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pv magazine webinars

Mounting big modules on rooftop PV

16 May 2023

2:00 pm – 3:00 pm | BST, London
3:00 pm – 4:00 pm | CEST, Berlin
4:00 pm – 5:00 pm | EEST, Athens

Beatriz Santos
Editor
pv magazine

Jason McCabe
Senior product manager UK & EU
Clenergy

Can Kökten
Vice President
Clenergy

Welcome!

pv magazine webinars

Do you have any questions? ❓ 🙋

Send them in via the Q&A tab. 👉 We aim to answer as many as we can today!

You can also let us know of any tech problems there.

We are recording this webinar today. 📹

We‘ll let you know by email where to find it and the slide deck, so you can re-watch it at your convenience. 👀 💡

Our Strengths

16 Years of Experience in Mounting Systems

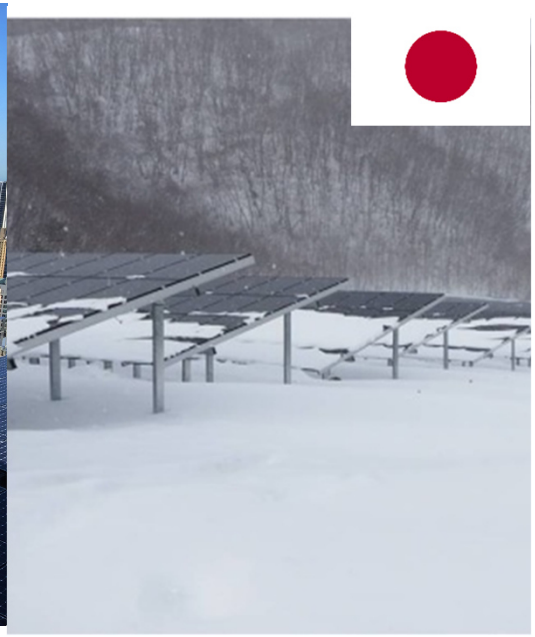
- 20 GW of Worldwide installations
- No.1 in Australia last 10 years
- 65000 Installations in Germany
- 30000 Installations in UK

Strong after sales support(Win-Win)

- Establishment of close contact with Customers
- Permanent improvements based on customer´s feedbacks:
  - New Product development for new market entry
  - Logistics
  - Packaging

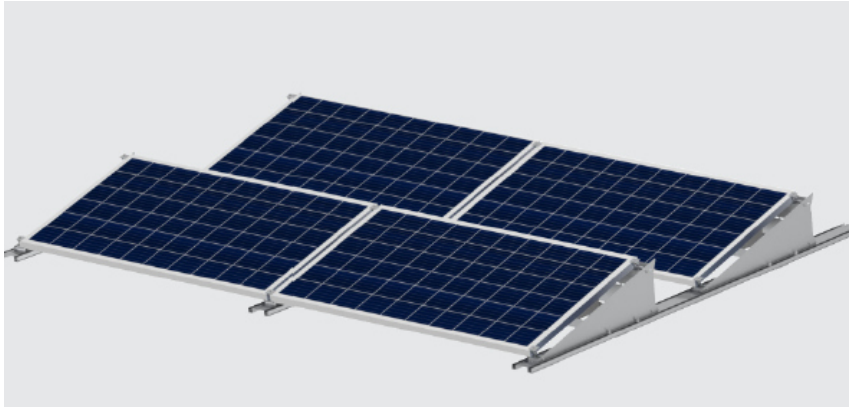
R&D Competence

- International Background
- Owner of Patent’s = 66



Ascent

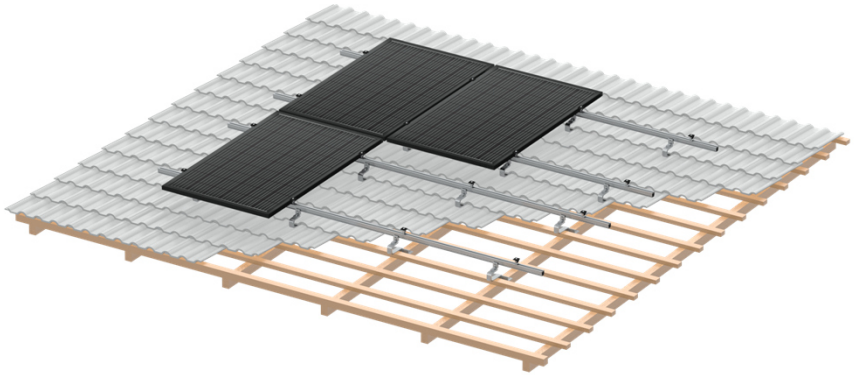
- **Roof Friendly Design**
  - the non-penetrative solution for flat roofs with 10 and 15°set angle
  - No penetration to the roof structure- 100% waterproof



- **Ballast Optimized**
  - Aerodynamic optimized construction
  - Wind tunnel Tested
  - Optimum ventilation for maximum energy output

- **Less Labor-1 Screwdriver enough for MW´s**
  - Click connections between Legs and Bases
  - no tools are used during the Legs and Bases and
  - preassembled

SolarRoof Pro 2.0



SRPII is a highly adjustable roof-mounting solution suitable for most types of pitched roofs

