

Gamcorp (Melbourne) Pty Ltd A.C.N 141 076 904 A.B.N 73 015 060 240
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Our Ref: 9123-02/JD
 19 November 2020

Xiamen Goomax Energy Technology Co., Ltd
 Suit 905, Jordan Building A, High-tech Park
 Huli District, Xiamen, 361000
 China

PV Array Frame Engineering Certification

RE: AS/NZ 1170.2 Certification for Tilt Mounted System on Tin Roof (Pierced Fix Roof)

Gamcorp (Melbourne) Pty Ltd, being Structural Engineers within the meaning of Australian Building Regulations, have carried out a structural design check of Tilt Mounted System on Tin Roof (Pierced Fix Roof) within Australia. The design check is based on the information and test reports provided by Xiamen Goomax Energy Technology Co., Ltd.

Components of the system covered in this certificate shown in the table below:

| Component | Part No |
|-------------------------|---|
| Rail | GM-R01-Light; GM-R56; GM-R69 |
| Rail Splice | GM-RS-51-AZ;GM-RS-51-AZ-1;GM-RS-56-AZ |
| Tilt leg | GM-AS-200-AZ;GM-AS-400-AZ; GM-AS-600-AZ; GM-AS-B01-AZ |
| Mid Clamp Kit | GM-MC-30-AZ;GM-MC-35-AZ;GM-MC-40-AZ; GM-MC-45-AZ; GM-MC-50-AZ;GM-MC-35(40)-AZ;GM-MC-35(40)-AZ-2; GM-MC-35(40)-AZ-1; |
| | GM-MC-30(35)-AZ; GM-MC-30(40)-AZ; GM-MC-35/50-D |
| End Clamp Kit | GM-EC-30-AZ;GM-EC-35-AZ;GM-EC-40-AZ;GM-EC-45-AZ; GM-EC-50-AZ;GM-EC-35(40)-AZ; |
| | GM-EC-30(35)-AZ; GM-EC-30(40)-AZ; GM-EC-35/50-D |
| Thin Film Mid/End Clamp | GM-MC-60-TF2-AZ;GM-EC-60-TF2-AZ; |
| Earthing Clip | GM-E-EL-AZ;GM-E-EL-12; |
| Grounding Lug | GM-EK-AZ |
| Cable Clip / Cable tie | GM-XJ-AZ;GM-SL-XJ-AZ;GM-CT-AZ |
| Rail Clamp / T nut | GM-BR-02-AZ;GM-BN-25-AZ |

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This certificate is **only valid** for Tilt Mounted System on Tin Roof (Pierced Fix Roof) itself. The roof structure or the building structure and PV panels shall be assessed separately and accordingly.

This certificate is **only valid** when fixing into minimum 1.9BMT steel or minimum JD4 seasoned timber. If the fixing condition is different from those conditions, interface spacing shall be reviewed and validated.

This certificate is **only valid** as a whole. Any information extracted from this certificate is not valid if standing alone.

We find the Installation of Tilt Mounted System on Tin Roof (Pierced Fix Roof) for Australian use to be structurally sufficient based on the following conditions:

- Wind loads to AS/NZ1170.2:2011(R2016) Wind actions
- Wind region **A, B, C and D**
- Wind terrain category **2 & 3**
- Wind average recurrence interval of **200 years**
- Maximum building height **20m**
- The maximum assessed PV panel dimensions are **1670mmx1000mm & 2000mmx1000mm** and **2250mm x 1200mm**
- Maximum wind pressure is limited to **3.85kPa** for panel dimension of **2250mm x 1200mm** and **5 kPa** for panel dimension of **1670mmx1000mm** and **2000mmx1000mm**
- Weight of the PV panel and array frame to be 15 kg/m²
- Material of Rails to be **AL6005-T5**
- The spacings are determined based on fixings into minimum JD4 seasoned timber and 1.9mm thick steel purlins
- Each PV panel to be installed using **2 rails** minimum in all circumstances
- Installation of PV panels to be done in accordance with the PV panels installation manual
- The certification **excludes** assessment of roof structure and PV panels

Refer to attached summary table for interface spacing (Unit: mm)

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NOTES:

- **The recommended spacing nominated in this certification is based on the capacity of the array frame and the fixing of array frames to the roof, not the roof structure and PV panels. It is the responsibility of the installer to adopt the most critical spacing.**
- **If any of the above conditions cannot be met, the structural engineer must be notified immediately.**
- **The capacity of tilt leg with tilt angle 10 – 15 degree was obtained from test report No. XMIN1909006675ML (Dated 28.10.2019), XMIN2003001197ML (Dated 20.03.2020) and XMIN2004002494ML(Dated 17.04.2020) by SGS-CSTC Standards Technmical Services Co., Ltd Xiamen Branch Testing Center.**
- **The capacity of tilt leg with tilt angle 15 – 30 degree was obtained from test report No. XMIN1912009101ML (Dated 19.12.2019), XMIN1912009100ML (Dated 19.12.2019) and XMIN1909007115ML(Dated 28.10.2019) by SGS-CSTC Standards Technmical Services Co., Ltd Xiamen Branch Testing Center.**
- **The spacing shown in the interface tables shall be adjusted based on the assessment and requirement of the roof structures.**

Construction is to be carried out strictly in accordance with the manufacturers instructions. This work was designed by **Jiwen Deng** in accordance with the provisions of Australian Building Regulations and in accordance with sound, widely accepted engineering principles. This certificate is only valid till 19/11/2022. Gamcorp should be contacted for future validation. Contact Gamcorp for customised system or if the site conditions are not covered by this assessment.

Yours faithfully,
Gamcorp (Melbourne) Pty Ltd

L. Van Spaandonk

Principal Engineer

FIEAust CPEng NER 5038980

NT Registration: 244137ES

QLD Registration: 18703

VIC Registration: EC 45972

TAS Registration: CC7366

Attachments:

- Summary table for interface spacing, Tilt mount - Tin Roof (Pierced Fix Roof);