

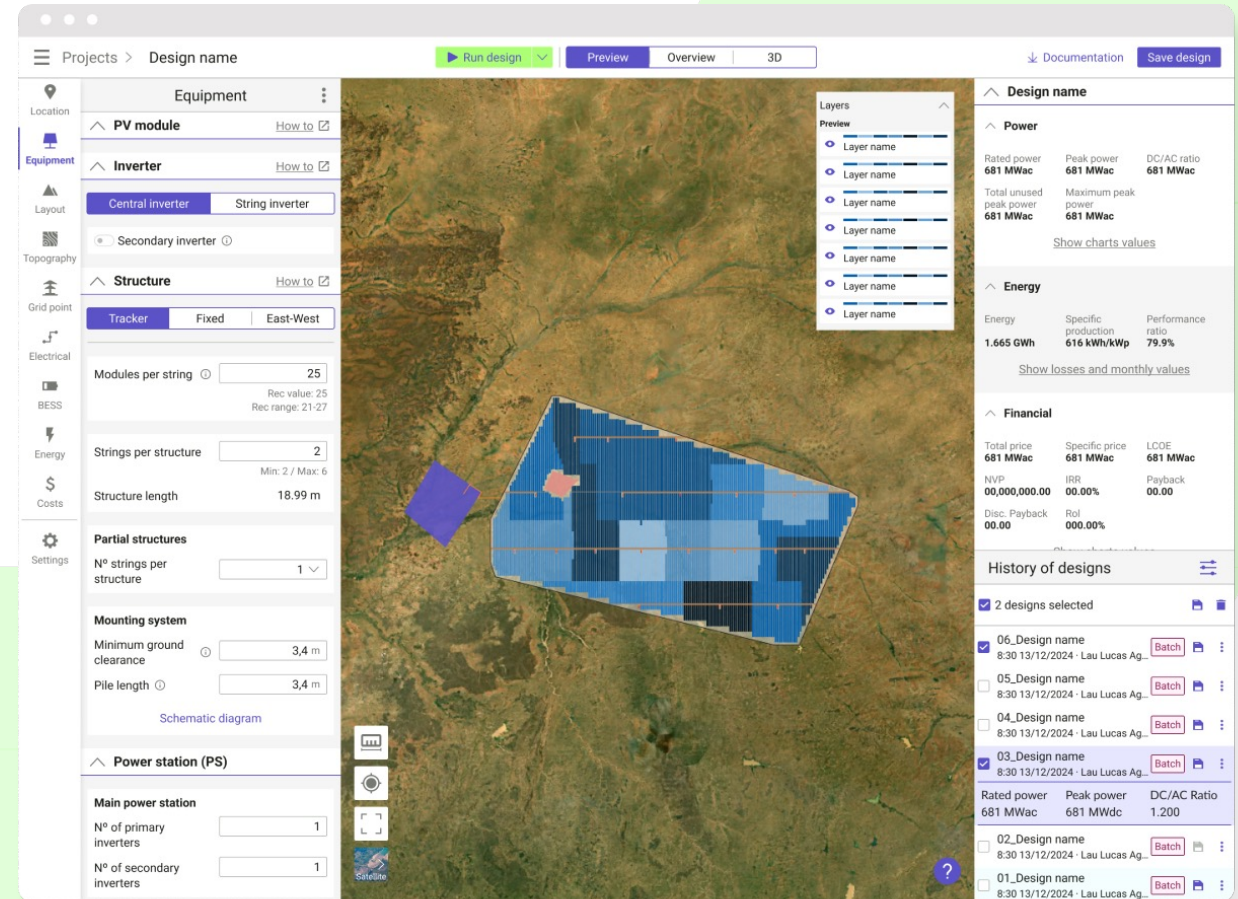
*Unlocking full potential  
of East-West PV designs*

# PULSE



PULSE - APRIL 3 & 4, 2025  
COAM, MADRID

BY RATEDPOWER



*Unlocking full potential  
of East-West PV designs*

## Your speakers today



**Samih Kalakeche**

**Technical Advisor I**

With over three years of experience, Samih leverages technology and strategy to drive renewable energy adoption and development.

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**Ming Cheng**

**Technical Advisor II**

Working in the industry for 6 years closely with China, Oceania and Japan regions.

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1. Introduction to E-W structures
2. What is MPPT and how it works?
3. Walkthrough & Outputs
4. Q&A



# 01. Introduction

East-West Structures: What is it?



East-West Structures: Is it better?

Instead of tilted towards the equator, the structures are fixed to both East and West orientations.

- Limited space and rooftops
- Flat production curve
- Advantage on energy performance
- Cheaper CAPEX(design, logistics, material, labor costs)
- Reduced wind loads on structures