One Tool Installation

High Flexibility

Rail

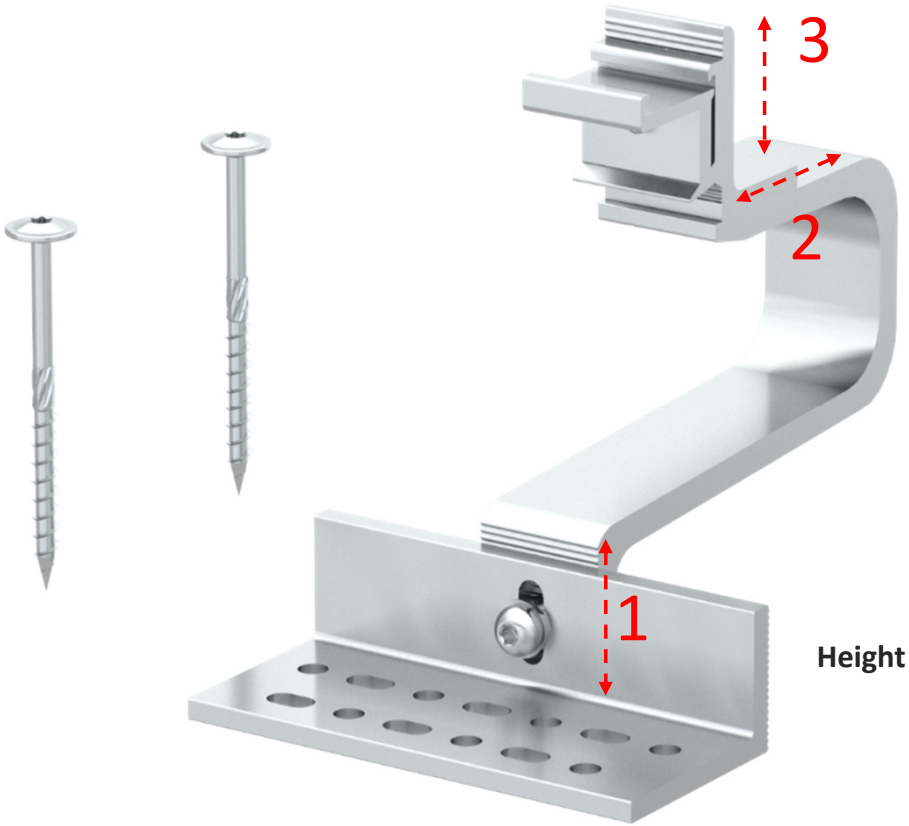
Universal Clamp

Interface

4 Way Adjustable Hook

Flexibility on the construction

- Patented roof hook, can adjust the whole system in four ways and multiple directions
- Suitable for tiles with different thickness and length
- Unevenness on the roof surface will be compensated and straight installation will be enabled for installers

