

# GSE Ground System Evolution

GSE  
Intégration

**OUR MISSION**

**Turning rooftops and  
landscapes into  
sources of clean  
energy.**

# GSE Intégration

## From BIPV Pioneer to Global Mounting System Manufacturer

### 💡 Known for in-roof excellence

- 7,000,000 m<sup>2</sup> of GSE In-Roof systems installed
- Benchmark solution for residential BIPV across Europe

### 🔧 GSE Ground System — A decade in the making

- Ground System in catalog for 10+ years
- 40+ MWp already installed

### 🚀 GSE Ground System Evolution (V2) — Game changer

#### 2 major upgrades:

- **Up to 2× faster installation** thanks to redesigned assembly
- **Digital configurator** for layout, ballast, and BoM in minutes

### 🎯 Strategic repositioning

- GSE now **has the ambition to become a complete PV mounting system provider**
- Elevating **in-roof and ground-mount** solutions to the same strategic level
- Addressing the needs of **residential, commercial, and large-scale projects**

# GSE Intégration

Mounting system manufacturer for photovoltaic modules

Founded in 2008



7.000.000 m<sup>2</sup> BIPV installed  
40+ MWp Ground system installed



34 employees

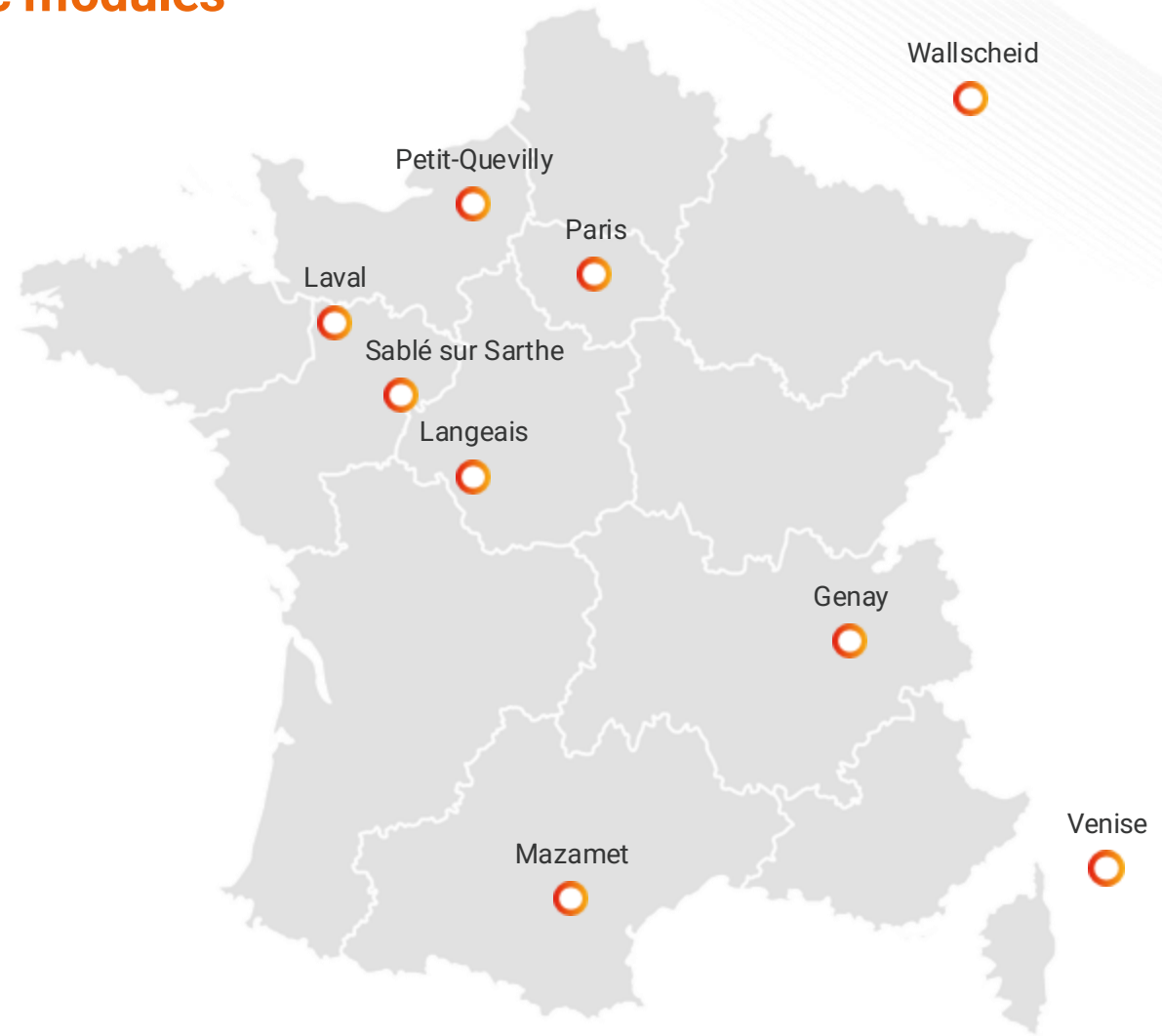


5 production sites in Europe



Technical support & logistics across  
Europe

The headquarters are in Paris  
and the warehouse is in Le Petit-Quevilly,  
Normandy.