## +Land

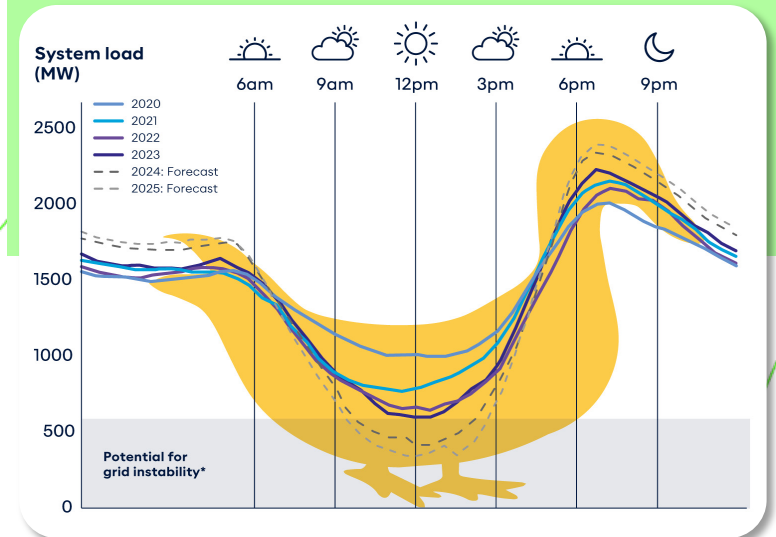
A rapid increase in land cost, more suitable for limited and irregular spaces.

## +High latitude

In countries with higher latitude, lower sun azimuth requires large pitch distance for both trackers and fixed structures. How to squeeze into more capacity with the drop of module price?

## +Duck Curve

The mismatching supply of solar energy with the actual demand, causing the market price of solar to fall sharply, cannibalizing its own profit.



## +Cheaper

Cheaper CAPEX for design, logistics, material, labor costs; less maintenance cost.

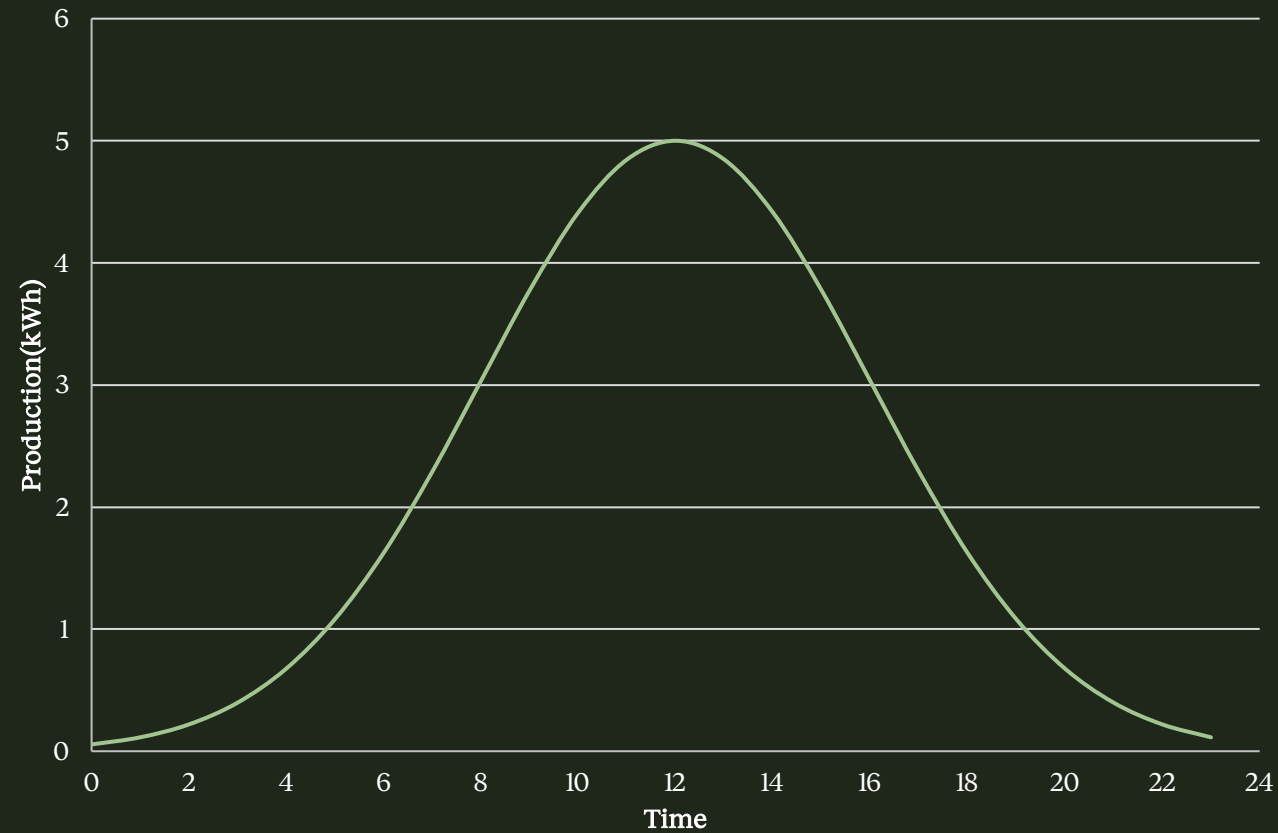
## +Stronger

Reduced wind loads on structures.