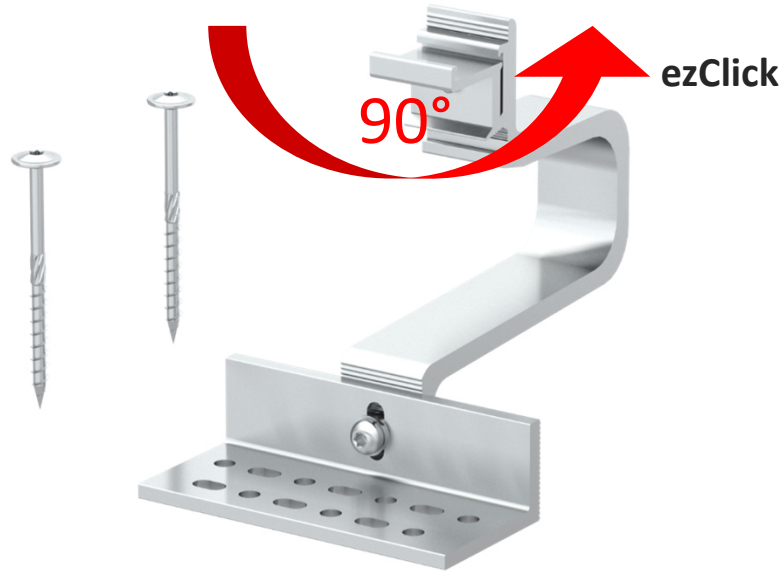


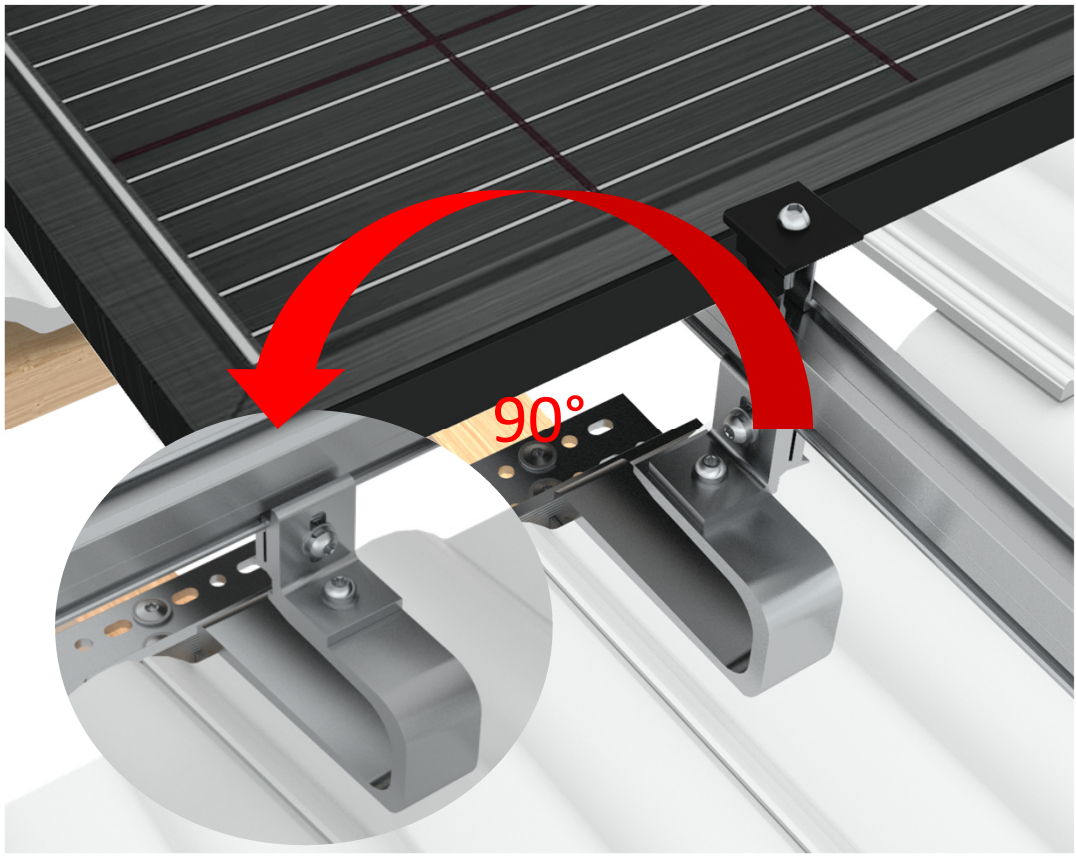
ezClick

Height Adjustment 40-56 mm

4 Way Adjustable Hook

Flexibility on the consturction





Vertical and Horizontal Installation in the same Kit

- Saving Effort
- Easy Logistics Management

Quality Guaranty

TÜV-Certified

WARRANTY

Mechanics
Calculation & Analysis

Interesting Facts

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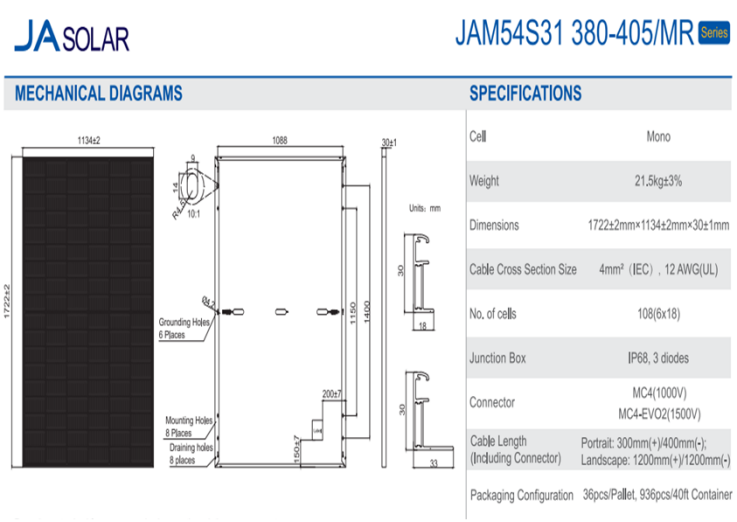
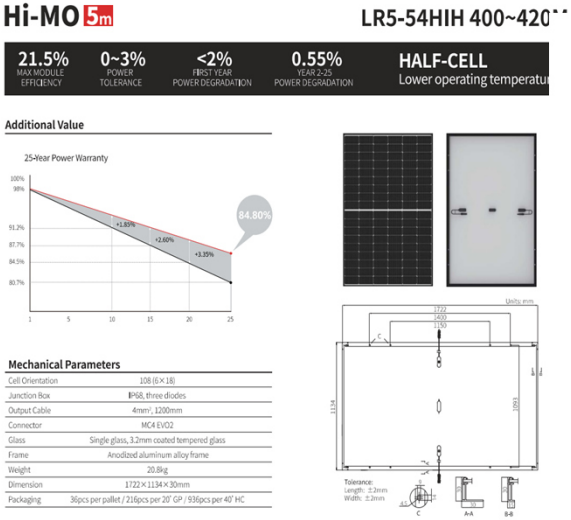
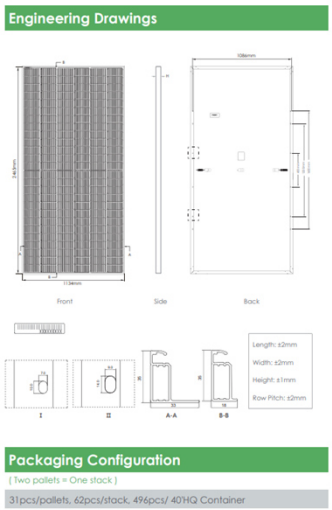
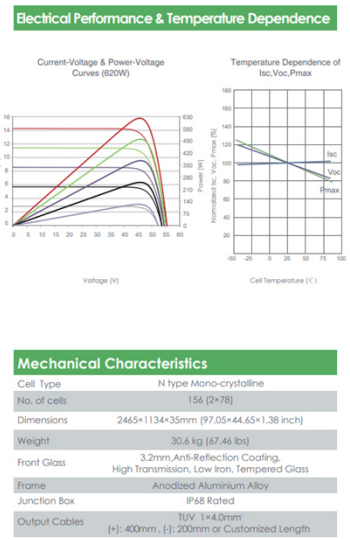
Back in September 2021 PV magazine shared an article regarding some prominent module producers agreeing on a standardization of module sizes. This was actually a follow up to an earlier white paper on the topic, after calls from other prominent module producers started to call for a standardization because clearly modules are getting more and more powerful and there was a risk of modules constantly getting bigger and bigger .









