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Our Ref: 2907/K.Z

6 January 2017

Xiamen New Way Energy Technology Co. Ltd.
Room 402, 21 Wanghai Road, Software Park 2
Siming District, Xiamen 361008
China

PV Array Frame Engineering Certification

Installation of New Way Energy Tilt Mount Solar System on KlipLok 700 Roof

Gamcorp (Melbourne) Pty Ltd, being Structural Engineers within the meaning of Australian Building Regulations, have carried out a structural design check of New Way Energy Tilt Mount Solar System installation on KlipLok 700 roof within Australia. The design check has been based on the information, test report and schematic drawings of the system components provided by Xiamen New Way Energy Tech Co. Ltd.

We find the Installation of New Way Energy Roof Tilt Mount Solar System for Australian use to be structurally sufficient based on the following conditions:

- Wind loads to AS/NZ1170.2:2011 Admt 3:2013
- Wind region A, B, C, D
- Wind terrain category 2 & 3
- Wind average recurrence interval of 500 years
- Maximum building height 20m
- Maximum PV panel dimensions to be 2000mm x 1000mm
- Maximum weight of the PV panel and array frame to be 15 kg/m²
- Rails to be ATL-TYN-28, ATL-TYN-53 and CG-010
- The roof interface to be New Way Energy tilt leg ATL-TYN-56 on Klamp Lock 700 clips
- Roof sheeting to be Lysaght KlipLok 700 with minimum BMT of 0.42mm
- Capacity of Klamp Lock 700 clips is from the test report no.MT-15/317
- Each PV panel to be installed using 2 rails minimum in all circumstances
- Installation of PV array to be done in accordance with the PV installation manual
- The certification **excludes** assessment of roof structure and PV panels

Refer to attached summary table for interface spacing

NOTES:

- **The recommended spacing nominated in this certification is based on the capacity of the array frame, not the roof structure and PV panel. It is the responsibility of the installer to adopt the most critical spacing.**

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- **If any of the above conditions cannot be met, the structural engineer must be notified immediately.**

Construction is to be carried out strictly in accordance with the manufacturers instructions. This work was designed in accordance with the provisions of Australian Building Regulations and in accordance with sound, widely accepted engineering principles.

Yours faithfully,
Gamcorp (Melbourne) Pty Ltd



Martin Gamble
Managing Director
MAICD



Mudi Ariyaratna
B.Eng(Civil)(Hons)Monash, M.Eng&Mgt, MIEAust,
CPEng, NPER, RBP EC-39699, RPEQ- 15899

Structural Design Documentation

**Adjustable Tilt Leg PV Racking System
KlipLok 700 Interface Spacing Table
According to AS/NZS 1170.2-2011 Amdt 3-2013
with ATL-TYN-28 Rails
within Australia
Terrain Category 2 & 3**

For: Xiamen New Way Energy
Technology Co. Ltd.



Job Number: 2907
Date: 6 January 2017

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ISO 9001:2008 Registered Firm
Certificate No: AU1222

Job No: 2907

Client: Xiamen New Way Energy Technology Co. Ltd.

Project: Tilt Leg with KlipLok 700 Interface Spacing Table

Address: within Australia

Australian Standards

AS/NZS 1170. 2011 – Structural Design Actions

Part 0 – General Principles

Part 1 – Permanent imposed and other actions

Part 2 – Wind Actions

AS/NZS 1252 – High Strength Structural Bolting

AS 4055 – Wind Loads for Housing

AS/NZS 1664 – Aluminium Structures

AS 4100 – Steel Structures

AS/NZS 4600 – Cold-Formed Steel Structures

Wind Terrain Category:

WTC 2 & 3

Designed: K.Z

Date: Jan-17

Client: **Xiamen New Way Energy Technology Co. Ltd.**
 Project: **Tilt Leg with KlipLok 700 Interface Spacing Table**
 Address: **within Australia**
 Designed: **K.Z**

Job: **2907**
 Date: **Jan-17**

Checked: **M.A**

Tilt Leg with KlipLok 700 Interface Spacing Table

Type of Rail ATL-TYN-28
 Type of Interface Klamp Lock 700 Clip
 Solar Panel Dimension 2m x 1m
Terrain category 2

Tilt Angle from Horizontal $10^\circ < \Phi \leq 15^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	600	918	1250	1860	493	752	1020	1585	446	679	920	1423	421	640	866	1338
B	368	559	755	1162	304	460	620	950	275	416	560	856	260	393	528	807
C	247	374	503	767	204	308	414	629	185	279	374	569	175	263	353	536
D	152	230	308	466	126	190	254	384	114	172	230	348	108	162	217	328