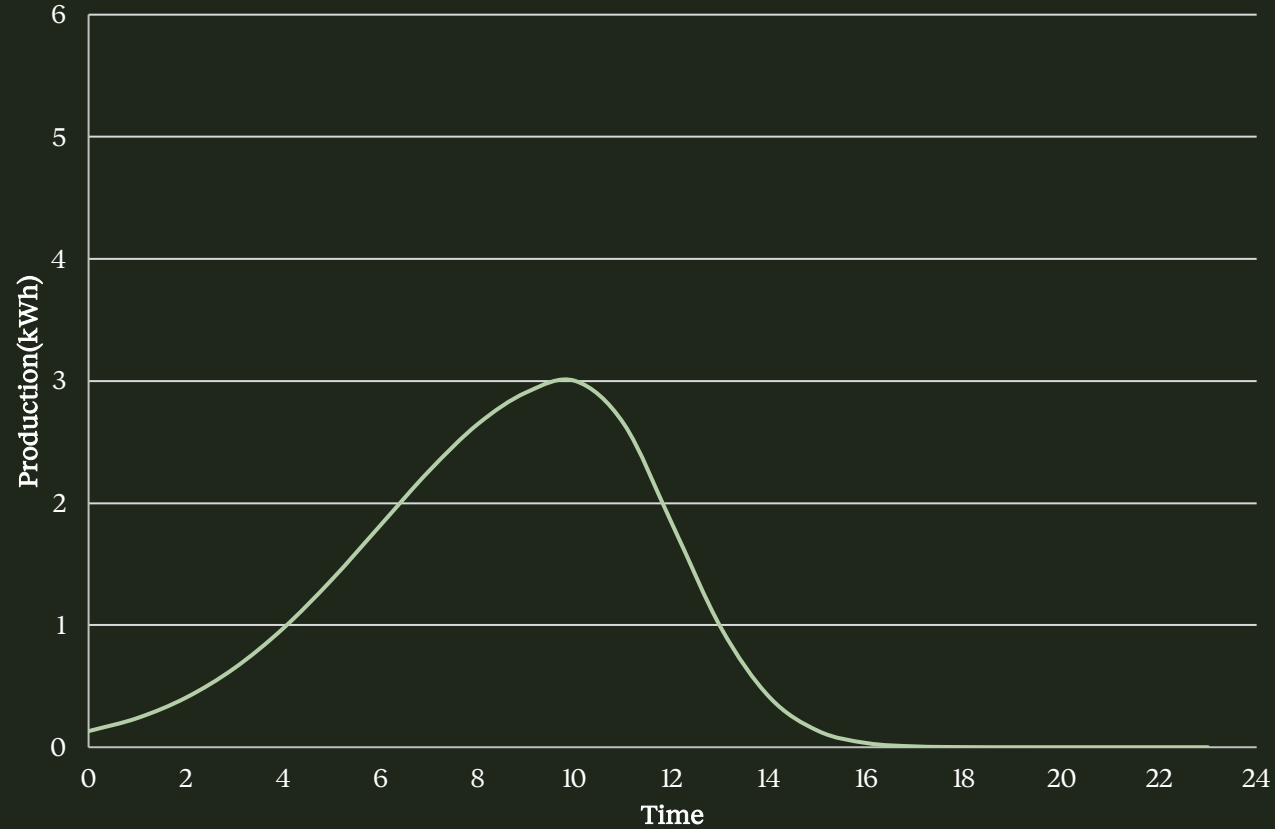
## + Energy

Optimizing with MPPT solution, possible improvement on temperature losses.