# GSE Intégration

A subsidiary of Wienerberger

## The Future of Building



- Wienerberger is one of the leading providers of innovative, ecological solutions for the entire building envelope, in the fields of new buildings and renovations.
- Since 1819, we have improved people's lives with our more than 20,000 employees.
- We are #1 in brick production worldwide and in clay roof tile production in Europe, with over 200 production sites in 28 countries.



# **GSE GROUND SYSTEM™**

## **Presentation**

# Why Mounting Systems Are Strategic ?

- 10–20% of PV project CAPEX (growing share as module prices fall)
- Crucial for:
  - **Long-term durability** (wind/snow/seismic)
  - **Energy performance** (shading, thermal behavior)
  - **O&M cost reduction** (structure reliability)
- **Poor structure choice** = long-term safety and performance risk

# Presentation

## What is GSE GROUND SYSTEM EVOLUTION ?

*The sustainable, modular, and affordable ground-mount solar system — no foundations required.*



**Quick and easy installation** — no drilling, no concrete, no groundwork



Fully compatible with any **PV module dimensions**



**No permits or paperwork** required for deployment



**Compact design:** Portrait installation minimizes ground footprint



**Suitable for any terrain**

# Presentation

## What is GSE GROUND SYSTEM EVOLUTION ?

*Ground-mounted solar, reimagined.*

- ✓ Concrete-free – Reversible – Modular - Cost-effective
- ✓ Ideal for self-consumption, direct-sale projects, or public tenders
- ✓ Built to last — and designed to meet new environmental requirements



# Presentation

## Application area

**GSE GROUND SYSTEM Evolution** is a ballasted ground-mount system.

It can withstand wind speeds up to 31 m/s, provided **sufficient ballast is used**.

The system must be installed on a **flat surface** and is compatible with the following **terrain categories** (according to Eurocode):

- **II**: open countryside with few obstacles
- **IIIa**: countryside with hedges
- **IIIb**: urban or industrial zones
- **IV**: dense urban areas.

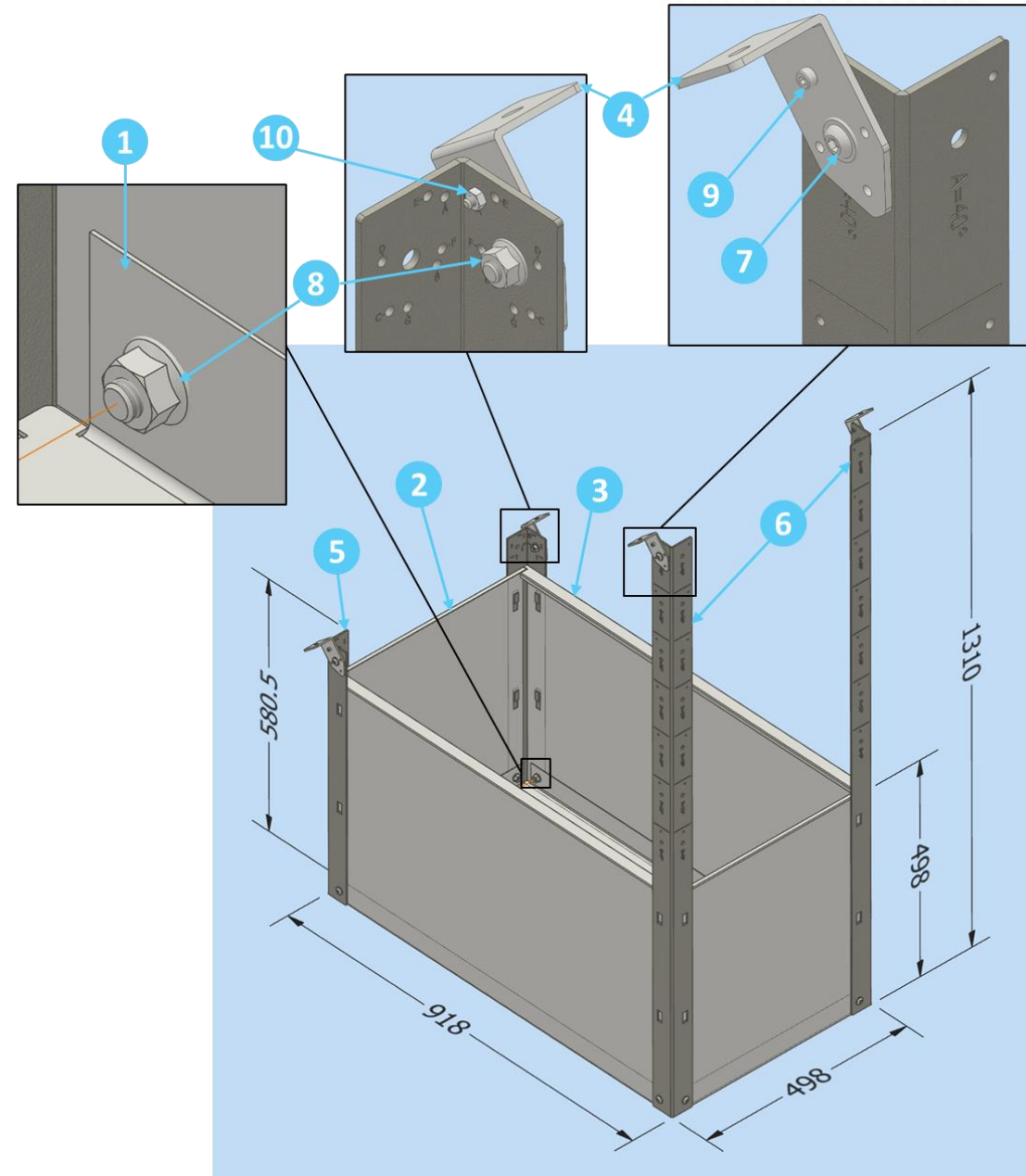
Use our **online Configurator** to plan your project and ensure full compliance with wind and terrain requirements.



