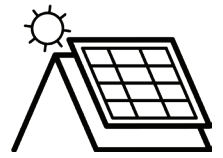




Case Study — Arkaroola Wilderness Sanctuary

PVKIT® & RibBracket™



At-A-Glance

Project Name

Arkaroola Microgrid Project,
Arkaroola Wilderness Sanctuary

Location

Flinders Ranges, SA, Australia

Solar Installer

APEX Energy

Module manufacturer

Axitec

Inverter manufacturer

Fronius

Roof Profile

TL-5™ Non-Cyclonic - Specifying Fielders (SA)

Industry

Commercial

The Situation

This remote property in Australia must generate its own electricity and wished to transition from a reliance on diesel fuel to solar power energy.

The Result

They chose the S-5! PVKIT direct-attach, rail-less solar mounting solution for its lower freight costs, ability to maximise rooftop space for solar, ease of installation and its low-profile aesthetic appeal, given the surrounding natural landscape.

Project Stats

- Each Roof Measured: 58 meters
- Roof Pitch: 10
- Project Size: 61.6kWp
- S-5! Products Supplied:
 - PVKIT® EdgeGrab (240)
 - PVKIT® MidGrab (180)
 - RibBracket™ (360)



The Project

Flinders Ranges is a remote area located 600km north of Adelaide, offering spectacular outback scenery with precipitous peaks and valleys, extreme topographic diversity, gorges and creeks. It is an inspiring destination for artists, aviators, astronomers, bikers, birdwatchers, bushwalkers, four-wheel drivers, geologists and just about anybody with a sense of adventure and a quest for knowledge.

It is also home to the Arkaroola Wilderness Sanctuary, which showcases almost 2 billion years of geological history, excellent dark skies for astronomical observations and unique wilderness—and is under consideration for the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage listing.

Education is a core value at Arkaroola. The Arkaroola Education and Research Foundation encourages the pursuit of careers in various scientific disciplines. Groups of students use the site for geological and astronomical investigations, with approximately 12,000 people visiting annually to experience the natural environment and local history.

The site is caught between a challenging environment in remote Australia and a desire by local, state and federal governments to showcase the region's treasures. The entire microgrid project is backed by a \$1.3 million federal government grant. The Arkaroola Microgrid will provide a reliable ongoing supply of clean energy to power the sanctuary and serve as an additional educational experience in remote energy technology and engineering.

On site, rooftop solar arrays on four buildings now power the microgrid. The most recent addition is the sanctuary's Mawson Lodge, which features a new Fielders TL-5 Colorbond® dual roof with 61.6 kilowatts (peak) of solar PV.



View the video case study.

The Challenge

Since the mid-1960s, the sanctuary had operated on diesel power, which was transported to the site monthly. The property's owner and son of the founder, Doug Sprigg saw it as a top priority to transition to clean energy.

"Being so remote, we have to generate our own electricity, and we've been doing that based on diesel fuel," said Sprigg. "Arkaroola's about conservation; we really should be trying harder to move away from diesel, and that's what we're doing."

One of several lodges at the sanctuary, the old Mawson Lodge features 20 accommodation rooms, each equipped with an ensuite bathroom, kitchenette, TV and reverse cycle air-conditioning unit. The total power consumption can be considerable during the winter peak season when temperatures drop to near freezing and up to 40 degrees Celsius in the summer. The new rooftop solar array would need to generate power for the entire building.

To power the sanctuary throughout its high season, it was important to cover the entire roof space with as many solar panels as possible, thereby maximising solar generation capacity.

In addition, the Mawson Lodge presented a challenge to installer APEX Energy due to the age and engineering of the substructure—it was not ideal for the adherence of a traditional racking solar system. This made it critical for the solar mounting solution to be strong yet lightweight to withstand potential wind uplift and minimise stress on the building structure.

A key consideration for the installation was the sheer remoteness of the site itself, being hours away from the nearest town and only accessible via a bumpy rugged road. Any materials transported to the site needed to be compact, lightweight and reliable enough to stand the test of time, as future replacement or maintenance would carry a high cost.

The Solution

Installer APEX Energy utilized the S-5! **PVKIT**® – a rail-less solar mounting solution – along with the **RibBracket**™ attachment, providing a simple, secure method to "lay & play" PV modules with tested, engineered, cost-saving, direct attachment onto the ribs of the metal roof.

Providing a faster and easier installation than a traditional rail system, S-5! turns the roof into a canvas, allowing panels to be installed anywhere on the roof, not just on roof purlins. The ability to design a landscape-oriented system enabled Apex Energy to maximise roof space and meant the arrays could be expanded by 7.3% to an impressive 61.6kWp of generation capacity.

The compact and lightweight nature of the S-5! mounting solution not only simplified freight and transporting logistics but reduced the load on the roof by 750 kilograms compared to traditional racking by eliminating the need for rails.

"The S-5! PVKIT offered the perfect solution for the Arkaroola Microgrid. The ability to install this rooftop system without rails meant lower freight costs, maximising the available roof for solar, easier installation, and ultimately a reliable and better-looking rooftop system that blends with the stunning natural landscape. Rails are unnecessary on a metal roof, and once you understand how to approach cable management, it really is a more common-sense solution with a multitude of benefits, from protecting the roof to cost savings and simplified logistics and installation. It makes sense from all angles."

—Sean LePoidevin, Project Manager, APEX Energy



How Did the S-5! PVKIT Help?

- Significantly reduced the cost and complexity of transporting materials to the site
- Reduced material costs by 15%, including freight costs
- Cut installation costs by a 25%
- Reduced added dead load of mounting components by 750kg
- Minimized the amount of time workers must spend on the roof
- Eliminated the risk of a voided roof manufacturer warranty—no damage
- All S-5! components are warranted for the life of the system



Long-Term Outlook

The microgrid will reduce Arkaroola's use of diesel by approximately 15,000L per year, a savings of 126,000kg of CO₂ annually. At times, the village will operate on 100% renewable energy. In addition, the sanctuary owners can rest assured knowing the quality and reliability of the S-5! solution is engineered to outlast the life of the roof and carries a market-leading lifetime warranty.



The Right Way™ | +61 3 8595 7001 | www.S-5.com



Made in USA