# *Fixed structure facing equator*

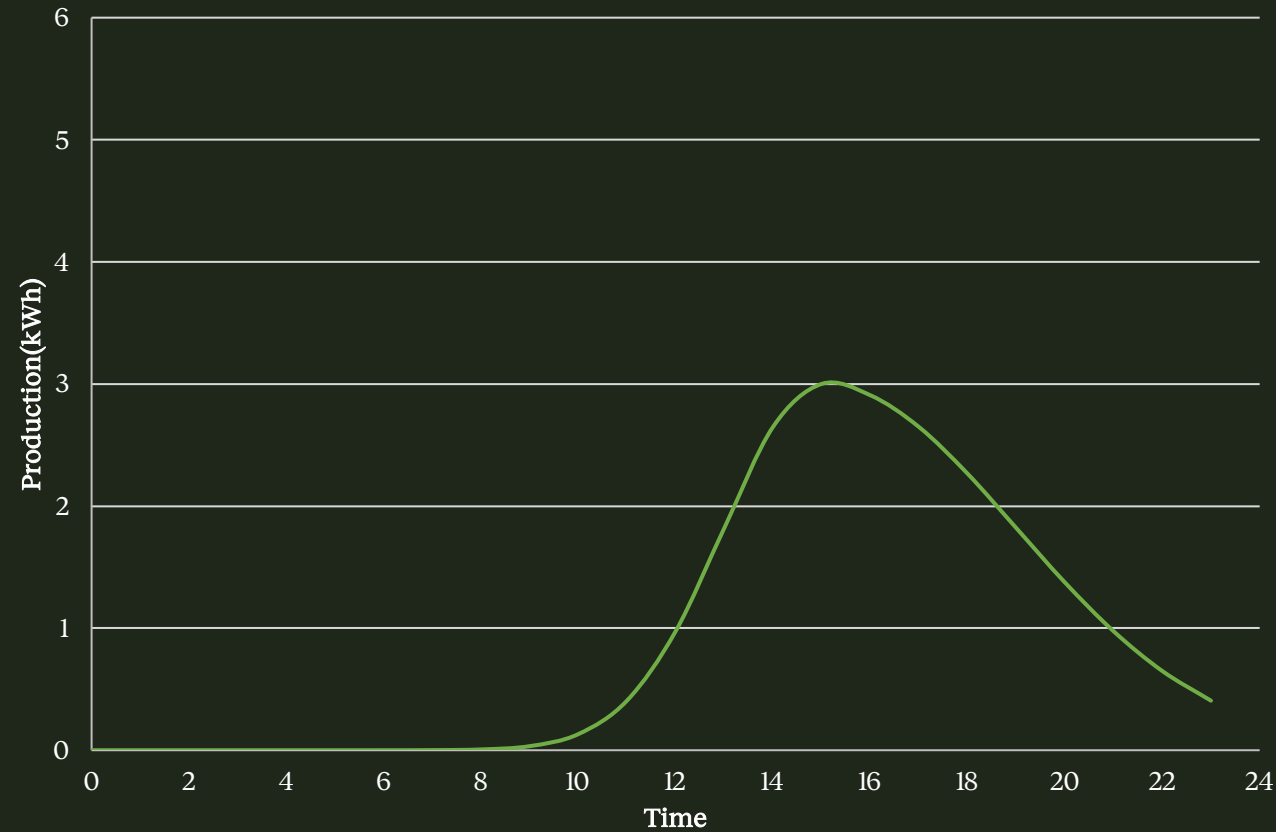


# *Fixed structure facing the East*

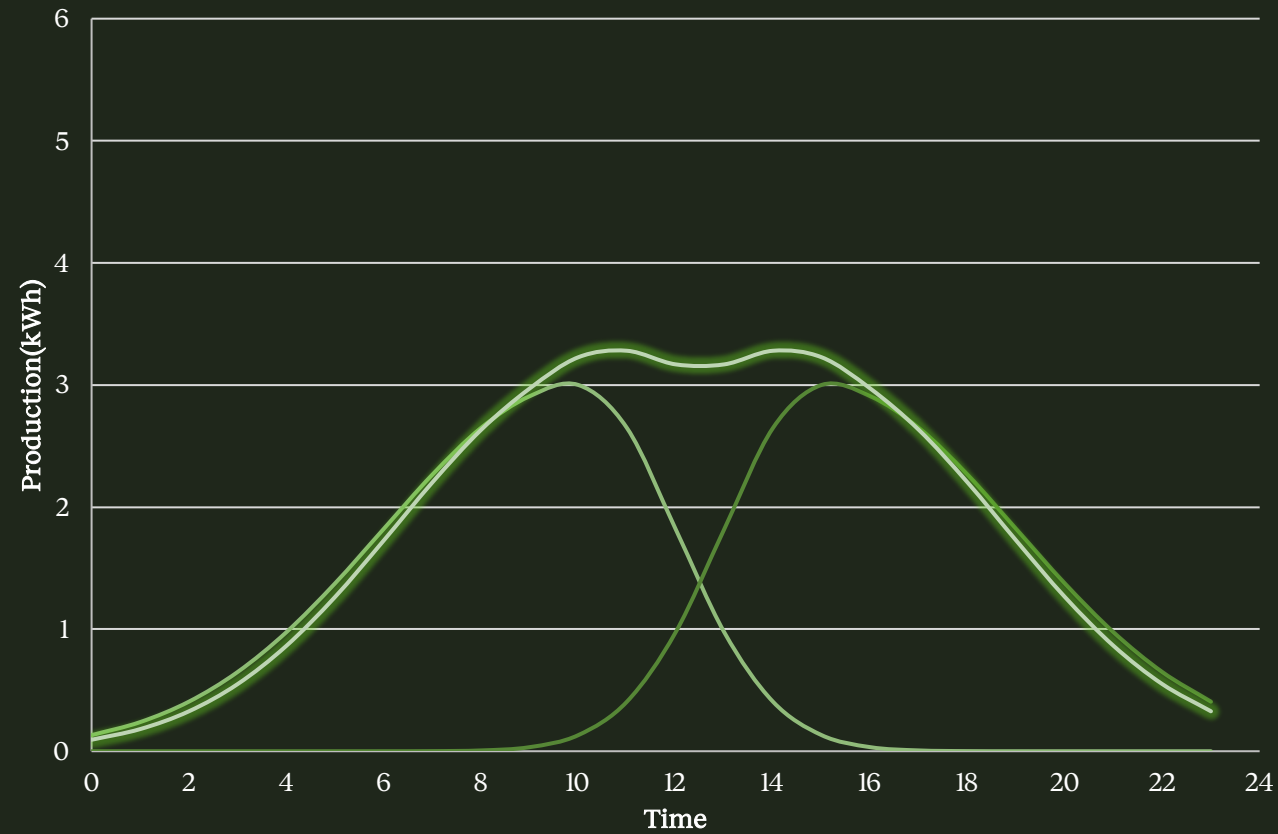


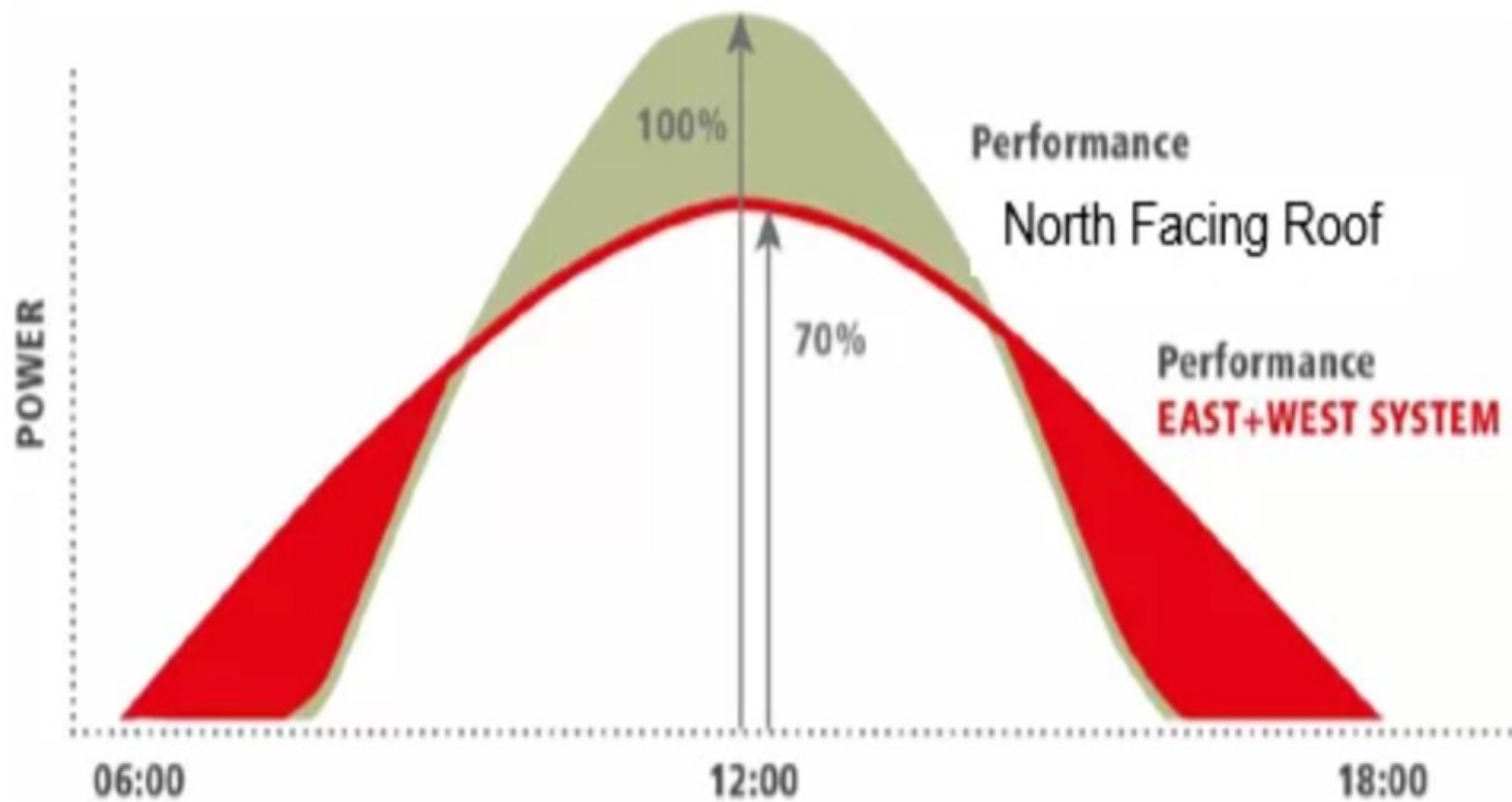


# *Fixed structure facing the West*



# *E-W Structure*





## Replicating Rooftop Solutions

Lat:39.539 ° Long:-119.468 °

Available area: 8.6ha

- Maintenance corridors
- Optimal block designs
- String inverters distributed across site
- Piles for mounting system