# System Components

## Ballast box

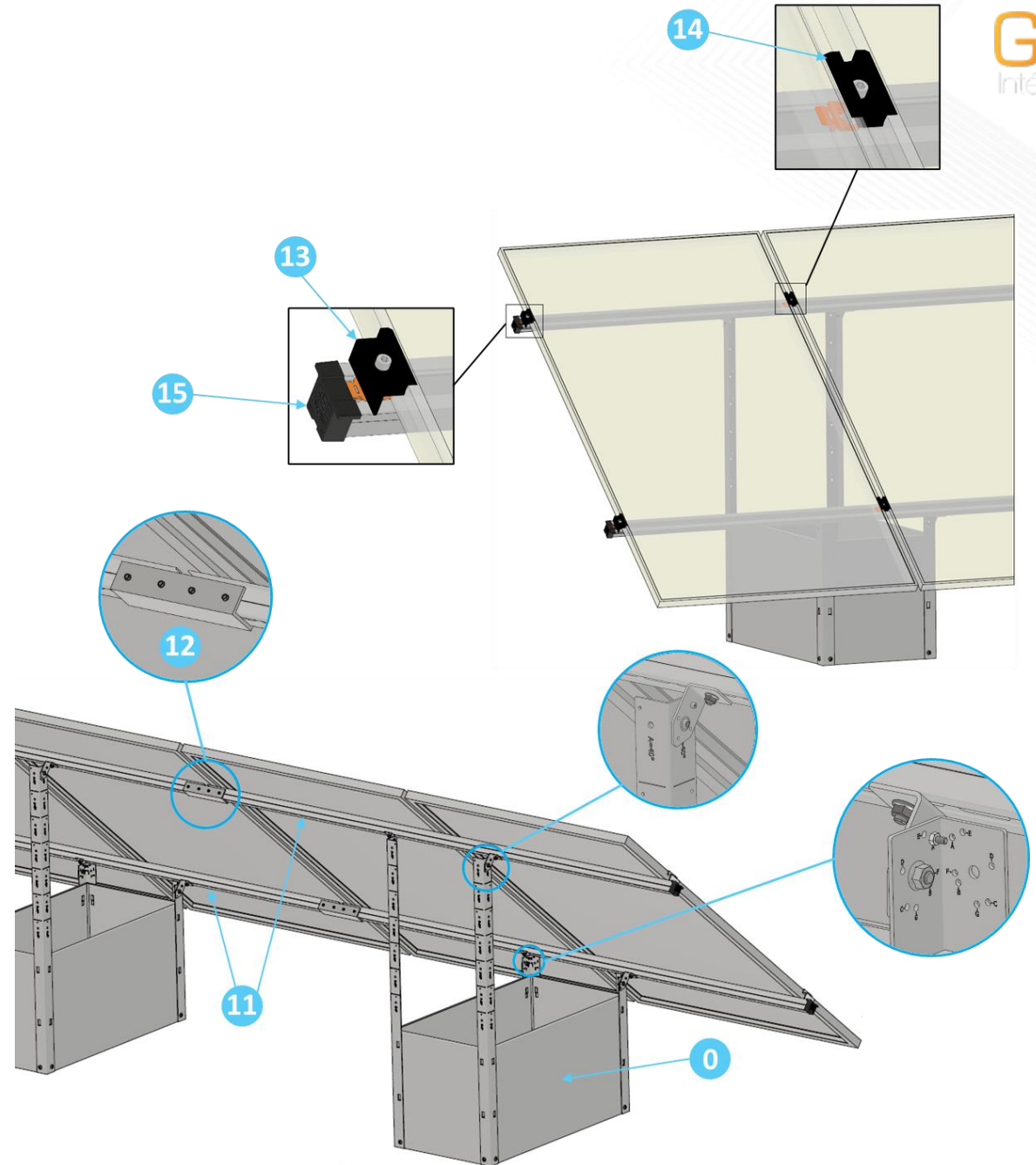
|    | Description                                |
|----|--------------------------------------------|
| 1  | Bottom Panel                               |
| 2  | Front/Back Panel                           |
| 3  | Left/Right Side Panel                      |
| 4  | Bracket                                    |
| 5  | Front Corner Bracket                       |
| 6  | Back Corner Bracket                        |
| 7  | M8x20 Flanged Hex Button Head Screw        |
| 8  | M8 H-Shaped Flanged Nut with Serrated Base |
| 9  | M4x12 Socket Head Cap Screw                |
| 10 | M4 H-Shaped Flanged Nut with Serrated Base |