Tilt Angle from Horizontal $15^\circ < \Phi < 30^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	327	496	669	1027	270	409	550	841	245	370	497	758	231	349	469	715
B	202	306	410	624	167	252	338	513	151	228	306	464	143	216	289	438
C	136	205	275	416	113	170	227	343	102	154	206	311	96	145	194	293
D	84	127	169	256	70	105	140	211	63	95	127	191	60	90	120	181

Tilt Angle from Horizontal $\Phi = 30^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	267	404	543	830	220	333	447	681	199	301	404	615	188	284	382	580
B	165	249	334	507	136	206	275	417	124	186	249	377	117	176	236	356
C	111	168	224	339	92	139	185	280	83	126	168	253	79	119	159	239
D	69	103	138	208	57	86	114	172	52	78	104	156	49	73	98	147

Tilt Leg with KlipLok 700 Interface Spacing Table

Type of Rail ATL-TYN-28
 Type of Interface Klamp Lock 700 Clip
 Solar Panel Dimension 2m x 1m
Terrain category 2

Tilt Angle from Horizontal $30^\circ < \Phi \leq 45^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	209	315	423	644	172	260	349	530	156	236	316	479	148	223	298	452
B	129	195	261	395	107	161	216	326	97	146	195	295	92	138	184	278
C	87	131	176	265	72	109	145	219	65	98	132	198	62	93	124	187
D	54	81	108	163	45	67	90	135	41	61	81	122	38	58	77	116

Tilt Angle from Horizontal $20^\circ < \Phi \leq 45^\circ$
 Roof Angle - $11^\circ - 20^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	255	386	519	792	210	318	427	650	191	288	386	587	180	272	365	554
B	158	238	319	484	130	197	263	398	118	178	238	361	112	168	225	340
C	106	160	214	324	88	132	177	267	80	120	160	242	75	113	152	229
D	66	99	132	199	54	82	109	165	49	74	99	149	47	70	94	141

Tilt Angle from Horizontal $30^\circ < \Phi \leq 45^\circ$
 Roof Angle - $21^\circ - 30^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	423	644	872	1347	349	530	715	1098	316	479	645	990	298	452	609	932
B	261	395	532	812	216	326	438	666	195	295	396	602	184	278	374	567
C	176	265	356	540	145	219	293	444	132	198	265	402	124	187	251	379
D	108	163	219	330	90	135	180	272	81	122	164	247	77	116	154	233

Client: **Xiamen New Way Energy Technology Co. Ltd.**
 Project: **Tilt Leg with KlipLok 700 Interface Spacing Table**
 Address: **within Australia**
 Designed: **K.Z**

Job: **2907**
 Date: **Jan-17**

Checked: **M.A**

Tilt Leg with KlipLok 700 Interface Spacing Table

Type of Rail ATL-TYN-28
 Type of Interface Klamp Lock 700 Clip
 Solar Panel Dimension 2m x 1m
Terrain category 3

Tilt Angle from Horizontal $10^\circ < \Phi \leq 15^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	727	1118	1528	1968	727	1118	1528	1968	628	962	1312	1885	561	857	1165	1819
B	445	677	917	1419	445	677	917	1419	385	586	791	1219	345	523	705	1084
C	298	452	608	931	298	452	608	931	259	391	526	804	231	350	470	716
D	183	277	371	564	183	277	371	564	159	240	322	488	143	215	288	436

Tilt Angle from Horizontal $15^\circ < \Phi < 30^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	395	601	812	1252	395	601	812	1252	343	520	701	1077	306	464	626	958
B	244	369	496	756	244	369	496	756	212	320	429	654	189	286	384	583
C	164	248	332	503	164	248	332	503	143	215	288	436	128	192	257	390
D	101	153	204	308	101	153	204	308	88	132	177	267	79	119	159	239

Tilt Angle from Horizontal $\Phi = 30^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	322	488	658	1009	322	488	658	1009	279	423	569	870	250	378	508	775
B	199	300	403	613	199	300	403	613	173	261	349	530	155	233	313	474
C	134	202	270	409	134	202	270	409	116	175	235	355	104	157	210	317
D	83	125	167	251	83	125	167	251	72	108	145	218	64	97	130	195