JinKO Solar

LONGi Solar

JA SOLAR

Trinasolar

Interesting Facts

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New standardised approach gives 54 x cell = 1722mm x 1134mm / 72 x cell = 2278mm x 1134mm / 78 x cell = 2465mm x 1134mm. Whilst this is welcome news, and it of course makes future product development of mounting structures somewhat clearer it does create some initial issues.

- For example most existing wind tunnel studies for flat roof systems had been conducted on traditional sized modules.
- Most mountings components, support rail for example had been designed for modules up <1000mm in width and < 2000mm in length.
- Project planning can even be affected with bigger modules. In an ideal world everyone would use the 1722mm x 1134mm, however we know that this simply is not the case. It could be that part of a roof mounted array could be in roof zones with higher wind forces, it could also mean more fixings are necessary to support larger array areas.
- I would like to share two small examples of why correct mounting planning is absolutely critical because of these topics.

JinKO Solar LONGi Solar JA SOLAR Trinasolar

Interesting Facts

Interesting Facts

Example x 1

- A standard residential building with a 8m building height with a 30* roof pitch switching between terrain category II - III (or city / exposed countryside) we have the following results.

Wind Load 0.52 - 0.97KN/ m2 Snow Load 0.47 - 0.69KN/m2

Wind Load 0.52 - 0.89KN/ m2 Snow Load 0.50 – 0.92KN/m2

Wind Load 0.42 – 0.72KN/ m2 Snow Load 0.90 - 2.2KN/m2

Wind Load 0.75 - 1.5KN/ m2 Snow Load 0.57 - 1.2KN/m2

Actually apart from these small examples above, you find across Europe we have wind loads from 0.37 – 1.6KN/m2 and snow loads between 0.18 – 2.5KN/m2 dependent on the location / terrain / building height / and a number of other factors the values change significantly. Not only do the values change significantly across Europe, but even in the same Country the location changes the results considerably.

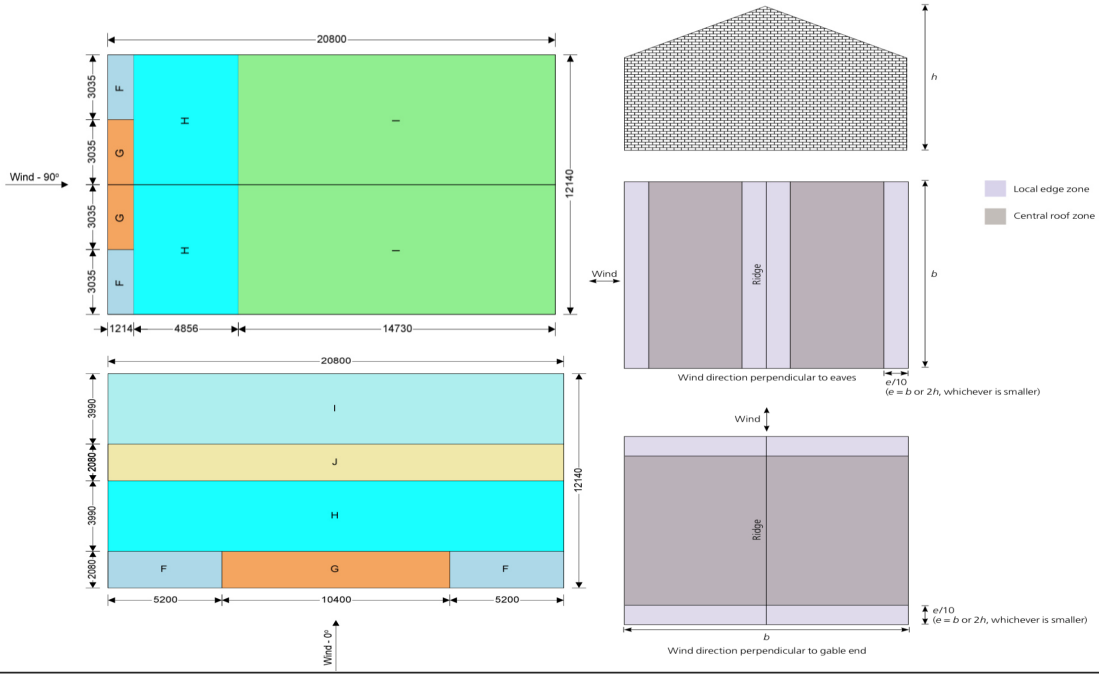
Interesting Facts

Clearly with such a a vast range in the difference of wind and snow loads a standard configuration of fixing supports and rail cannot be the same, also considering the module may be 1.95m2 / 2.58m2 / 2.79m2 . It would absolutely be project specific and with the following calculations it can be proven that different module positions in different roof zones have different wind forces to resist and the potential snow load both horizontal and vertical.