# System Components

## PV Fixing Accessories

|    | Description                         |
|----|-------------------------------------|
| 0  | Ballast box                         |
| 11 | 40x60 Rail – 2.40 m                 |
| 12 | Rail Splice Connector with 4 Screws |
| 13 | Single Black Clamp                  |
| 14 | Double Black Clamp                  |
| 15 | End Cap for Rail                    |

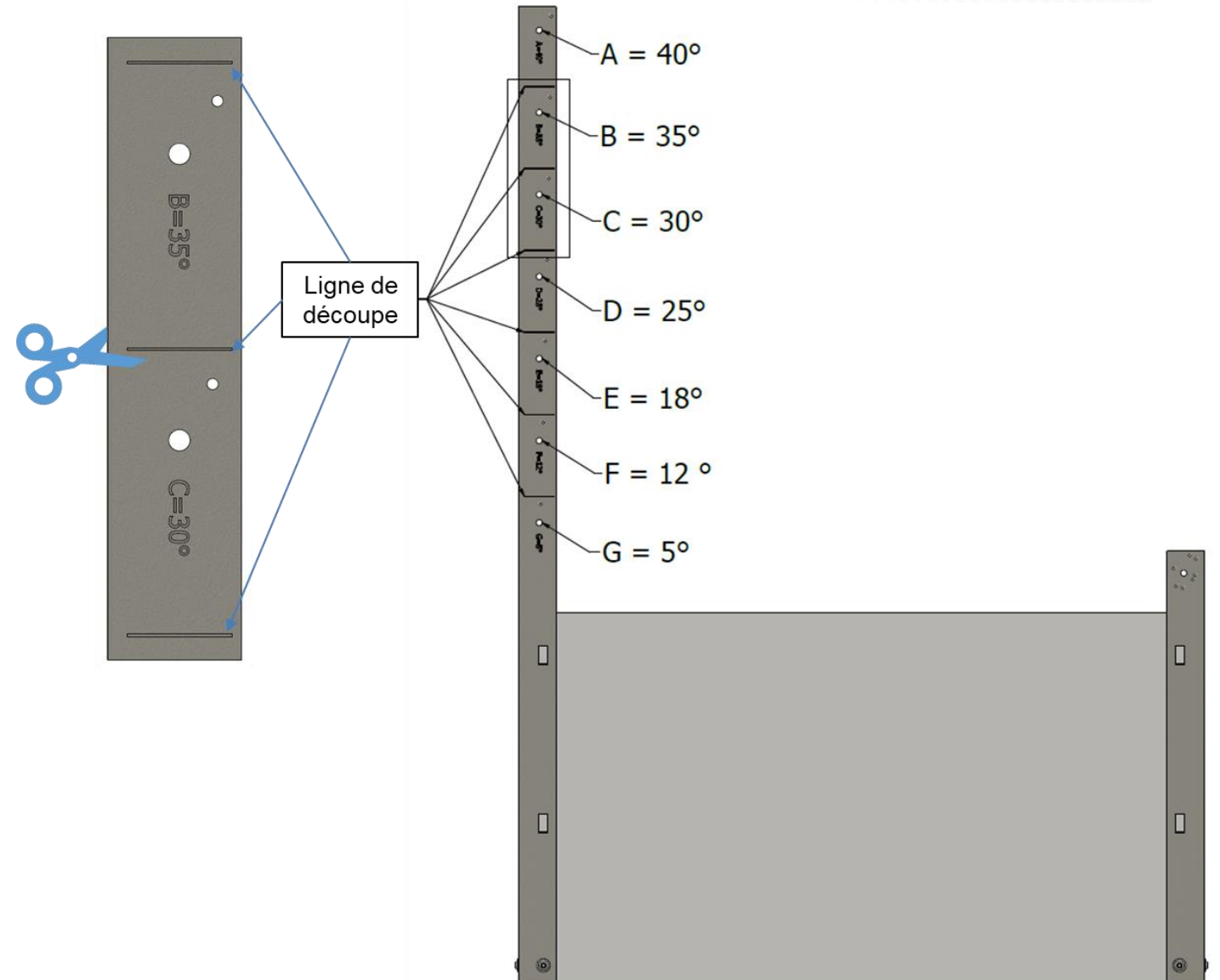


# System Components

## Tilt adjustment

The tilt angle of the modules is adjustable across 7 different positions.

The default tilt is 40°, with no cutting required.



# Ballasting

Determine the required ballast for your project using the CONNECTOR tool:



To define the appropriate ballast, you need to specify the **location**, **module tilt**, and **project orientation**.

**Example ballast options:**

**Box volume:**  $0.227 \text{ m}^3$

- **Dry sand:**  $1800 \text{ kg/m}^3 \rightarrow 400 \text{ kg per box}$
- **Construction gravel (4/20):**  $1500 \text{ kg/m}^3 \rightarrow 340 \text{ kg per box}$
- **Concrete tiles:**  $400 \times 400 \times 37 \text{ mm}$  (12.8 kg each), **26 tiles per box**  $\rightarrow 335 \text{ kg per box}$

**Note:** The minimum ballast per box is 100 kg

# GSE Ground System – From V1 to Evolution

| Key Feature              | V1 – Ground System        | V2 – Ground System Evolution                                                                                                       |
|--------------------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| 1. Installation speed    | Standard sequential setup |  Up to <b>2× faster</b> with streamlined design |
|                          |                           | ➤ Moins de pièces, assemblage fluide, composants précoupés                                                                         |