Tilt Leg with KlipLok 700 Interface Spacing Table

Type of Rail ATL-TYN-28
 Type of Interface Klamp Lock 700 Clip
 Solar Panel Dimension 2m x 1m
Terrain category 3

Tilt Angle from Horizontal $30^\circ < \Phi \leq 45^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	252	381	512	781	252	381	512	781	218	330	443	675	195	295	396	602
B	156	235	315	478	156	235	315	478	135	204	273	414	121	183	244	370
C	105	158	212	320	105	158	212	320	91	137	184	277	82	123	165	248
D	65	98	131	197	65	98	131	197	56	85	113	171	51	76	102	153

Tilt Angle from Horizontal $20^\circ < \Phi \leq 45^\circ$
 Roof Angle - $11^\circ - 20^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	395	601	812	962	395	601	812	962	343	520	701	830	306	464	626	740
B	244	369	496	586	244	369	496	586	212	320	429	507	189	286	384	453
C	164	248	332	391	164	248	332	391	143	215	288	339	128	192	257	303
D	101	153	204	240	101	153	204	240	88	132	177	208	79	119	159	187

Tilt Angle from Horizontal $30^\circ < \Phi \leq 45^\circ$
 Roof Angle - $21^\circ - 30^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	727	1118	1528	1650	727	1118	1528	1650	628	962	1312	1414	561	857	1165	1255
B	445	677	917	987	445	677	917	987	385	586	791	851	345	523	705	758
C	298	452	608	654	298	452	608	654	259	391	526	565	231	350	470	505
D	183	277	371	399	183	277	371	399	159	240	322	346	143	215	288	309

General Notes

Note 1 Following components are satisfied to use according to AS/NZS 1170.2 - 2011 Amdt 3 - 2013

Components	Part Number	Description
Standard Rail	ATL-TYN-28	Antai Rail II
Light Rail	ATL-TYN-53	Antai Rail III
Light Rail 2	CG-010	Antai CG-010 Light Rail
Inter Clamp	ATL-FWNY-09	Internal fixing between rail and Solar Panel
End Clamp	ALT-TYN-14	End fixing between rail and Solar Panel
Adjustable Tilt Leg	ATL-TYN-57	Adjustable back legs
Rail Splice	ATL-TYN-21	Rail Connection
Klamp Lock 700 Clip		Capacity from test report No.MT-15/317

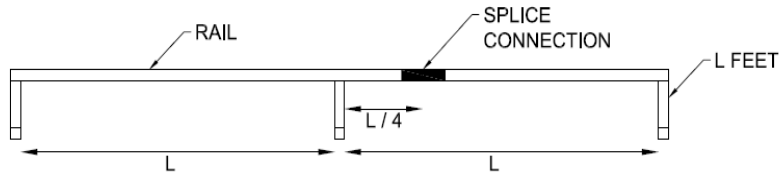
Note 2 Refer attached Gamcorp Roof Definition and Figure 5.3 of AS/NZS 1170.2:2011 for definition of roof zones

Note 3 Terrain Category 2 (TC2) refers to open terrain, including grassland, with well-scattered obstructions having heights generally from 1.5 m to 5 m, with no more than two obstruction per obstructions per hectare.

Terrain Category 3 (TC3) refers to numerous closely spaced obstructions having heights generally from 3m to 10m. For example, suburban housing or light industrial estates. Refer clause 4.2.1 of AS/NZS 1170.2-2011 Amdt 3-2013 for definition of Terrain Category 3.

Note 4 Above tables apply when the roof sheeting is **Lysaght Kliplok 700** with minimum 0.42 BMT.

Note 5 Splice connection must placed quarter length of the spacing of the L foot. No Splice connection should be placed at the centre of spacing or over the L foot.



Structural Design Documentation

**Adjustable Tilt Leg PV Racking System
KlipLok 700 Interface Spacing Table
According to AS/NZS 1170.2-2011 Amdt 3-2013
with ATL-TYN-53 Rails
within Australia
Terrain Category 2 & 3**

For: Xiamen New Way Energy
Technology Co. Ltd.



Job Number: 2907
Date: 6 January 2017

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Certificate No: AU1222

Job No: 2907

Client: Xiamen New Way Energy Technology Co. Ltd.

