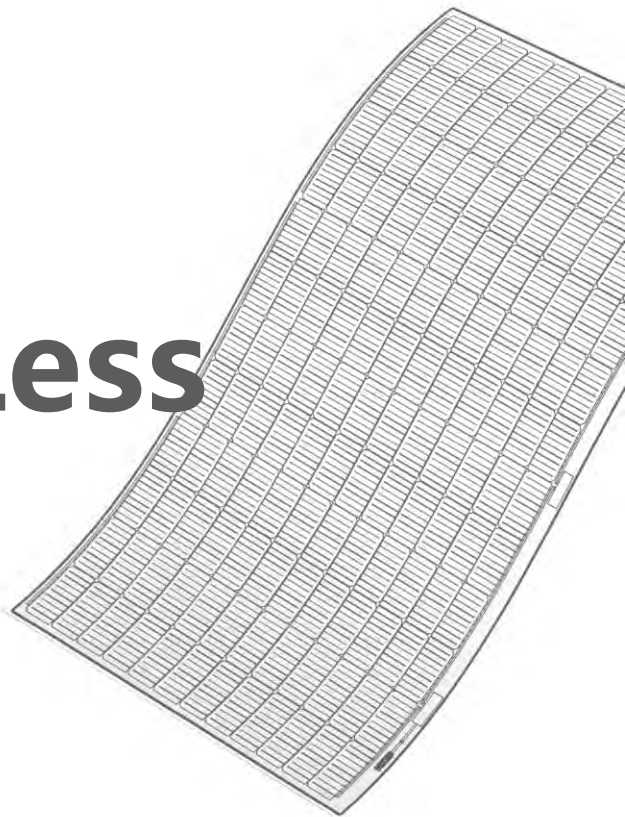


Doing More with Less

SUNMAN ENERGY



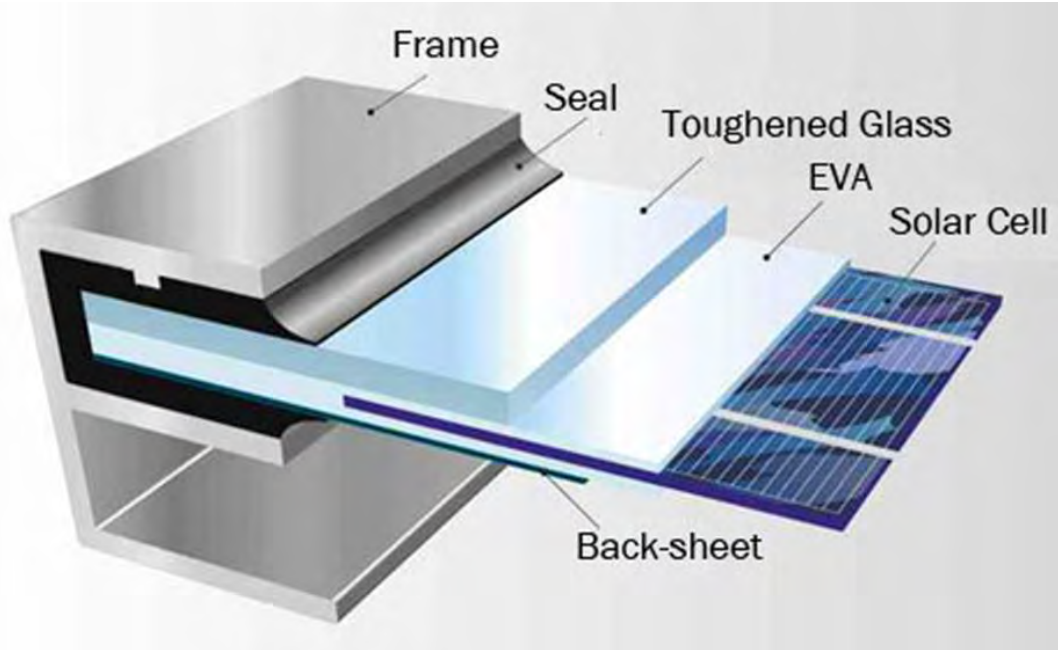


IN THE LAST 40 YEARS

.....