| 2. Digital Planning Tool | Not available             |  <b>GSE Configurator</b> layout + compliance    |
|                          |                           | ➤ Smart layout, wind verification, and instant BOM – all in a few clicks                                                           |

- ✓ Simplified installation = time savings + fewer errors
- ✓ Faster technical study = project validated in clicks

# Key Benefits of the Ground System Evolution

- ✓ No heavy foundations – No concrete, no civil works
- ✓ Reversible – Zero land sealing
- ✓ Modular and adaptable to all types of terrain
- ✓ Compatible with self-consumption thanks to East–West orientation
- ✓ Cost-effective solution

# Reversible

**GSE Ground System Evolution is fully removable and requires no concrete foundations.**

It allows the land to be returned to its original state — a key requirement for tenders and environmental compliance.

A system is considered **reversible** when it can be entirely dismantled without leaving any permanent trace on the ground:

- No concrete or deep foundations
- No lasting soil sealing
- Land can be restored to its original condition after use
- Compliant with “zero net land take” regulations

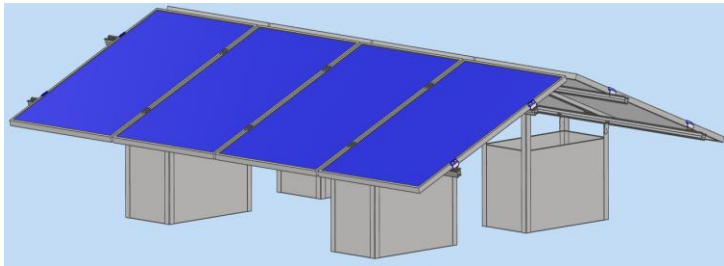
# Designed for long-term performance

-  Recyclable galvanized steel
-  European manufacturing – reduced carbon footprint and lead times
-  Standards-compliant: wind, snow, and corrosion resistance
-  Long service life, low O&M, fully removable system
-  Supports industrial sovereignty goals (NZIA, Made in Europe)

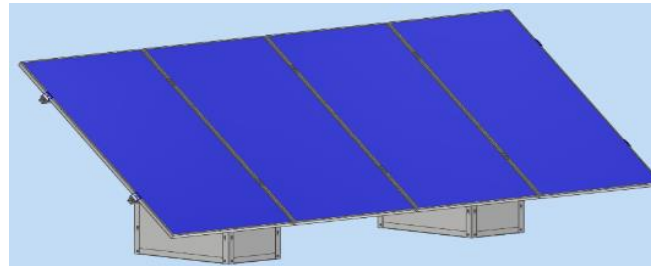
# East–West vs. South: Which Orientation Maximizes ROI?