Project: Tilt Leg with KlipLok 700 Interface Spacing Table

Address: within Australia

Australian Standards

AS/NZS 1170. 2011 – Structural Design Actions

Part 0 – General Principles

Part 1 – Permanent imposed and other actions

Part 2 – Wind Actions

AS/NZS 1252 – High Strength Structural Bolting

AS 4055 – Wind Loads for Housing

AS/NZS 1664 – Aluminium Structures

AS 4100 – Steel Structures

AS/NZS 4600 – Cold-Formed Steel Structures

Wind Terrain Category:

WTC 2 & 3

Designed: K.Z

Date: Jan-17

Client: **Xiamen New Way Energy Technology Co. Ltd.**
 Project: **Tilt Leg with KlipLok 700 Interface Spacing Table**
 Address: **within Australia**
 Designed: **K.Z**

Job: **2907**
 Date: **Jan-17**

Checked: **M.A**

Tilt Leg with KlipLok 700 Interface Spacing Table

Type of Rail ATL-TYN-53
 Type of Interface Klamp Lock 700 Clip
 Solar Panel Dimension 2m x 1m
Terrain category 2

Tilt Angle from Horizontal $10^\circ < \Phi \leq 15^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	600	918	1250	1821	493	752	1020	1585	446	679	920	1423	421	640	866	1338
B	368	559	755	1162	304	460	620	950	275	416	560	856	260	393	528	807
C	247	374	503	767	204	308	414	629	185	279	374	569	175	263	353	536
D	152	230	308	466	126	190	254	384	114	172	230	348	108	162	217	328

Tilt Angle from Horizontal $15^\circ < \Phi < 30^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	327	496	669	1027	270	409	550	841	245	370	497	758	231	349	469	715
B	202	306	410	624	167	252	338	513	151	228	306	464	143	216	289	438
C	136	205	275	416	113	170	227	343	102	154	206	311	96	145	194	293
D	84	127	169	256	70	105	140	211	63	95	127	191	60	90	120	181

Tilt Angle from Horizontal $\Phi = 30^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	267	404	543	830	220	333	447	681	199	301	404	615	188	284	382	580
B	165	249	334	507	136	206	275	417	124	186	249	377	117	176	236	356
C	111	168	224	339	92	139	185	280	83	126	168	253	79	119	159	239
D	69	103	138	208	57	86	114	172	52	78	104	156	49	73	98	147

Tilt Leg with KlipLok 700 Interface Spacing Table

Type of Rail ATL-TYN-53
 Type of Interface Klamp Lock 700 Clip
 Solar Panel Dimension 2m x 1m
Terrain category 2

Tilt Angle from Horizontal $30^\circ < \Phi \leq 45^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	209	315	423	644	172	260	349	530	156	236	316	479	148	223	298	452
B	129	195	261	395	107	161	216	326	97	146	195	295	92	138	184	278
C	87	131	176	265	72	109	145	219	65	98	132	198	62	93	124	187
D	54	81	108	163	45	67	90	135	41	61	81	122	38	58	77	116

Tilt Angle from Horizontal $20^\circ < \Phi \leq 45^\circ$
 Roof Angle - $11^\circ - 20^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	255	386	519	792	210	318	427	650	191	288	386	587	180	272	365	554
B	158	238	319	484	130	197	263	398	118	178	238	361	112	168	225	340
C	106	160	214	324	88	132	177	267	80	120	160	242	75	113	152	229
D	66	99	132	199	54	82	109	165	49	74	99	149	47	70	94	141

Tilt Angle from Horizontal $30^\circ < \Phi \leq 45^\circ$
 Roof Angle - $21^\circ - 30^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	423	644	872	1347	349	530	715	1098	316	479	645	990	298	452	609	932
B	261	395	532	812	216	326	438	666	195	295	396	602	184	278	374	567
C	176	265	356	540	145	219	293	444	132	198	265	402	124	187	251	379
D	108	163	219	330	90	135	180	272	81	122	164	247	77	116	154	233

Client: **Xiamen New Way Energy Technology Co. Ltd.**
 Project: **Tilt Leg with KlipLok 700 Interface Spacing Table**
 Address: **within Australia**
 Designed: **K.Z**

Job: **2907**
 Date: **Jan-17**

Checked: **M.A**

Tilt Leg with KlipLok 700 Interface Spacing Table

Type of Rail ATL-TYN-53
 Type of Interface Klamp Lock 700 Clip
 Solar Panel Dimension 2m x 1m
Terrain category 3

Tilt Angle from Horizontal $10^\circ < \Phi \leq 15^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	727	1118	1528	1928	727	1118	1528	1928	628	962	1312	1846	561	857	1165	1786
B	445	677	917	1419	445	677	917	1419	385	586	791	1219	345	523	705	1084
C	298	452	608	931	298	452	608	931	259	391	526	804	231	350	470	716
D	183	277	371	564	183	277	371	564	159	240	322	488	143	215	288	436