solar panels have remained unchanged

Weight / Thickness – Conventional Solar panel



Weight of solar panel = 27 kg

Weight of solar cells = 920 g

Only 3.6% makes electricity

Thickness of panel = 40 mm

Thickness of cell = 0.5 mm

Only 1.25% makes electricity

Product limitations

FINANCIAL REVIEW

“As much as 70 per cent or more of industrial roofs are being built “slender” and to the minimum 100-year rain event standards”

<https://www.afr.com/real-estate/slender-roofs-wont-bear-a-solar-future-20180329-h0y3vg>



“Finding lightweight solar solutions for those slender rooftops – could unlock another 3GW of installations, and \$3.5 billion of investment.”

<https://reneweconomy.com.au/whos-missing-out-on-australias-rooftop-solar-boom-36261/>



THE SOLUTION

Turn all building skins into green
electricity generators

SMF520J-12X12UW

- ① -----• 8.6 kg, 70% lighter than glass panel
- ② -----• 2246 * 1197 * 2 mm
- ③ -----• 66 panels each pallet ~ 34.32 kw
- ④ -----• 12 year product warranty
- ⑤ -----• 25 year performance warranty, 84.8%



SMF430F-12X12UW

- ① -----• 7.3kg, 70% lighter than glass panel
- ② -----• 2054 * 1080 * 2 mm
- ③ -----• 66 panels each pallet ~ 28.4kw
- ④ -----• 12 year product warranty
- ⑤ -----• 25 year performance warranty, 84.8%



Changes to AS1170.2 2021- White paper



Sunman Energy
Level 9, 153 Walker Street
North Sydney NSW 2060

16 Feb 2023
Gamcorp Reference: 12270

eArc Solar Panels to Be Installed On Top of Building Roofs

Gamcorp have been engaged by Sunman to issue a White Paper which explores the advantages of the eArc Module compared to the conventional glass panels. Due to the new wind codes (AS/NZS 1170.2:2021) impact on the commercial solar industry, innovative products and solutions will need to be adopted to ensure maximum utilisation of a roof area. Many projects that were considered not suitable for traditional systems have taken advantage of the innovative elements of Sunman's eArc MonoCrystalline Module system and examples of these advantages are elaborated below:

Suman advantages

- Gravity loads (dead loads)
- Wind uplift Large span rafters
- High pressure zones (corners and edges)