Wind $= W=qp\ Cp\ net\ /\ Fv = 1/\sum n\ modules\ w\ Aref\ Yf$

Snow $= Skv = \mu 1\ x\ Ce\ x\ Ct\ x\ Sk\ x\ Cos^{a}$
$Skh = \mu 1\ x\ Ce\ x\ Ct\ x\ Sk\ x\ Sin^{a}$

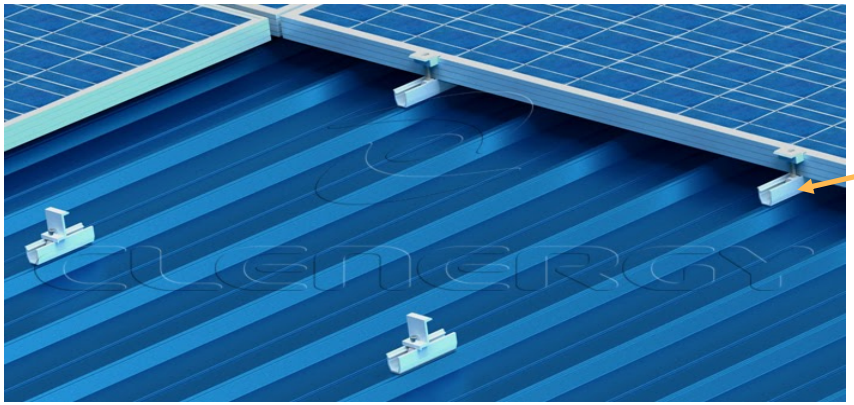
Therefore planning correctly is absolutely critical because otherwise it is a gamble you either have to go overkill and utilise as many fixings as possible or even worst, you do not use enough fixings for the system to be stable in the event of high loads.



Interesting Facts

Example x 2

- A typical commercial trapezoidal roof, very common across the globe but in Europe we have a significant differences in the distance between the raised ribs. Modules very often are positioned in landscape orientation. With short rails 120mm -150mm in length which clamp on the long side of the module.



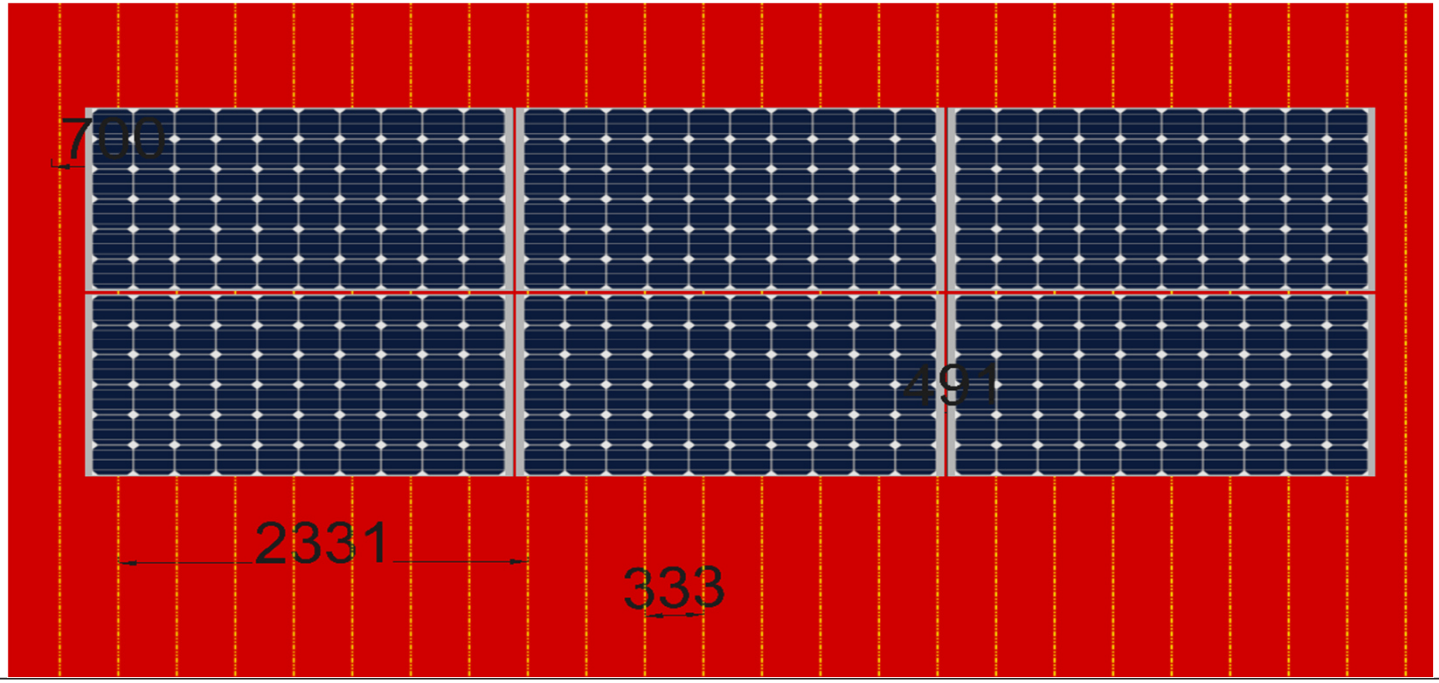
Note the position of the fixing supports clamping on the long side of the module

This has been the case for many years, but this was in the days of course when modules were on average 1.58m2 or around 1.65m in length … clearly a module length of 1722mm should not pose to much of a problem .. However we are now talking about module lengths of 2278mm / 2465mm .. Are we comfortable in the industry with this ?