Tilt Angle from Horizontal $15^\circ < \Phi < 30^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	395	601	812	1252	395	601	812	1252	343	520	701	1077	306	464	626	958
B	244	369	496	756	244	369	496	756	212	320	429	654	189	286	384	583
C	164	248	332	503	164	248	332	503	143	215	288	436	128	192	257	390
D	101	153	204	308	101	153	204	308	88	132	177	267	79	119	159	239

Tilt Angle from Horizontal $\Phi = 30^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	322	488	658	1009	322	488	658	1009	279	423	569	870	250	378	508	775
B	199	300	403	613	199	300	403	613	173	261	349	530	155	233	313	474
C	134	202	270	409	134	202	270	409	116	175	235	355	104	157	210	317
D	83	125	167	251	83	125	167	251	72	108	145	218	64	97	130	195

Tilt Leg with KlipLok 700 Interface Spacing Table

Type of Rail ATL-TYN-53
 Type of Interface Klamp Lock 700 Clip
 Solar Panel Dimension 2m x 1m
Terrain category 3

Tilt Angle from Horizontal $30^\circ < \Phi \leq 45^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	252	381	512	781	252	381	512	781	218	330	443	675	195	295	396	602
B	156	235	315	478	156	235	315	478	135	204	273	414	121	183	244	370
C	105	158	212	320	105	158	212	320	91	137	184	277	82	123	165	248
D	65	98	131	197	65	98	131	197	56	85	113	171	51	76	102	153

Tilt Angle from Horizontal $20^\circ < \Phi \leq 45^\circ$
 Roof Angle - $11^\circ - 20^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	395	601	812	962	395	601	812	962	343	520	701	830	306	464	626	740
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C	164	248	332	391	164	248	332	391	143	215	288	339	128	192	257	303
D	101	153	204	240	101	153	204	240	88	132	177	208	79	119	159	187

Tilt Angle from Horizontal $30^\circ < \Phi \leq 45^\circ$
 Roof Angle - $21^\circ - 30^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	727	1118	1528	1650	727	1118	1528	1650	628	962	1312	1414	561	857	1165	1255
B	445	677	917	987	445	677	917	987	385	586	791	851	345	523	705	758
C	298	452	608	654	298	452	608	654	259	391	526	565	231	350	470	505
D	183	277	371	399	183	277	371	399	159	240	322	346	143	215	288	309

General Notes

Note 1 Following components are satisfied to use according to AS/NZS 1170.2 - 2011 Amdt 3 - 2013

Components	Part Number	Description
Standard Rail	ATL-TYN-28	Antai Rail II
Light Rail	ATL-TYN-53	Antai Rail III
Light Rail 2	CG-010	Antai CG-010 Light Rail
Inter Clamp	ATL-FWNY-09	Internal fixing between rail and Solar Panel
End Clamp	ALT-TYN-14	End fixing between rail and Solar Panel
Adjustable Tilt Leg	ATL-TYN-57	Adjustable back legs
Rail Splice	ATL-TYN-21	Rail Connection
Klamp Lock 700 Clip		Capacity from test report No.MT-15/317

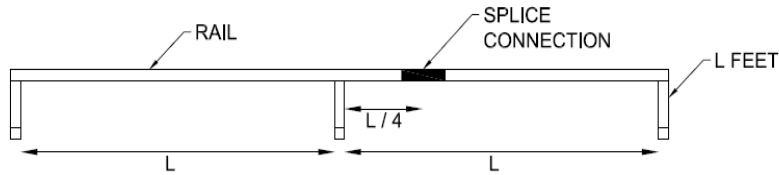
Note 2 Refer attached Gamcorp Roof Definition and Figure 5.3 of AS/NZS 1170.2:2011 for definition of roof zones

Note 3 Terrain Category 2 (TC2) refers to open terrain, including grassland, with well-scattered obstructions having heights generally from 1.5 m to 5 m, with no more than two obstruction per obstructions per hectare.

Terrain Category 3 (TC3) refers to numerous closely spaced obstructions having heights generally from 3m to 10m. For example, suburban housing or light industrial estates. Refer clause 4.2.1 of AS/NZS 1170.2-2011 Amdt 3-2013 for definition of Terrain Category 3.

