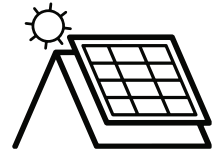




CASE STUDY — McIndoe Clinic Tauranga, New Zealand

PVKIT® & RibBracket™ IV



AT-A-GLANCE

Electrical Contractor & Solar Installer

Guild & Spence Electrical

Module Manufacturer

REC TwinPeak 5

Inverter Manufacturer

Fronius 15 kW 3-phase inverter; Victron MPPT 450/200 charge controller and three Victron Quattro 15kW inverter chargers.

Industry

Healthcare

The Situation

The Bay of Plenty region often experiences power outages. The McIndoe Clinic wished to generate enough power to provide two hours of grid-free electricity, which would cover potential power outages during surgery.

The Result

The PVKIT direct-attach, rail-less solar mounting solution along with the RibBracket IV made it quick and easy to install on a steep roof compared to a traditional rail system and allowed for the maximum number of solar panels due to the flexibility of module placement.

Project Stats

Four Roofs Measured:
260-square-metres in total

Roof Pitch: 20 degrees

Project Size: 29.5 kW

S-5! Products Supplied:
PVKIT (192), RibBracket IV (192)



The Project

The McIndoe Clinic is a purpose-built consultation and day surgery facility for oral and maxillofacial surgery in the Bay of Plenty region in New Zealand. The 330-square-metre, one and a half-story building includes a reception area, two maxillofacial surgery rooms, an ENT surgery room, a recovery room, three consultation rooms, as well as staff and administrative offices.

Contractor, Guild & Spence Electrical was brought on to install a 29.5-kilowatt rooftop solar array on the facility's existing trapezoidal painted metal roof to supplement the power consumption of the facility and provide uninterrupted power in case of power cuts.

The Challenge

In line with the New Zealand Energy Strategy, a government initiative that aims for an aspirational 100% renewable electricity by 2030, McIndoe Clinic wanted to go solar. They needed to provide backup power for surgeries as the area experiences several power outages per year, which is highly disruptive.

The practice wanted to store enough energy to provide at least two hours of off-grid power, which would cover potential power outages during surgery.



After monitoring the main grid and the facility for about three months, Guild & Spence determined a 29.5 kW PV system with 40kWh of battery storage was needed to satisfy these requirements. The system would provide up to 90 percent of the facility's power needs in the summer and 90 percent of their essential power needs in the winter, with enough capacity to still enable the daily benefit of the overall system.

The roof pitch was steep at 20 degrees, which would make any solar installation challenging. Added to that, the roof consisted of four main segments and various rooftop obstacles such as air vents, sky lights and an aerial and satellite array. The installer wanted a quick and easy solution to minimise the amount of time workers spent on the steep roof, and he wanted to maximise the roof capacity for panel efficiency and ROI. A traditional rail system would involve the need to trim or splice rails, which often results in metal shavings left on the roof, eventually leading to rust spots.

Another consideration for system selection was the harsh environmental conditions associated with the island's

salt air and salt spray, which accelerate corrosion and make the longevity of construction materials a challenge.

Of course, delivery logistics to the island is always an expensive exercise. Transporting traditional rails would be extremely costly and cumbersome due to the topography of the region.

The Solution

Guild & Spence selected the S-5! PVKIT rail-less, direct-attach, solar mounting solution paired with the RibBracket IV for the clinic's 72-panel solar array.

The S-5! system allowed for the maximum number of solar panels due to its flexible module placement ability via all trapezoidal ribs at every 190mm centres, instead of just the roof purlins as with railed installations. This flexibility also allowed the installer to manoeuvre around various roof obstacles. He reported the installation took about half of the time compared to rails and allowed him to rearrange the panels freestyle on the spot.

Additionally, on any project by the sea, an installer prefers to use

anodised aluminium and stainless-steel components to combat corrosion and the effects of salt air. S-5! uses non-corrosive materials made from high-tensile aluminium and A2-70 stainless steel that are salt-fog corrosion tested for metallurgical compatibility in accordance with ASTM B117 standards.

Furthermore, the logistical challenge of delivery to the island was eliminated because the entire solar mounting solution could easily be transported in a single carton along with all tools required for installation. (The system is 85% less weight and 90% less volume of rail components).

Long-Term Outlook

The McIndoe Clinic was able to achieve its energy goals with a rail-less solar mounting solution that saved them time and money and gave them confidence that there wouldn't be any further disruptions to the surgical practice.

How Did S-5! Products Help?

- Cut mounting material costs in half, including freight costs
- Cut installation costs in half by eliminating the assembly and installation required by traditional racking
- Significantly reduced the cost and complexity of transporting mounting materials to the site
- Minimised the amount of time workers must spend on a steep roof
- Improved system aesthetics
- Eliminated the risk of a voided roof manufacturer warranty—no damage
- Reduced added dead load to the building structure. The PVKIT is 85% lighter than rails, while providing 25% better load distribution.

"Every solution has its place. S-5! was great for this one. Mounting the panels itself took half the amount of time compared to other solutions. You have to get your head around doing things differently, but I would definitely use it again. You can't beat the ease of installation with S-5!"

Levi Bell, Project Manager, Guild & Spence Electrical, New Zealand



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