### Structure

TrackerFixedEast-West

Manufacturer Erthos  
Model Erthos Test  
Configuration 1P  
Database Public

Show detailsChange Structure

Modules per string ⓘ14 Modules  
Rec. value 24  
Rec. range: 13 - 24

Strings per table1  
Min: 1 / Max: 4

Structure length16.01 m

### Mounting System

Mono-PoleBi-Pole

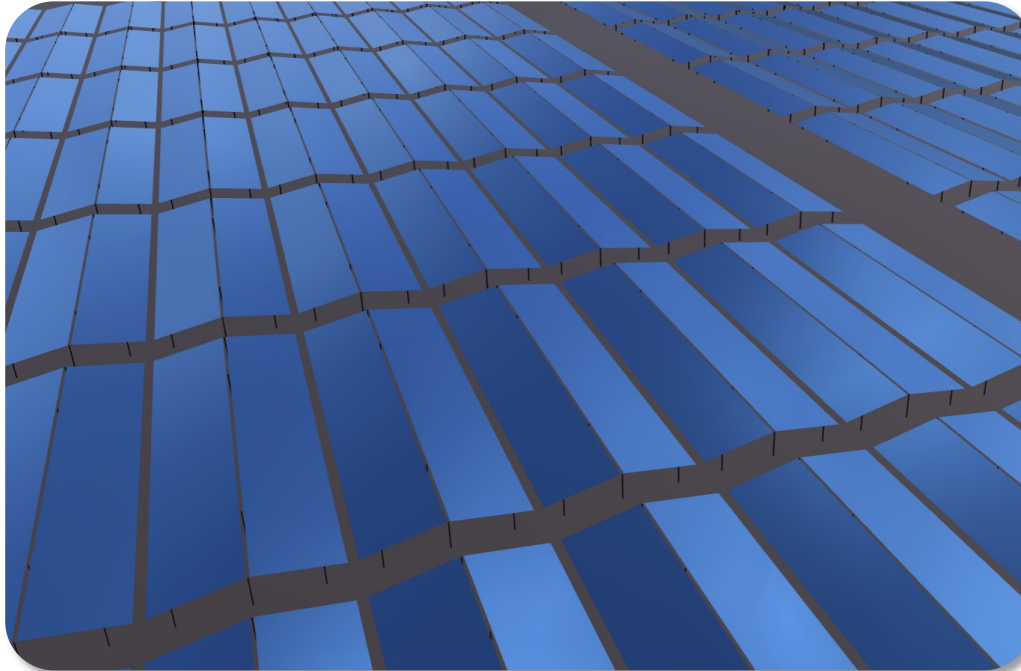
Tri-Pole

Tilt Angle ⓘ10 °

Ridge Distance ⓘ10 cm

Minimum Ground Clearance ⓘ0.5 m

Minimum pile length ⓘ1.79 m  
Min: 0.93 m






Comparing with fixed structures

# E-W VS South faced


Same capacity installed

- 29% higher Specific production
- 28.4% higher Energy production per annum
- 52.5% higher PR!



**32. Fixed Structure**

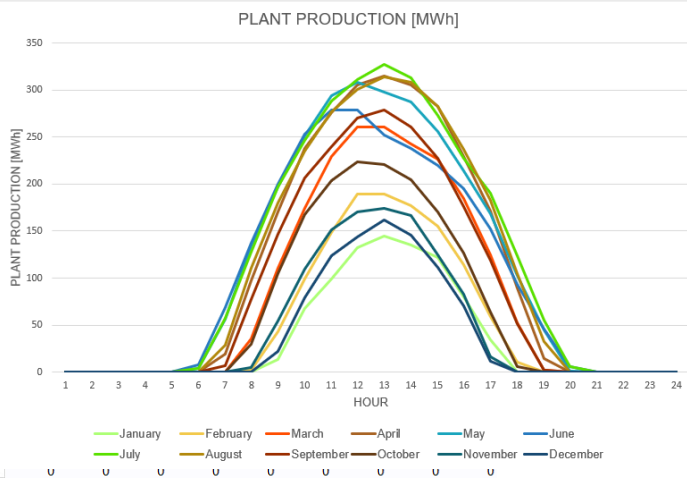
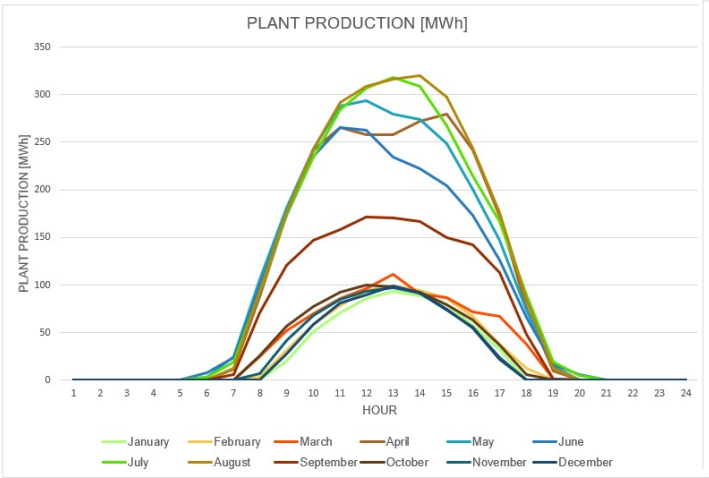
Ming Cheng2025-01-20



**21. E-W Structure**

Ming Cheng2025-01-16

Rated Power	↑	11.61 MWac	12.255 MWac
Peak Power	↑	13.893 MWdc	13.79 MWdc
DC/AC Ratio	↑	1.197	1.125
Specific Production	↑	1251.7 kWh/kWp	1619.5 kWh/kWp
Energy	↑	17.39 GWh	22.334 GWh
GCR	↑	70.6 %	94.3 %
PR	↑	56.3 %	85.9 %



## 02. What is MPPT and how it works?

What is MPPT and how it works?

## What is MPPT

- MPPT is a technology used in solar inverters to maximize the energy harvested from a solar photovoltaic (PV) array.
- It continuously monitors the voltage and current output of solar panels and adjusts the electrical load to keep the system operating at its maximum power point (MPP).

## Why is MPPT Necessary?

- Solar panels produce varying amounts of power based on sunlight intensity, temperature, shading, and other factors. Their voltage and current characteristics are nonlinear, meaning the power output isn't consistent.
- By using MPPT, the inverter can adapt to these fluctuations, finding the optimal balance between current and voltage to maximize power output under changing conditions.