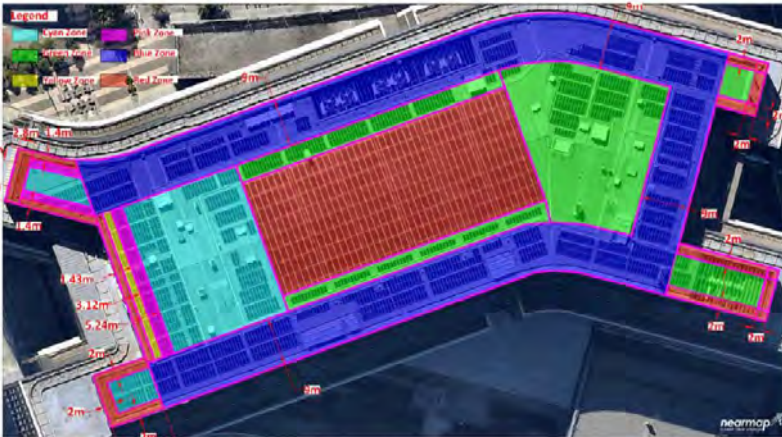


Figure 3 – Roof Zone Definition by using Glass Panels

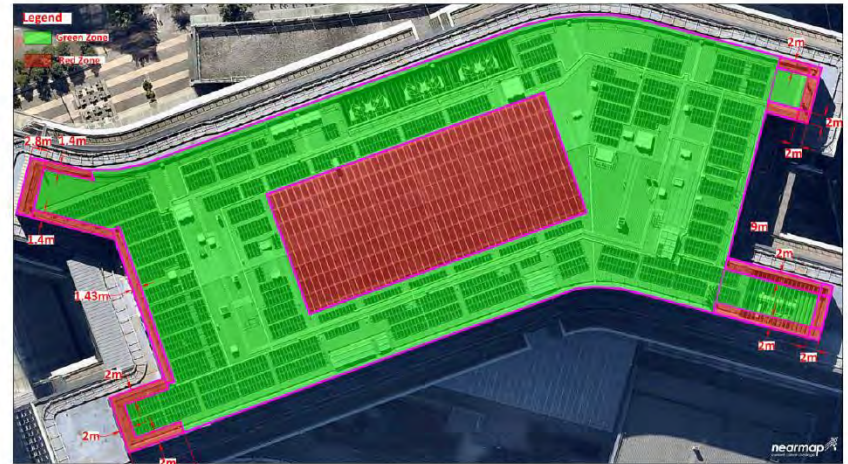
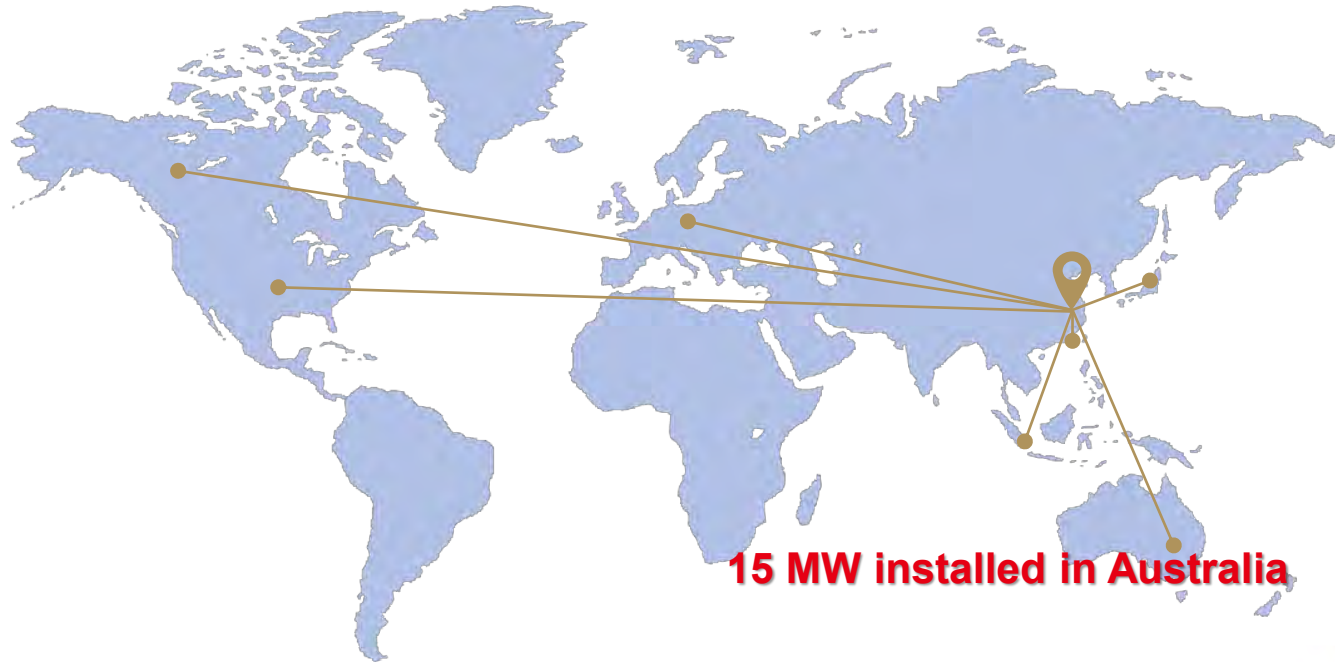


