EUROPEAN PV
MOUNTING SYSTEMS
MANUFACTURER

Energy5

POLISH MANUFACTURER OF PHOTOVOLTAIC STRUCTURES

TÜVRheinland CERTIFIED

DEKRA

STEEL WITH ANTI-CORROSION COATING

UP TO 25 YEARS WARRANTY FOR STRUCTURES

7 GW+ of PV mounting structures manufactured

350 MW+ of manufactured PV trackers

1,5 GW anual production capacity

2 manufacturing plants

11 years of experience

15+ export markets

45+ registered designs with the EU Intellectual Property Office

7 automated production lines

160+ employees

About Us

Who are we?

Designed for decades. Built for the future.
These are the foundations of Energy5.

We design and manufacture advanced photovoltaic mounting systems tailored to the specific needs of every project. As a leading European producer of PV structures, we combine engineering expertise with innovative, field-tested solutions to deliver products that meet the highest industry standards.

Energy5 is also a pioneer in research on photovoltaic structures, particularly in the area of corrosion resistance and long-term performance. Our commitment to quality is supported by a team of experienced engineers, skilled operators and dedicated specialists who ensure precision at every stage, from design to production.

With Energy5, you gain a reliable partner focused on performance, durability and safety for years to come.

Offer

PRODUCTION AND DELIVERY
of photovoltaic structures

TECHNICAL AND SERVICE SUPPORT

INDIVIDUAL DESIGN

FREE PRODUCT TRAINING

Modern
STATE-OF-THE-ART MACHINERY

2 PRODUCTION SITES
in central Poland

7 AUTOMATED LINES,
originating from leading manufacturers

3200 M²
of manufacturing space

ENGINEERED
for site-specific conditions

Comprehensive studies

To ensure maximum operational safety, we deliver ready-to-install mounting systems for photovoltaic modules, with every connection component thoroughly tested as part of the complete system.

All testing is conducted to verify compliance with legally required performance standards applicable to construction products of this type, confirming the declared mechanical strength and reliability of the system.

The highest standard

Backed by engineering expertise and collaboration with leading research institutions, our solutions meet the highest European standards and comply with all required certifications and regulatory approvals.

GRYFIT LAB

ITH®

KEZO Konwersja Energii i Źródła Odnawialne Centrum Badawcze PAN

IMP

Tests
AND CERTIFICATES

KRAJOWA OCENA TECHNICZNA
ITB-KOT-2018/0109 wydanie 2

Energy5 Sp. z o.o.
ul. Ziejkowa 5, 00-500 Gostynin

Zestawy wyrobów do mocowania modułów fotowoltaicznych i kolektorów słonecznych systemu ENERGY5

30 marca 2028 r.

National Technical Assessment

The range of functional and operational features of the Energy5 structure is much wider than that required by the range of the EN-1090-1 standard.

TÜVRheinland CERTIFIED
Safety
Regular
Production
Surveillance
www.tuv.com
ID 0000065055

Security Certificate. Controlled production

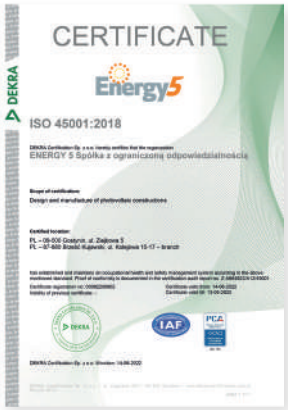
Energy5 products have a certificate issued by TÜV Rheinland, an independent entity, internationally recognized. It does confirm the highest quality and safety of products.

Certification of Factory Production Control

Energy5's products have certificates of conformity awarded
to the Factory Production Control pursuant to the EN 1090-1,2,3 standard