## East–West: The Smarter Choice?

-  **Higher module density per m<sup>2</sup>:** up to **2× more** thanks to back-to-back mounting
-  **Lower CAPEX:** smaller inverters, lighter structure
-  **Reduced wind load:** ideal for exposed sites
-  **Less price cannibalization** → more stable revenue over time



Orientation East-West



Orientation South

# Built with self-consumption in mind

## East–West Orientation: Not Just an Option, but a Strategic Advantage

**Business Case Example: South of France**

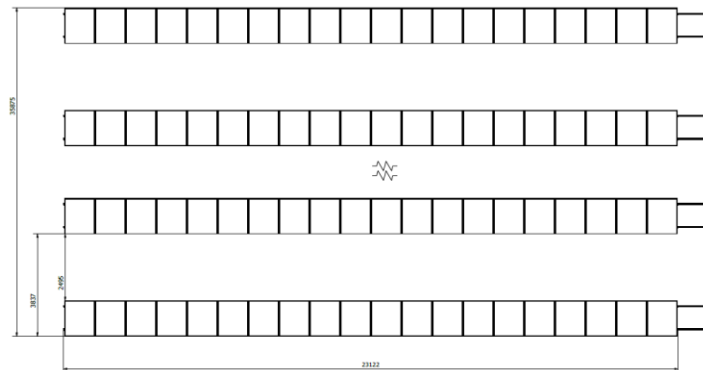
**Site dimensions: 38 × 26 m**

**Orientation: South**

**Tilt angle: 40°**

**Total system size: 220 × 450 Wp = 99 kWp**

**Annual production: 140,030 kWh**

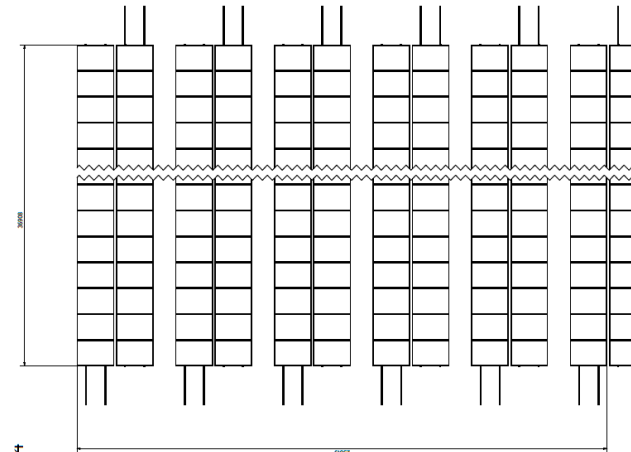


**Orientation: East–West**

**Tilt angle: 18°**

**Total system size: 384 × 450 Wp = 172.8 kWp**

**Annual production: 207,178 kWh**



# Built with self-consumption in mind

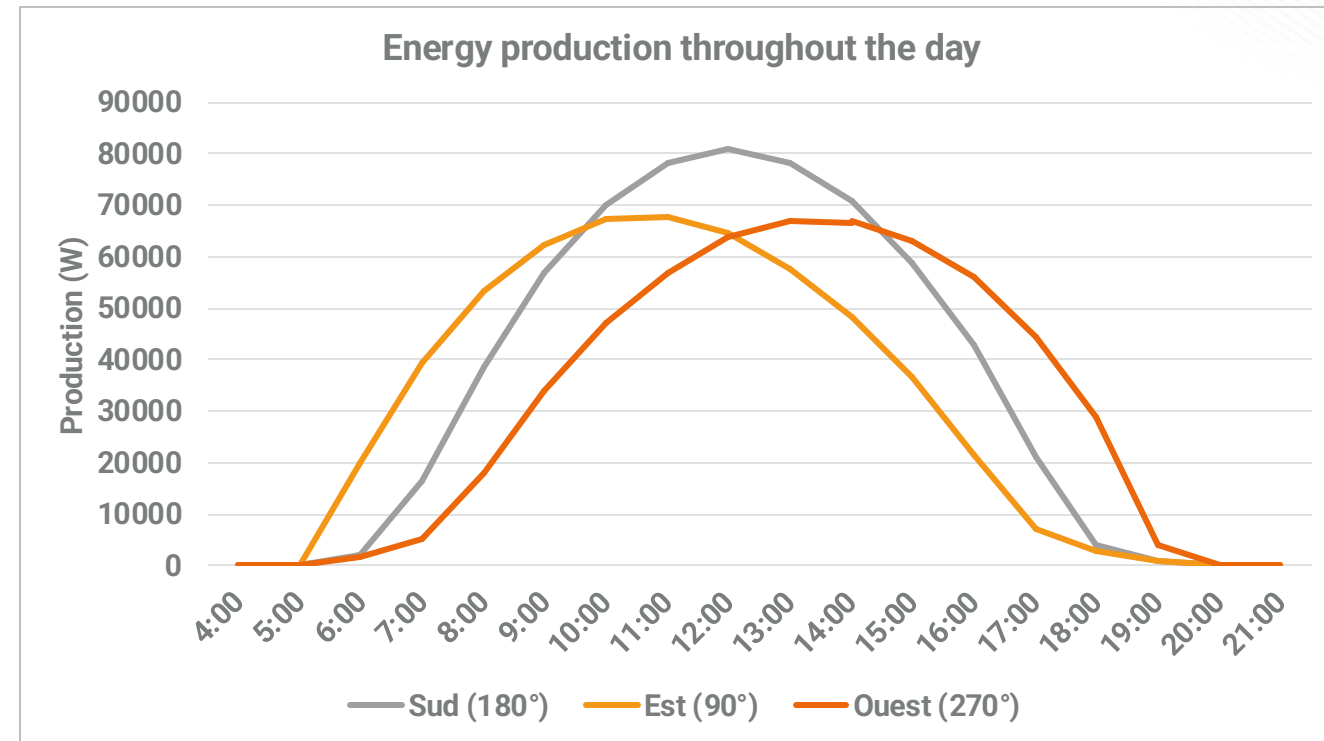
## East-West orientation enables:

 Energy production spread throughout the day

 Reduced midday peaks

 Better alignment with consumption patterns of businesses and farms

 Less need for storage → faster ROI



# Economic and market benefits

## **Better electricity valuation**

→ Avoids midday price cannibalization

## **Lower risk of curtailment**

→ Smoother grid integration

## **More predictable revenue**

→ Improved cash flow profile for investors

## **Faster ROI**

→ Thanks to self-consumption, higher ground density, and reduced CAPEX

# Ideal for developers, municipalities, and commercial & industrial projects

## GSE Ground System Evolution, it's :

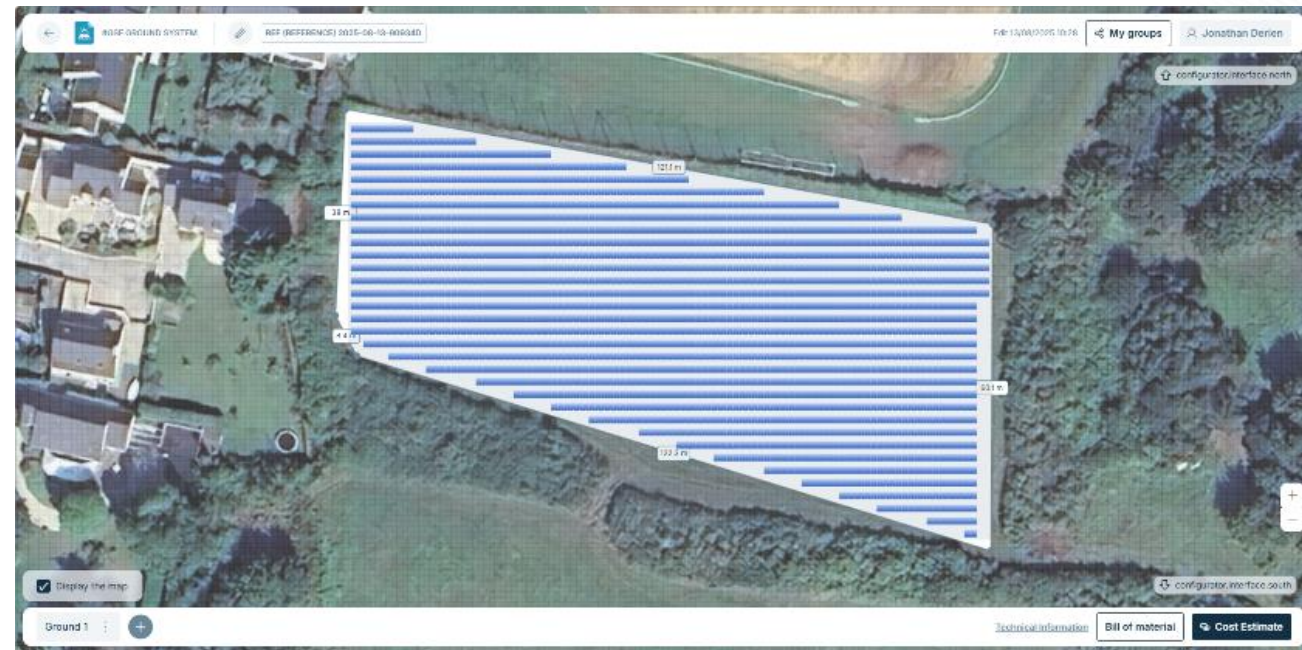
- ◆ A direct response to regulatory constraints (*e.g. land use limits, permitting simplification*)
- ◆ A system that can be rapidly industrialized across Europe
- ◆ An intelligent layout planning tool to simplify design and optimize costs