Figure 4 – Roof Zone Definition by using eArc Lightweight Panels

In field performance

Since 2014 SunMan have installed over 400 MW of eArc globally



15 MW installed in Australia

Market Opportunity – Lightweight Rooftops

Market Segment (AUD)	MW
Residential roofs	1,557 MW
Expansion of existing capacity	667 MW
New capacity added	890 MW
Commercial roofs	4,075 MW
Agricultural	517 MW
C&I Roofs	1,441 MW
Insulated Panel Roofs	758 MW
Building Skins/Facade	1,359 MW

NOTE: This number does not include the potential of VPP. Turning industrial parks into the new solar farms. Conventional glass panels CANNOT service this market when full roof top utilisation is require because of structural limitations. It is estimated that this VPP market on C & I roofs could be 2-4 GW

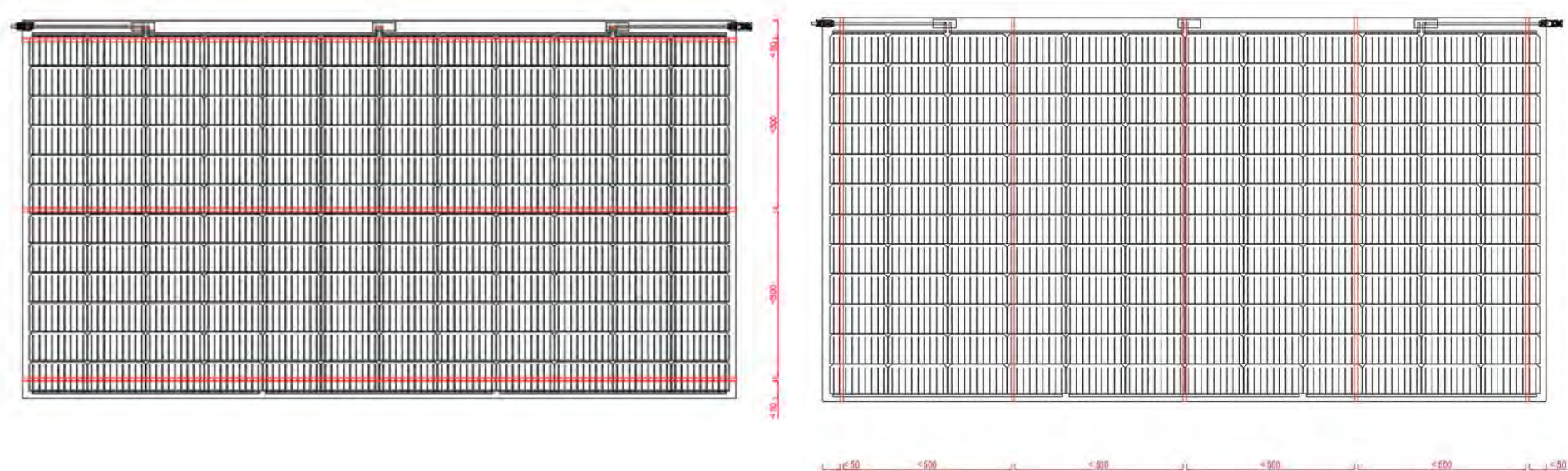
SMF / Installation method – Quick Bonding