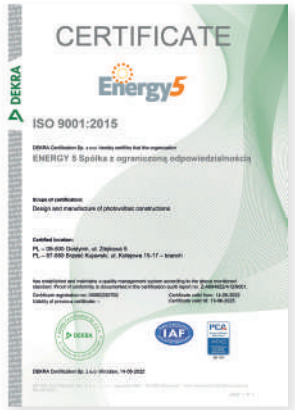
Environmental Management System

in compliance with ISO 14001:2015 standard



Occupational Health and Safety System

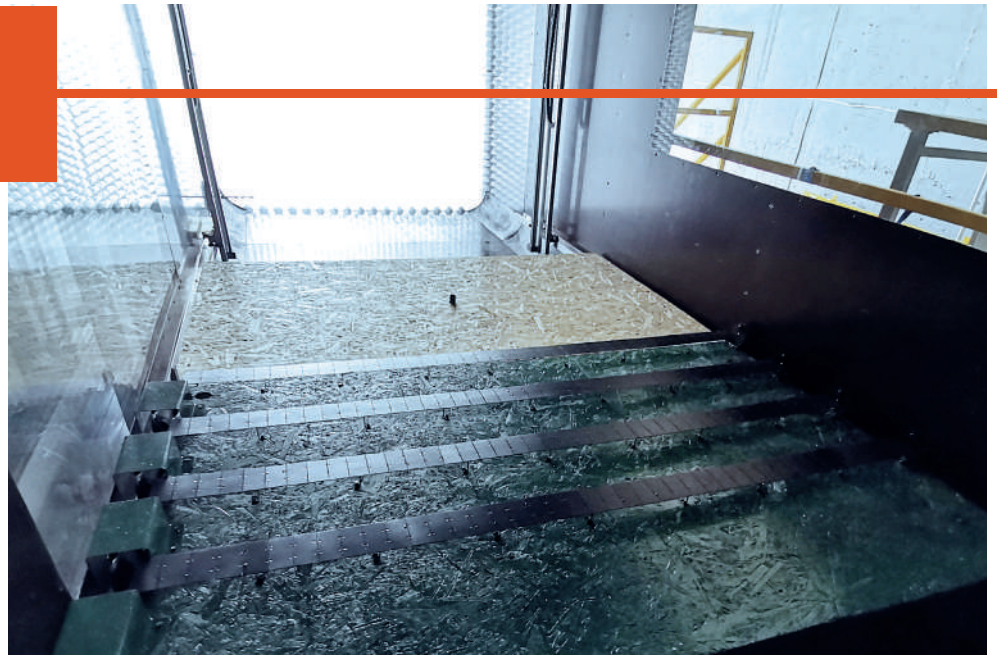
in compliance with ISO 45001:2018 standard



Quality Management Systems

in compliance with ISO 9001:2015 standard

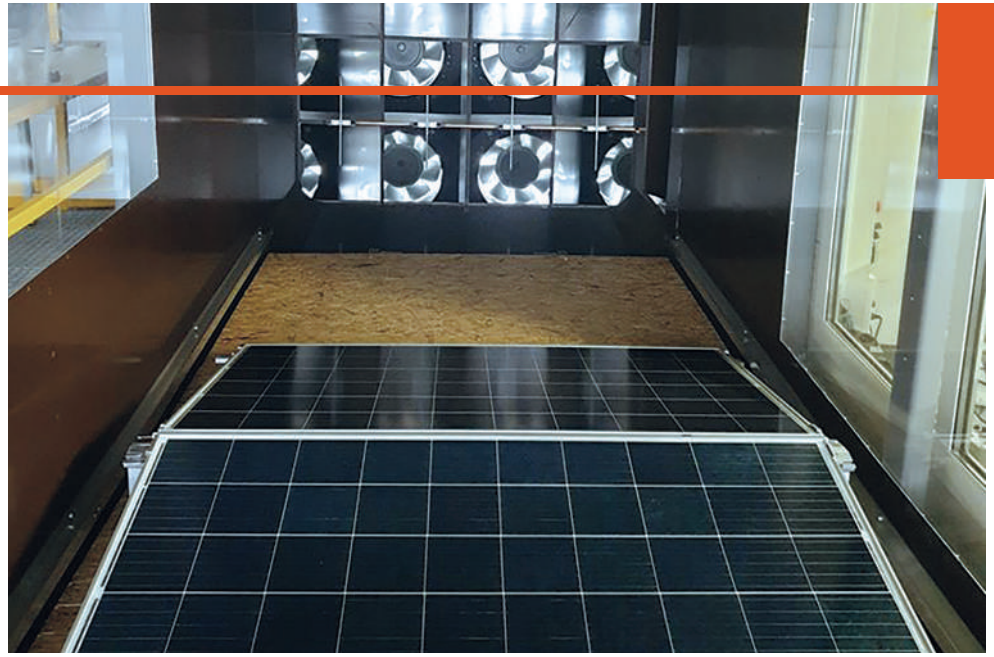
Tested
AND VERIFIED PERFORMANCE



The technical performance of Energy5 structures has been validated through comprehensive type testing conducted at the Building Research Institute.