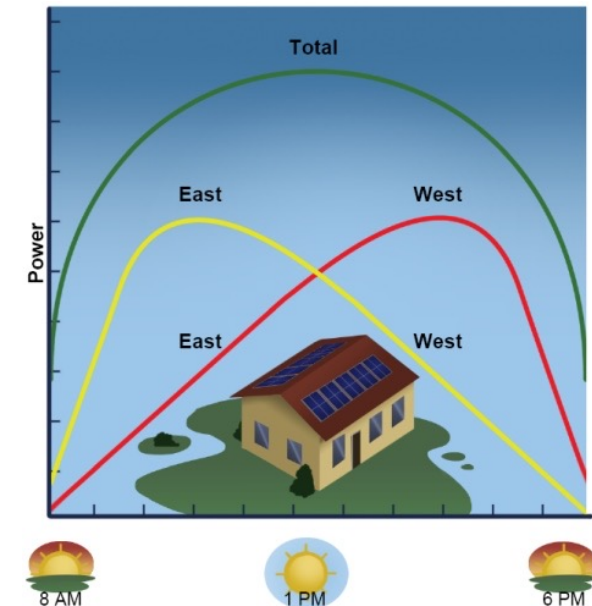
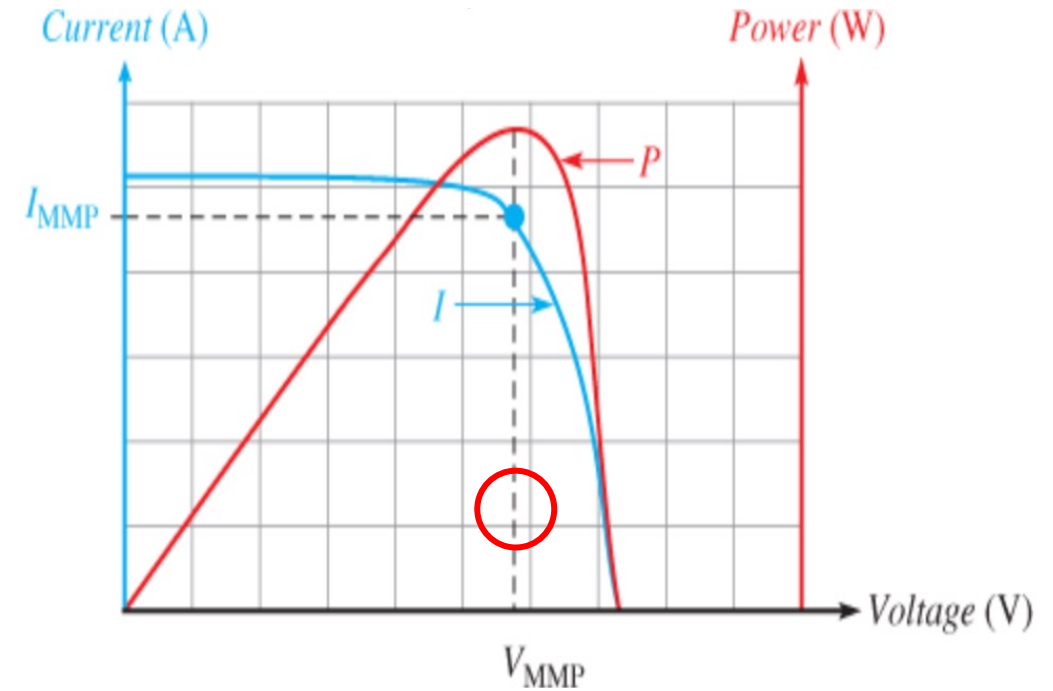
What is MPPT and how it works?

## How MPPT works

- The inverter's MPPT algorithm measures the voltage and current from the panels and adjusts the operating point to match the system's MPP, where power ( $P = V \times I$ ) is at its highest.
- It adjusts the load by modifying the inverter's internal parameters to achieve the best voltage and current combination, maximizing energy efficiency.

## Key Benefits of MPPT

- Maximizes Efficiency: Ensures the solar system always operates at the optimal power level, even when conditions vary.
- Improves Yield in Varying Conditions: Delivers better performance under partial shading, varying sunlight, and temperature changes.
- Increases Energy Output: Maximizes the amount of energy harvested, which improves return on investment (ROI) for solar installations.