SMF: Quick Bonding – No mounting hardware – Installed weigh @ 3.5 kg /m2



Installation Method: Quick Bonding Steel roof

Quick Bonding – CEC approved. Certified to wind region D 30m high



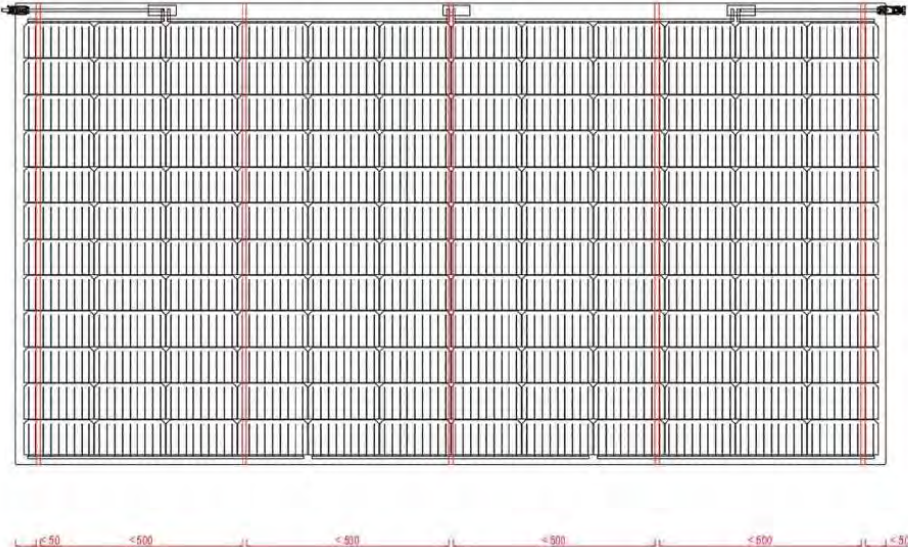
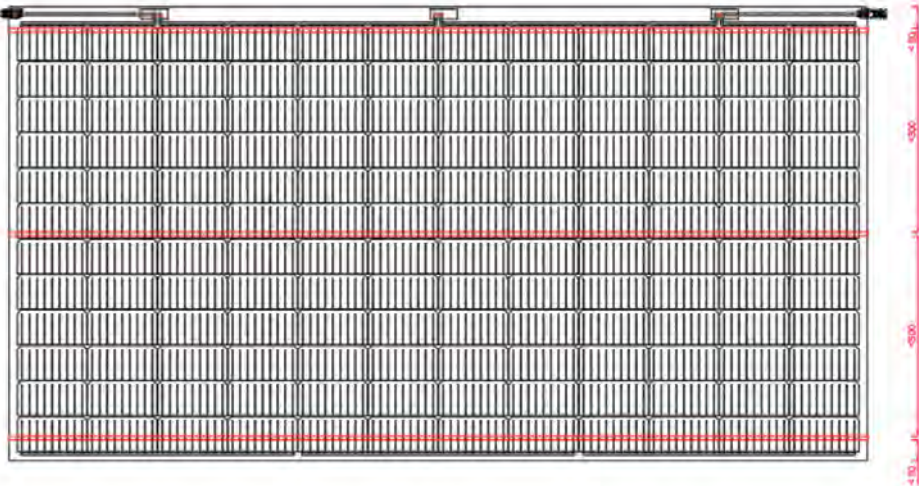
Installation Method: Quick Bonding Steel roof

Quick Bonding – CEC approved. Certified to wind region D 30m high



Installation Method: Flat Roof Guide Rails

Quick Bonding – CEC approved. Certified to wind region D 30m high



Installation Method: Flat Roof Guide Rails

Quick Bonding – CEC approved. Certified to wind region D 30m high

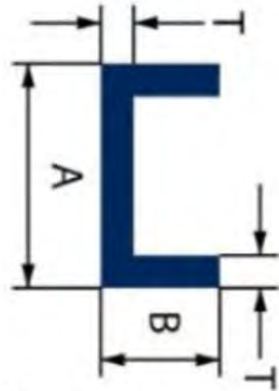






Figure 3 - Aluminum Channel Section Details

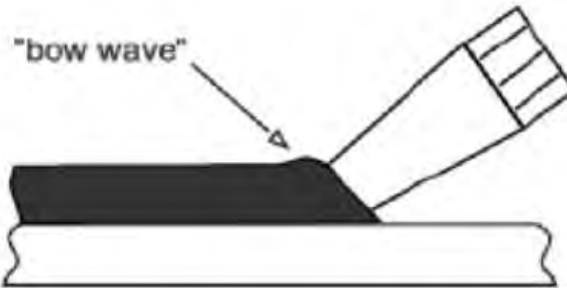
Note: A=20mm, B=20mm & T=1.6mm

Glue line should be applied on the flanges as closely as practically possible to the channel web