Interesting Facts

Example x 2

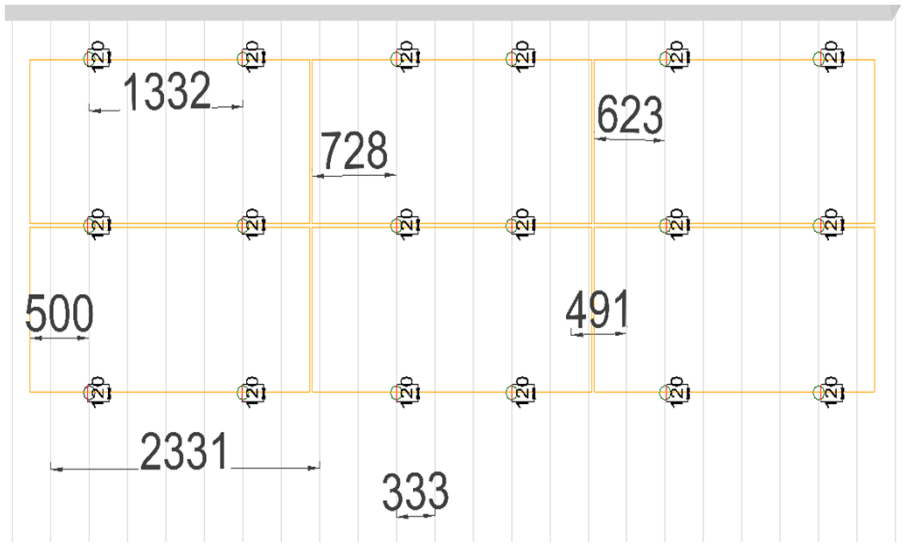
- Below are 6 x modules in landscape the modules are around just under 2.4m in length and they are attached to a trapezoidal sheet roof that has raised ribs at 333mm centres.

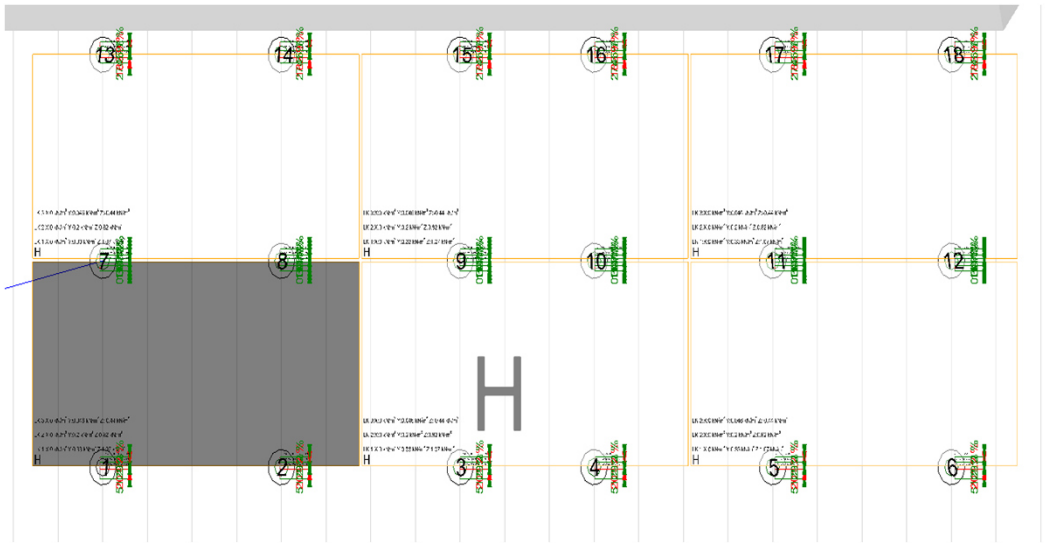


Interesting Facts

Example x 2

- By using the normal configuration of fixings that I have used since 2010 I now have significant problems, because no matter where I move the PV array, either to the left or to the right because my anchor points need to attach to the vertical rib sections at 333mm centres It will absolutely create some mounting issues …

