chance for leaks onto the vehicles below.

With safety always at the forefront, especially with a lightweight structure, the brackets can be prepped on the ground using simple instructions, meaning less time spent working on the roof. Earthing was also easy to achieve with the brackets as they automatically bond frame-to-frame.

All S-5! kits are delivered in small boxes, with the EV charging station project requiring only 50 brackets in three boxes. No long rails on the roof meant a safer installation, a more environmentally friendly solution and a maximum use of roof space for additional charging power.



How Did the S-5! Products Help?

- Reduced cost for materials, material handling and freight
- Reduced cost for installation by eliminating the assembly and installation required by traditional rail mounting
- Allowed for flexible placement of panels due to fastening into the roof vs. the battens/purlins
- Reduced the added dead load of mounting components by 85%
- Improved aesthetics

"When it comes to solar technology, living in harsh weather conditions demands high quality, fit-for-purpose products. The PVKIT rail-less mounting system and range of brackets are suitable for all roof types and weather conditions. This simple, secure and economical solution requires minimal components and comes with a lifetime warranty designed to outlast your roof. There's a real sense of ownership with every S-5! solar product so you know quality is world-class and has been engineered with a solution for the solar industry in mind."

—Glen Morris, Principal, SolarQuip; General Manager, Smart Energy Lab; Operations Manager, Moora Moora Community Microgrid



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