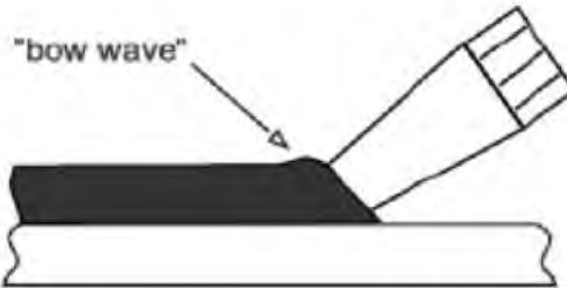
Installation Method: Quick Bonding

	
	
<p>✔ Correct dimension ($h \approx 5 \text{ mm}$)</p>	<p>❌ Too flat</p>
<p>❌ Too high, too small</p>	<p>❌ Poor wetting</p>



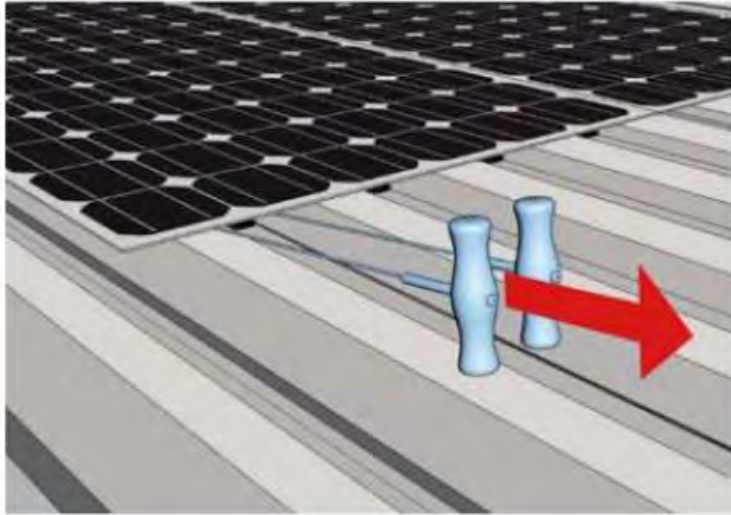
Installation Method: Quick Bonding

	
	
<p>✔ Correct dimension ($h \approx 5 \text{ mm}$)</p>	<p>❌ Too flat</p>
<p>❌ Too high, too small</p>	<p>❌ Poor wetting</p>



Installation Method: Quick Bonding

SMD : Quick Bonding – Uninstall



Installation method – Quick Bonding

- 1 -----• Mark the Roof
- 2 -----• Clean Roof
- 3 -----• Laying Panels
- 4 -----• Cable Management



51.9 kW eArc Installation in 11hours

Installation method – Quick Bonding

1 -----• Mark the Roof



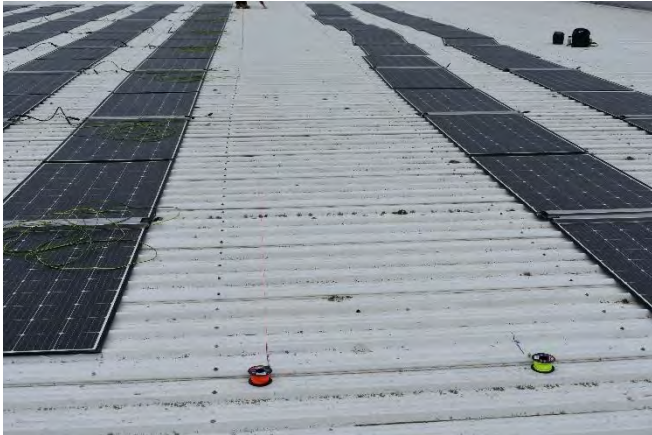
Installation method – Quick Bonding

② -----• Clean Roof



Installation method – Quick Bonding

- 3 -----• Laying Panels: Apply silicone using a Cordless Caulking Gun. 5- 8 mm bead (as per installation manual). 2 installers are used to ensure module is installed square.