# Built-in project planning tool

## Configurator Ground GSE

### Features:

- **Optimize the number of modules** for a given surface
- Generate the **structural calculation report** for your project
- Determine the required **ballast per box**
- Automatically configure the **full system layout** based on your project parameters
- Produce the complete **bill of materials**
- **Save time** when preparing orders and quotes



# Logistics and Packaging

- **Bottom panel:** pallet of 100 units (1200 × 1000 mm)
- **Side panel:** pallet of 200 units (1200 × 800 mm)
- **Front panel:** pallet of 400 units (1200 × 1000 mm)
- **Small angle bracket:** pallet of 400 units (1200 × 800 mm)
- **Large angle bracket:** pallet of 200 units (1350 × 800 mm)
- **Support bracket:** box of 100 units (300 × 200 mm)

✅ **Proportional packaging** allows a full truckload to be built with **600 box structures**.

💡 **Transport recommendation:**

An optimal order size is **200 box structures**, ensuring **simplified logistics** and **optimized shipping costs**.

# **GSE GROUND SYSTEM™**

## **Realisations**

# See the products in action



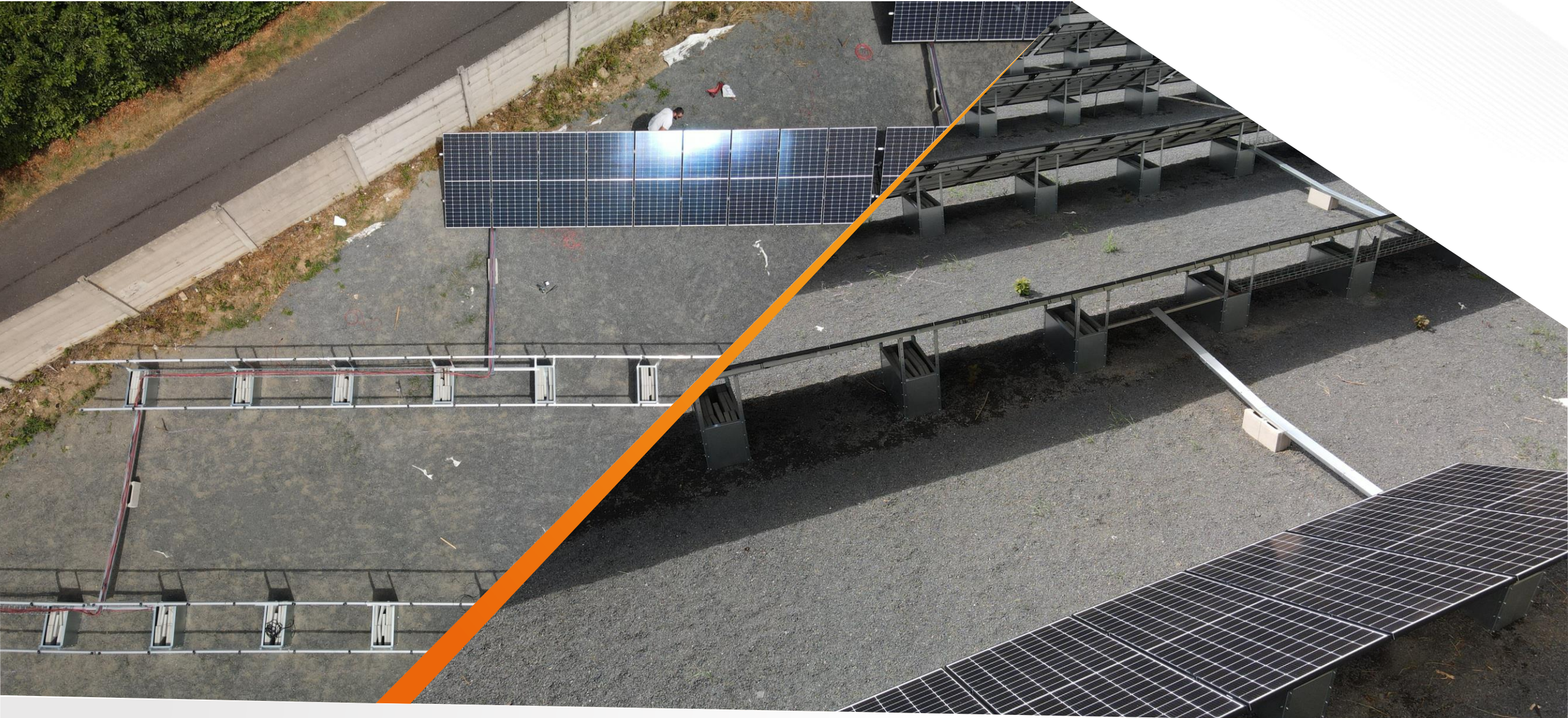
# See the products in action

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# See the products in action

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# Thank you for your attention!

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