The scope of testing includes:

- Product classification in terms of shape and dimensions, in compliance with PN-EN 755-9:2010
- Durability classification of aluminium profiles in accordance with PN-EN 1999-1-1:2011
- Corrosion resistance classification of steel sections up to class C5, pursuant to PN-EN ISO 12944-2:2018
- Structural connection strength
- Load resistance of PV modules, including their supporting structure
- System performance on flat roofs, verified in aerodynamic tunnel testing
- Structural strength of Aero S and Aero EW systems (glued or welded to membrane surfaces), tested in an aerodynamic tunnel
- These tests confirm the structural reliability, durability and compliance of Energy5 systems with applicable industry standards.



Tested
AND VERIFIED PERFORMANCE

Additional Testing for Maximum Safety and Long-Term Durability

At Energy5, safety and durability are verified through extensive in-house testing designed to ensure long-term system performance under real operating conditions.

Our additional testing scope includes:

- Shear and tensile strength of structural connections, including hammer screws installed in aluminium and steel profile channels
- Structural resistance of PV modules together with the supporting system under wind and snow loads
- Load transfer performance of middle and end mounting clamps
- Impact resistance of the complete system against both soft-heavy and hard-light objects
- Long-term durability depending on the environmental corrosion class
- Total system weight analysis, critical for accurate roof load verification
- These tests ensure structural integrity, reliability and compliance in demanding environmental conditions worldwide.

Ground-Mounted **STRUCTURES**

What are the Ground-Mounted Structures?

Ground-mounted structures are engineered support systems designed for photovoltaic installations of any scale — from small commercial projects to large utility-scale solar power plants comprising hundreds of thousands of modules.

Designed with structural integrity and long-term performance in mind, these systems ensure optimal energy generation while maintaining reliability under diverse environmental and geotechnical conditions. Their robust design guarantees stability, durability and efficient operation throughout the entire lifecycle of the installation.

Individual approach

The systems proposed by us are selected individually, taking into account the **shape of a terrain, geotechnical conditions, and wind and snow zones in a specific location.** We manufacture structures for modules with an

25

a guarantee for the systems
for up to 25 years

different
table inclines

vertical or horizontal
layout of the modules

structures adopted to
glass-glass and bifacial modules

aluminium frame, as well as for glass-glass or bifacial modules. We provide a support of well-qualified specialists from a design to a final installation.

Extensive range

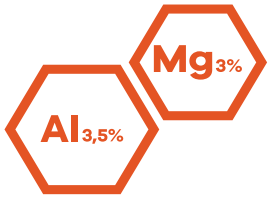
We offer pile driving services, including **pull out tests for structural piles,** required for a correct installation of the structure.

Safety guarantee

We make all efforts possible to ensure that systems designed by us not only **reduce monthly electricity bills, but are also safe**. We perform tests of all connecting elements in the system, guaranteeing **the long-term reliability** and **smooth operation.**

Resistance to corrosion

To ensure correct protection against corrosion, the overground Energy5 systems are made of black steel, S320, coated with the metallic coat Magnelis®. The coating is characterised by its significantly **higher resistance to corrosion**, when compared to galvanised products. This innovative coating guarantees a long-term protection against corrosion in aggressive environmental conditions, up to the corrosion class C5, and this translates into the increased life of the photovoltaic systems.



EUIPO
URZĄD UNII EUROPEJSKIEJ DS. WŁASNOŚCI INTELEKTUALNEJ

Ground-Mounted **STRUCTURES**

GOLD MEDAL 2023

Photovoltaic tracker TR/V1/R or TR/V1/K

The Energy5 photovoltaic tracker is a single axis system that follows the sun. It allows modules to be mounted in a single row up to a maximum length of 98 m.