Ins





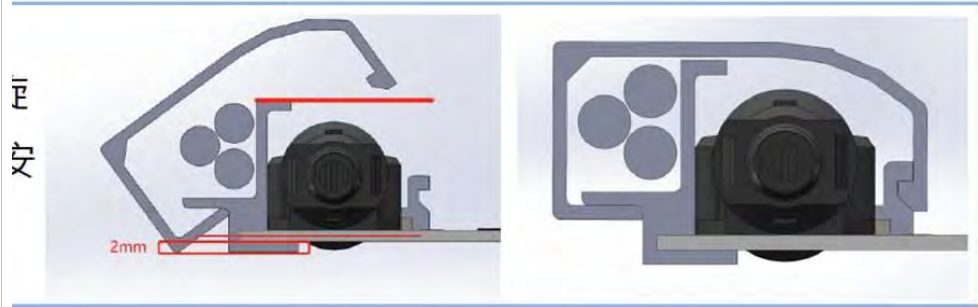
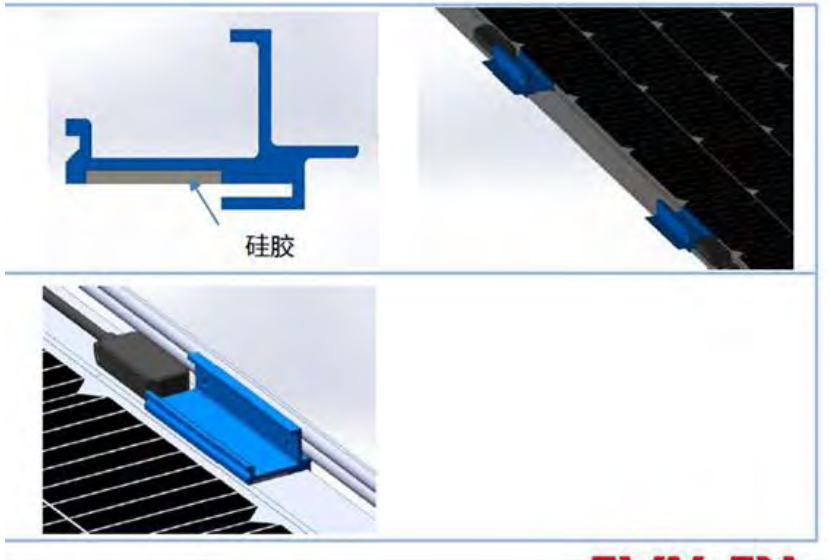
Screw Replacement



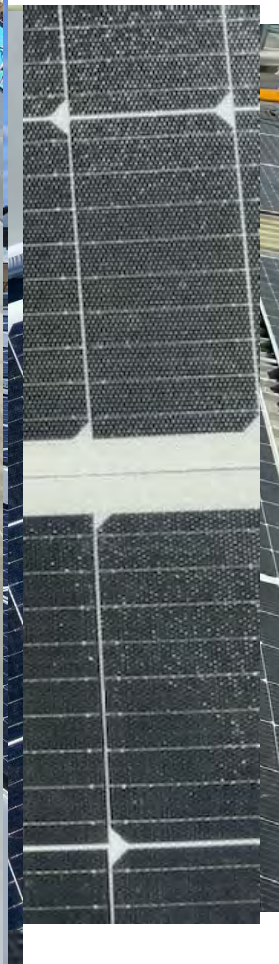
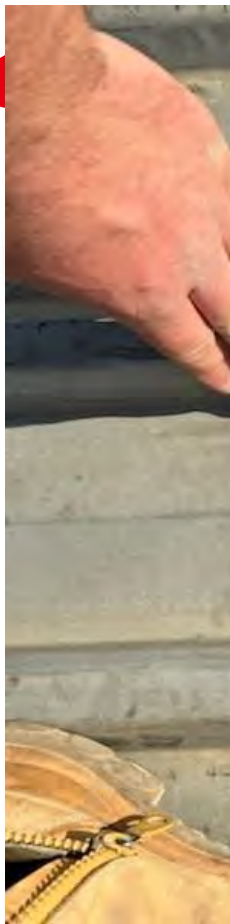
- Suitable for both residential and commercial metal roofs
- Phillips 3 driver bit included