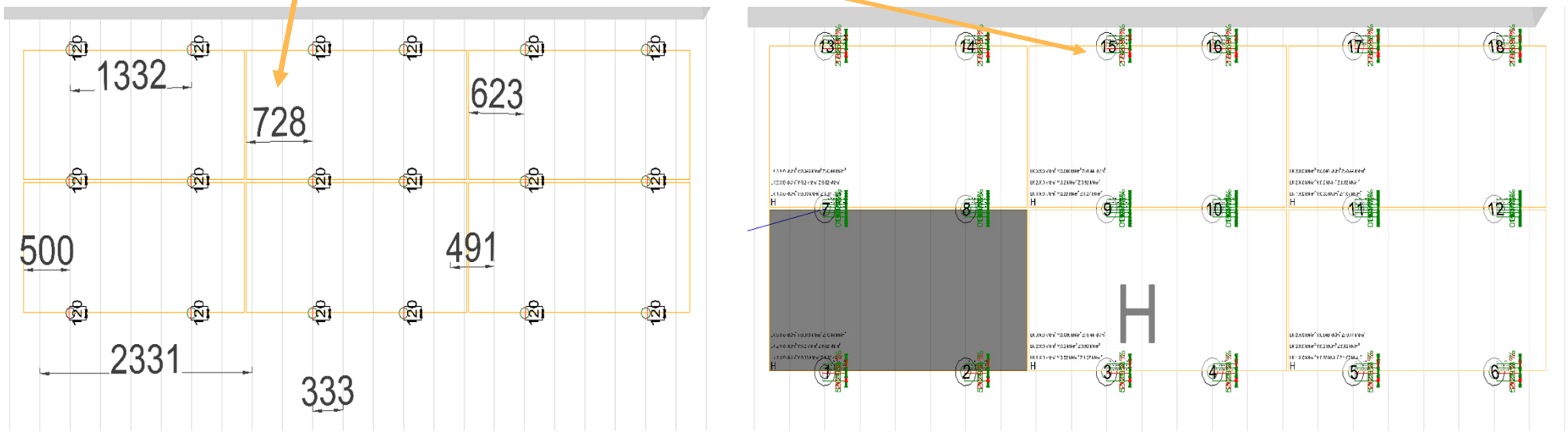




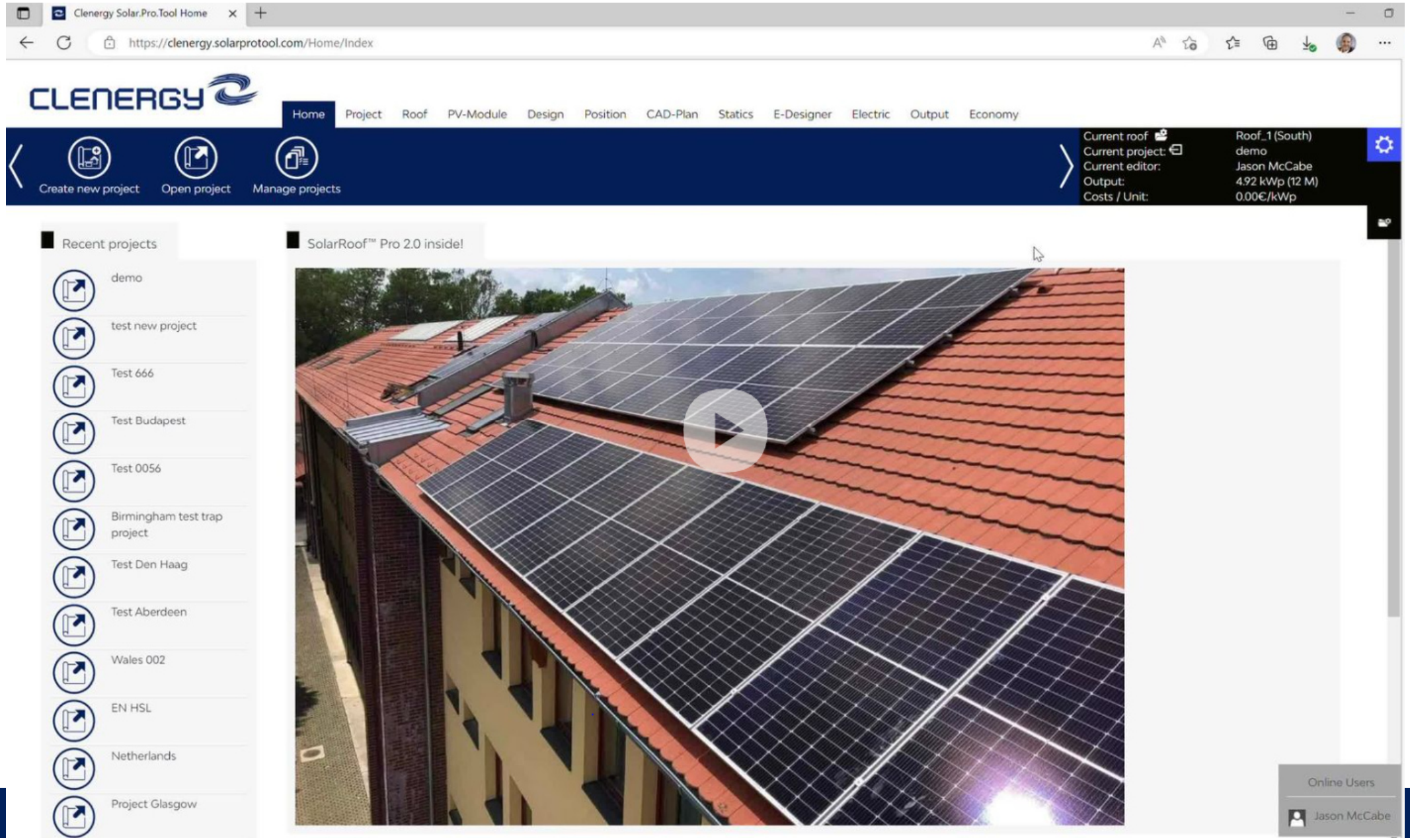
Interesting Facts

Example x 2

- Excessive cantilevers and generally speaking all the modules have a lot of unsupported area particularly as we have between 2.58 – 2.79m2 per module.



As we have seen in the two small examples careful consideration should be applied to a PV mounting system design when using large format modules. But when planned correctly the risk is minimised and fully stable. If in any doubt always consult the manufacturer of the racking system and module producer.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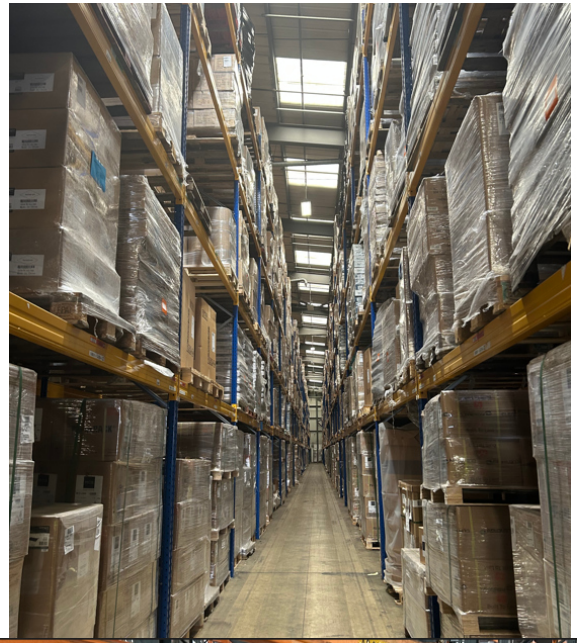