Note 4 Above tables apply when the roof sheeting is **Lysaght Kliplok 700** with minimum 0.42 BMT.

Note 5 Splice connection must placed quarter length of the spacing of the L foot. No Splice connection should be placed at the centre of spacing or over the L foot.



Structural Design Documentation

**Adjustable Tilt Leg PV Racking System
KlipLok 700 Interface Spacing Table
According to AS/NZS 1170.2-2011 Amdt 3-2013
with CG-010 Rails
within Australia
Terrain Category 2 & 3**

For: Xiamen New Way Energy
Technology Co. Ltd.



Job Number: 2907
Date: 6 January 2017

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ISO 9001:2008 Registered Firm
Certificate No: AU1222

Job No: 2907

Client: Xiamen New Way Energy Technology Co. Ltd.

Project: Tilt Leg with KlipLok 700 Interface Spacing Table

Address: within Australia

Australian Standards

AS/NZS 1170. 2011 – Structural Design Actions

Part 0 – General Principles

Part 1 – Permanent imposed and other actions

Part 2 – Wind Actions

AS/NZS 1252 – High Strength Structural Bolting

AS 4055 – Wind Loads for Housing

AS/NZS 1664 – Aluminium Structures

AS 4100 – Steel Structures

AS/NZS 4600 – Cold-Formed Steel Structures

Wind Terrain Category:

WTC 2 & 3

Designed: K.Z

Date: Jan-17

Client: **Xiamen New Way Energy Technology Co. Ltd.**
 Project: **Tilt Leg with KlipLok 700 Interface Spacing Table**
 Address: **within Australia**
 Designed: **K.Z**

Job: **2907**
 Date: **Jan-17**

Checked: **M.A**

Tilt Leg with KlipLok 700 Interface Spacing Table

Type of Rail CG-010
 Type of Interface Klamp Lock 700 Clip
 Solar Panel Dimension 2m x 1m
Terrain category 2

Tilt Angle from Horizontal $10^\circ < \Phi \leq 15^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	600	918	1250	1558	493	752	1020	1474	446	679	920	1423	421	640	866	1338
B	368	559	755	1162	304	460	620	950	275	416	560	856	260	393	528	807
C	247	374	503	767	204	308	414	629	185	279	374	569	175	263	353	536
D	152	230	308	466	126	190	254	384	114	172	230	348	108	162	217	328

Tilt Angle from Horizontal $15^\circ < \Phi < 30^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	327	496	669	1027	270	409	550	841	245	370	497	758	231	349	469	715
B	202	306	410	624	167	252	338	513	151	228	306	464	143	216	289	438
C	136	205	275	416	113	170	227	343	102	154	206	311	96	145	194	293
D	84	127	169	256	70	105	140	211	63	95	127	191	60	90	120	181

Tilt Angle from Horizontal $\Phi = 30^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	267	404	543	830	220	333	447	681	199	301	404	615	188	284	382	580
B	165	249	334	507	136	206	275	417	124	186	249	377	117	176	236	356
C	111	168	224	339	92	139	185	280	83	126	168	253	79	119	159	239
D	69	103	138	208	57	86	114	172	52	78	104	156	49	73	98	147

Tilt Leg with KlipLok 700 Interface Spacing Table

Type of Rail CG-010
 Type of Interface Klamp Lock 700 Clip
 Solar Panel Dimension 2m x 1m
Terrain category 2

Tilt Angle from Horizontal $30^\circ < \Phi \leq 45^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	209	315	423	644	172	260	349	530	156	236	316	479	148	223	298	452
B	129	195	261	395	107	161	216	326	97	146	195	295	92	138	184	278
C	87	131	176	265	72	109	145	219	65	98	132	198	62	93	124	187
D	54	81	108	163	45	67	90	135	41	61	81	122	38	58	77	116

Tilt Angle from Horizontal $20^\circ < \Phi \leq 45^\circ$
 Roof Angle - $11^\circ - 20^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	255	386	519	792	210	318	427	650	191	288	386	587	180	272	365	554
B	158	238	319	484	130	197	263	398	118	178	238	361	112	168	225	340
C	106	160	214	324	88	132	177	267	80	120	160	242	75	113	152	229
D	66	99	132	199	54	82	109	165	49	74	99	149	47	70	94	141

Tilt Angle from Horizontal $30^\circ < \Phi \leq 45^\circ$
 Roof Angle - $21^\circ - 30^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	423	644	872	1347	349	530	715	1098	316	479	645	990	298	452	609	932
B	261	395	532	812	216	326	438	666	195	295	396	602	184	278	374	567
C	176	265	356	540	145	219	293	444	132	198	265	402	124	187	251	379
D	108	163	219	330	90	135	180	272	81	122	164	247	77	116	154	233