Installation method – Quick Bonding

- Inbuilt cable management V2 from May 2023



Inst



Case Study



Case Study



Case Study



Case Study



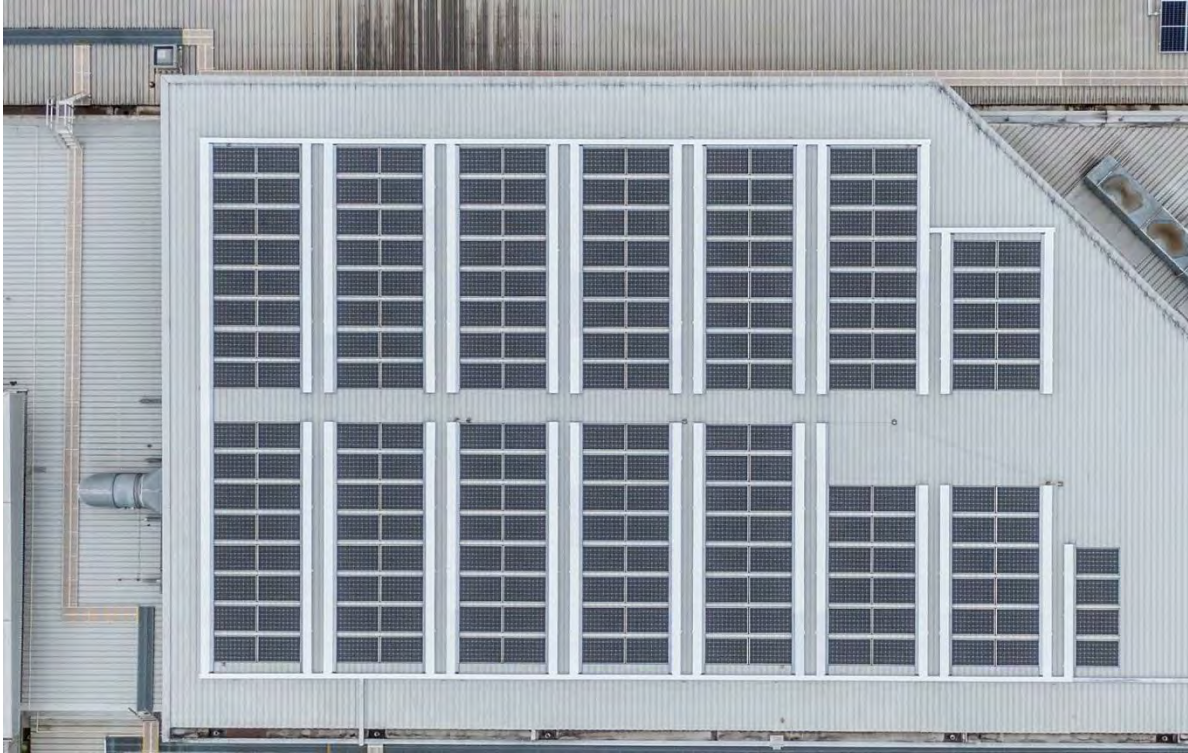
Case Study



Case Study



Case Study



Case Study



Case Study



Case Study



Case Study





Case Study



Case study



Case Study



Case Study



Case Study



Case Study



Case Study



Off Grid Installation: case study



Off Grid Installation: case study



Australia | SMF35M-2x6UW | Gluing via silicone sealant for PV modules

The world's first solar-powered train, blending heritage with modern technology.

Thank You



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✉️ Thomas.bell@sunman-energy.com