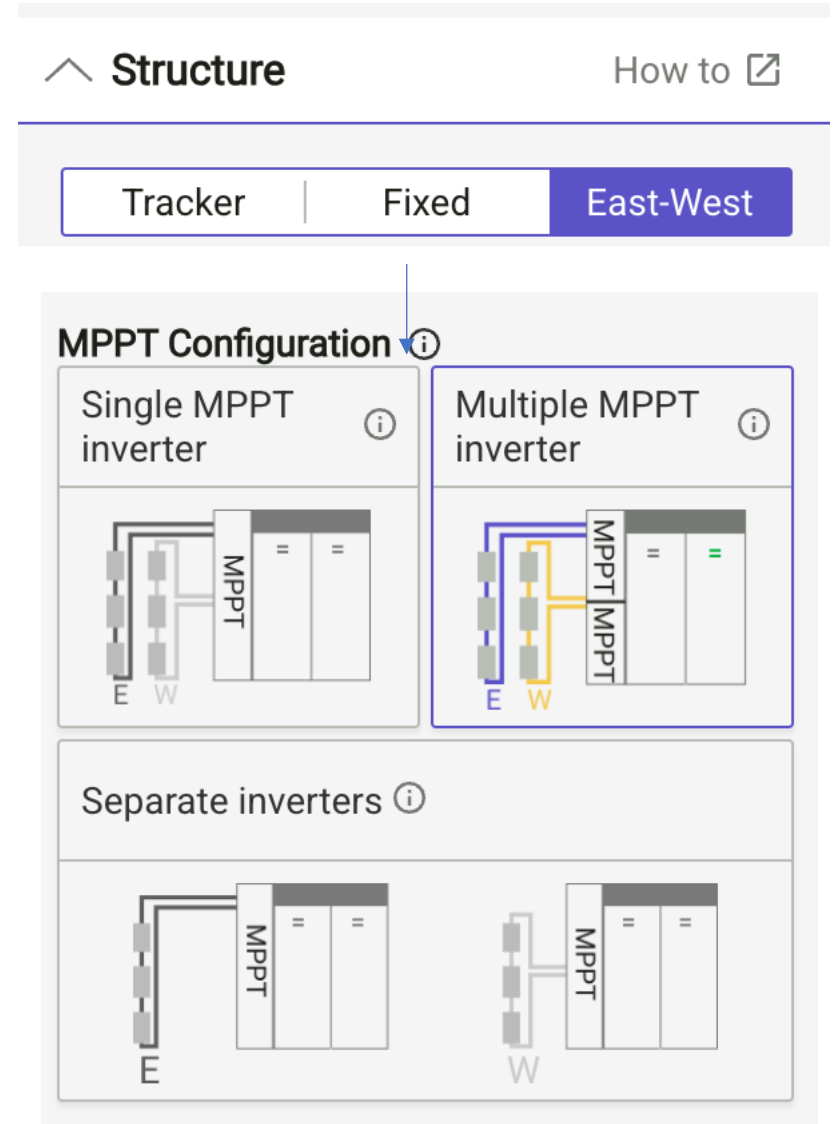


## How to activate MPPT in RatedPower

- The MPPT configuration options are only available when an E-W structure is selected. You would need to choose this structure first and then go back to “Equipment > Inverter > MPPT configuration” and select the preferred configuration.

## How MPPT works in RatedPower

- If you're using a tracker or a fixed structure, this option won't be available.
- The reason for this is because our energy model will consider a flat terrain and homogeneous irradiance, meaning that no difference will be computed in terms of energy in each of the different MPPT levels of that inverter (it would be like using an inverter with only one MPPT).



- Each one of those MPPT options will give us a different result in the energy yield analysis

# MPP Losses that are taken into RatedPower

→ According to our Energy Yield Methodology (chapter 8), these are the different electrical system losses that are reflected in the losses and monthly values

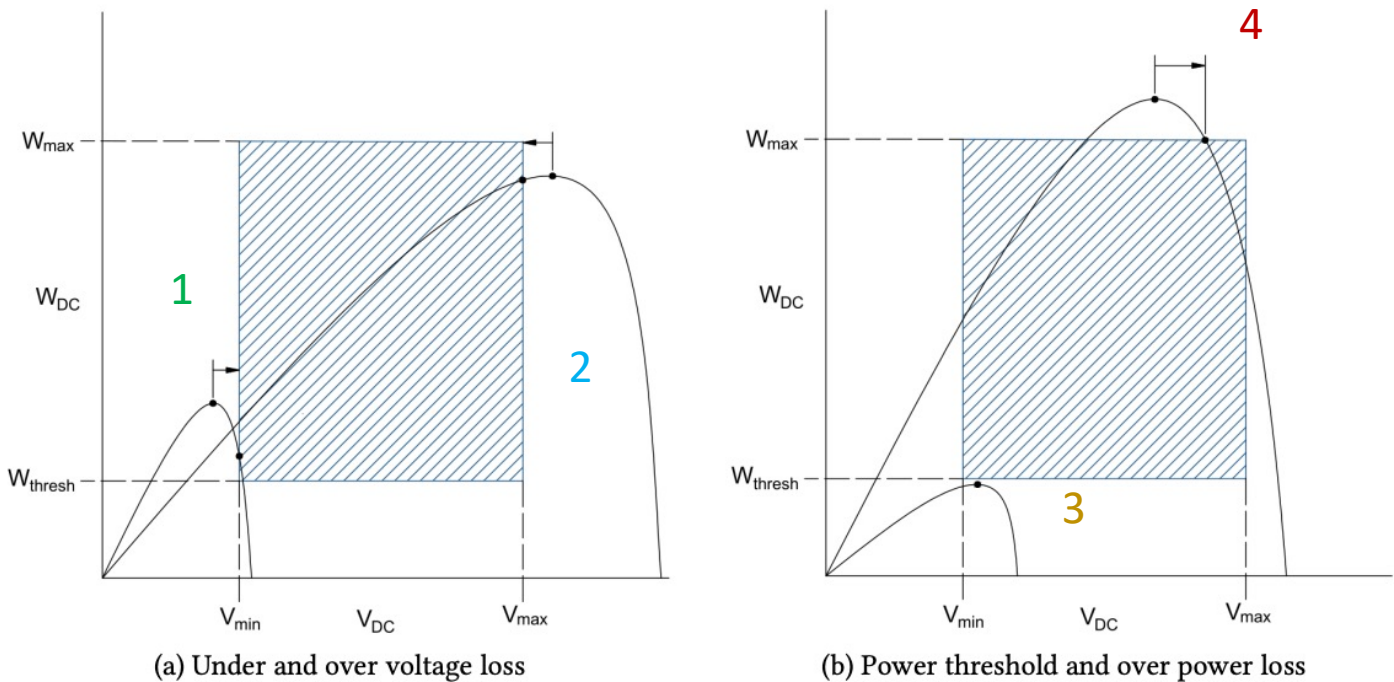


Figure 8.4: Losses due to MPP outside operation window

Show losses and monthly values

## Electrical system losses

Inverter voltage threshold	0.00%	1
Inverter over voltage	0.00%	2
Inverter power threshold	0.00%	3
Inverter power limit	-0.12%	4

# Questions?

We're all ears!

Drop yours in the question box!



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