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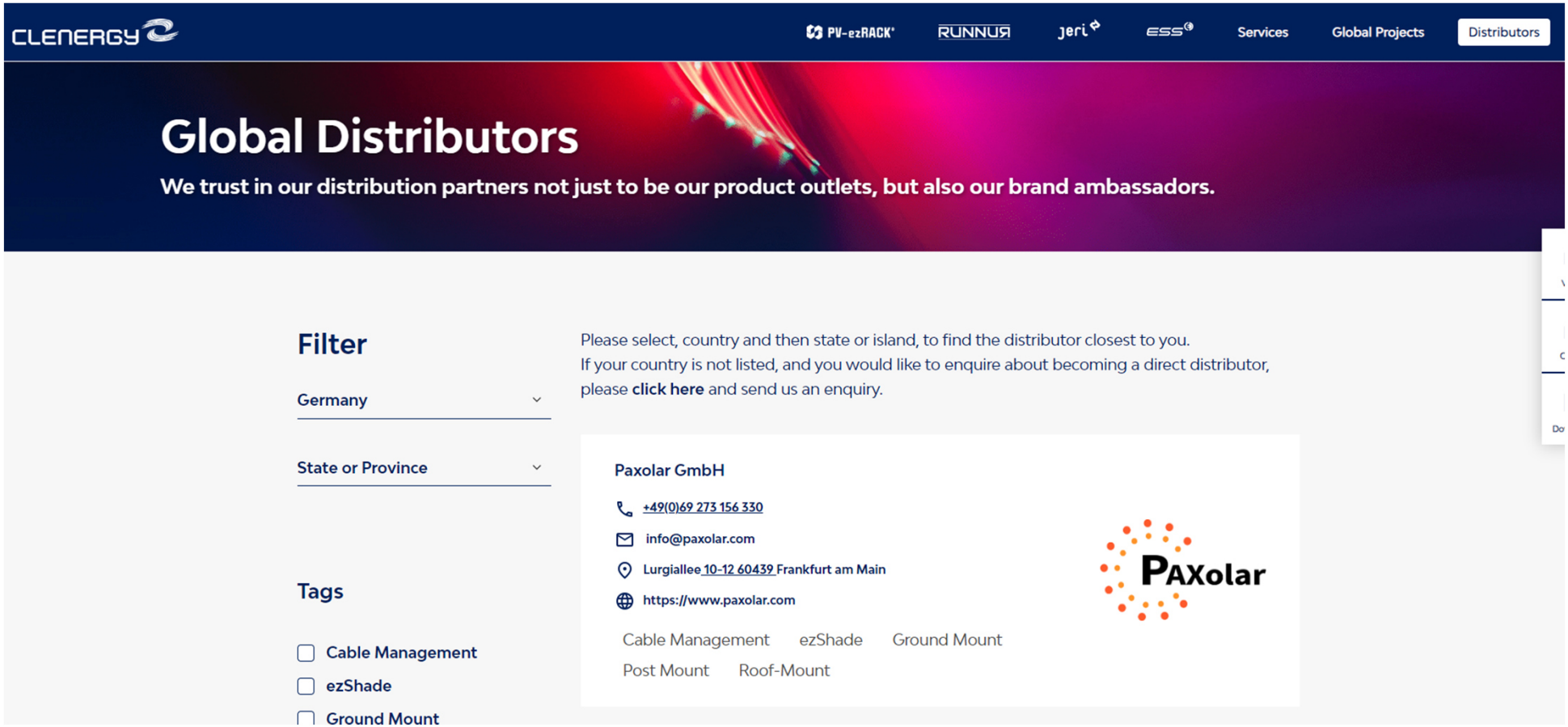

Global Project Development

- Founded in 2017 in Hamburg
- Green field project development
  - Land Securing
  - Building Permit
  - Grid Connection Permits
- Construction management
- O&M

References and Pipeline

- Developed and built one of the largest EEG Project
- 64 MW-110kV Substation and 26 km Transmission Line
- 583 MWp in Pipeline

GANZLIN, GERMANY

64MW

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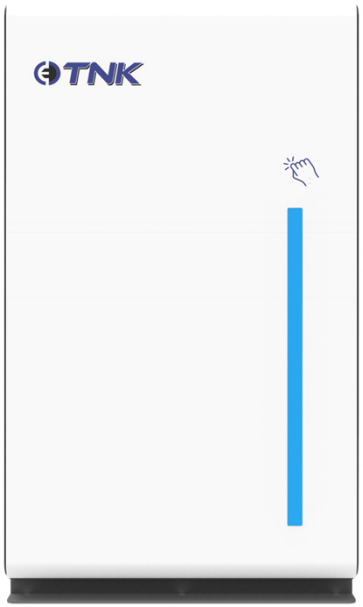

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PCS: 5kW/6kW
BAT: 20kWh

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Q&A

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3:30 pm – 4:30 pm IST, Delhi

The role of monitoring in managing power and maximizing returns: Indian C&I segment in focus

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Beatriz Santos
Editor
pv magazine

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