Client: **Xiamen New Way Energy Technology Co. Ltd.**
 Project: **Tilt Leg with KlipLok 700 Interface Spacing Table**
 Address: **within Australia**
 Designed: **K.Z**

Job: **2907**
 Date: **Jan-17**

Checked: **M.A**

Tilt Leg with KlipLok 700 Interface Spacing Table

Type of Rail CG-010
 Type of Interface Klamp Lock 700 Clip
 Solar Panel Dimension 2m x 1m
Terrain category 3

Tilt Angle from Horizontal $10^\circ < \Phi \leq 15^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	727	1118	1460	1649	727	1118	1460	1649	628	962	1312	1580	561	857	1165	1528
B	445	677	917	1419	445	677	917	1419	385	586	791	1219	345	523	705	1084
C	298	452	608	931	298	452	608	931	259	391	526	804	231	350	470	716
D	183	277	371	564	183	277	371	564	159	240	322	488	143	215	288	436

Tilt Angle from Horizontal $15^\circ < \Phi < 30^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	395	601	812	1252	395	601	812	1252	343	520	701	1077	306	464	626	958
B	244	369	496	756	244	369	496	756	212	320	429	654	189	286	384	583
C	164	248	332	503	164	248	332	503	143	215	288	436	128	192	257	390
D	101	153	204	308	101	153	204	308	88	132	177	267	79	119	159	239

Tilt Angle from Horizontal $\Phi = 30^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	322	488	658	1009	322	488	658	1009	279	423	569	870	250	378	508	775
B	199	300	403	613	199	300	403	613	173	261	349	530	155	233	313	474
C	134	202	270	409	134	202	270	409	116	175	235	355	104	157	210	317
D	83	125	167	251	83	125	167	251	72	108	145	218	64	97	130	195

Tilt Leg with KlipLok 700 Interface Spacing Table

Type of Rail CG-010
 Type of Interface Klamp Lock 700 Clip
 Solar Panel Dimension 2m x 1m
Terrain category 3

Tilt Angle from Horizontal $30^\circ < \Phi \leq 45^\circ$
 Roof Angle - $\leq 10^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	252	381	512	781	252	381	512	781	218	330	443	675	195	295	396	602
B	156	235	315	478	156	235	315	478	135	204	273	414	121	183	244	370
C	105	158	212	320	105	158	212	320	91	137	184	277	82	123	165	248
D	65	98	131	197	65	98	131	197	56	85	113	171	51	76	102	153

Tilt Angle from Horizontal $20^\circ < \Phi \leq 45^\circ$
 Roof Angle - $11^\circ - 20^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	395	601	812	962	395	601	812	962	343	520	701	830	306	464	626	740
B	244	369	496	586	244	369	496	586	212	320	429	507	189	286	384	453
C	164	248	332	391	164	248	332	391	143	215	288	339	128	192	257	303
D	101	153	204	240	101	153	204	240	88	132	177	208	79	119	159	187

Tilt Angle from Horizontal $30^\circ < \Phi \leq 45^\circ$
 Roof Angle - $21^\circ - 30^\circ$

Wind Region	Building Height - H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	727	1118	1460	1489	727	1118	1460	1489	628	962	1312	1414	561	857	1165	1255
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C	298	452	608	654	298	452	608	654	259	391	526	565	231	350	470	505
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General Notes

Note 1 Following components are satisfied to use according to AS/NZS 1170.2 - 2011 Amdt 3 - 2013

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Rail Splice	ATL-TYN-21	Rail Connection
Klamp Lock 700 Clip		Capacity from test report No.MT-15/317

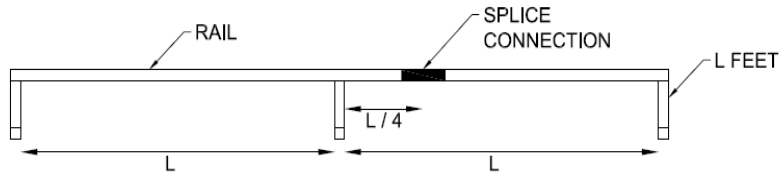
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Note 4 Above tables apply when the roof sheeting is **Lysaght Kliplik 700** with minimum 0.42 BMT.

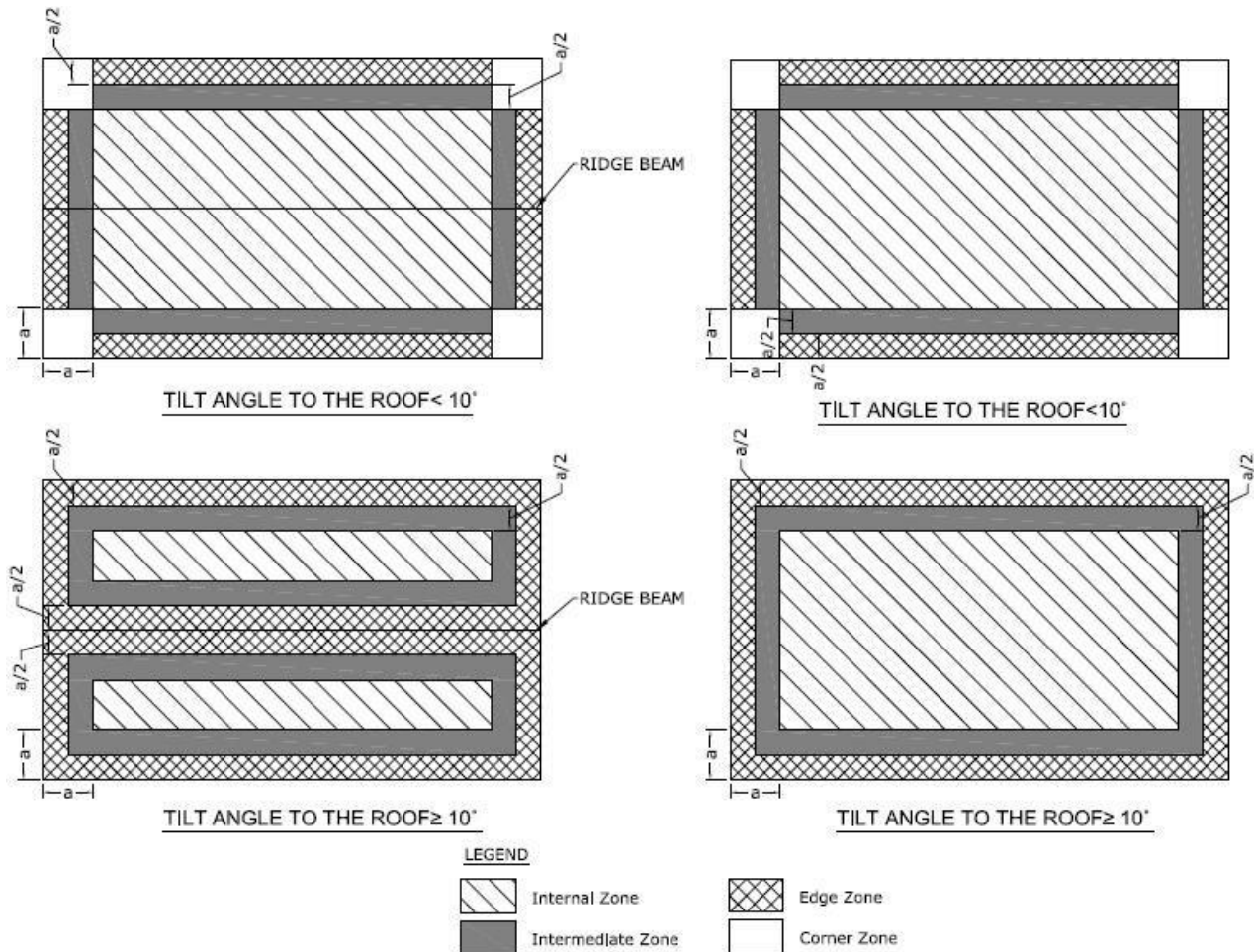
Note 5 Splice connection must placed quarter length of the spacing of the L foot. No Splice connection should be placed at the centre of spacing or over the L foot.



For tilt array systems

Condition:

- a. For pitched roofs where roof angle is between 1° and 45° .



In the front figure h = height, b = width and d = length of the building.

Step 1: Determine building height, width and length.

Step 2: Multiply the width of the building by 0.2

Step 3: Multiply the length of the building by 0.2

Step 4: Determine **lowest** value between: (height of the building) **and** $0.2 \times$ length of the building **and** $0.2 \times$ width of the building

Step 5: The lowest value in step 4, equates to **a**.