- It stands out with yields up to 30% higher than still PV structures. Exceptional efficiency of the solar system is ensured by the sun-tracking feature, which aligns the PV modules optimally to the direction of sunrays.
- The system is controlled through an astronomical clock, while the system security is provided by smart sensors that measures wind strength and direction. When the critical values are exceeded, the system automatically forces the panels into the safe position.
- The Energy5 tracking system is also equipped with snowfall sensors. When heavy precipitation is detected, the trackers go into automatic snow removal mode and angle the structures to allow snow to slide off or the structures to be cleaned.

PHOTOVOLTAIC TRACKER SYSTEM SPECIFICATION:

Material	black steel with Magnelis® coating or galvanized steel
Number of module rows	1
Layout	vertical
Incline	+/- 60°
Maximum tilt of the tracker in the north-south direction	4°
Fixing method	pile driven / concrete
Guarantee	up to 25 years guarantee for perforation
Maximum tracker length	98 m* *depending on module dimensions
Minimum module-to-ground clearance	400 mm
Maximum module-to-ground clearance	3000 mm

BACKTRACKING FUNCTION – ROW SHADING MINIMIZATION

The 3D-backtracking algorithm calculates the angle of the panels to prevent shading of the consecutive rows of modules. This function allows the panels to be rotated to a position in which the shadow cast is shorter and bypasses the next row, ensuring the highest efficiency of the follow-up system.

SUN TRACKING
system

3D BACKTRACKING
minimize row shading

SNOW REMOVAL

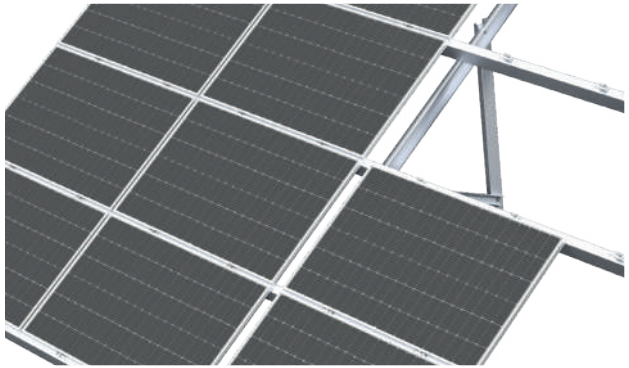
EMERGENCY POWER
system

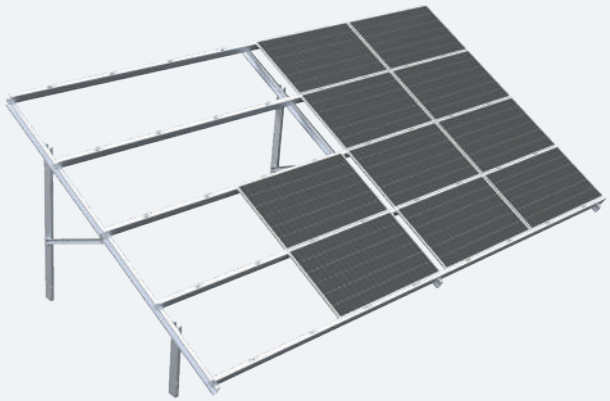
additional feature:
24/7 MONITORING APPLICATION

Ground-Mounted **STRUCTURES**

BIFACIAL - WITH TWO SUPPORTS

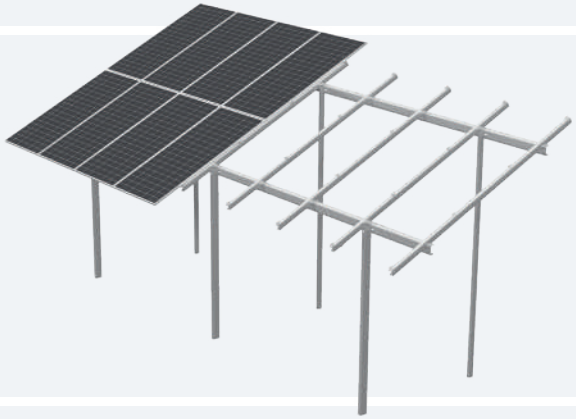
- Horizontal arrangement of four modules
- **The bifacial system** is characterised by a reduced shadowing of modules by structural elements. The structure profiles are spaced in such way that they enable a maximum exposure of the bottom side of the bifacial modules to reflected and scattered light.





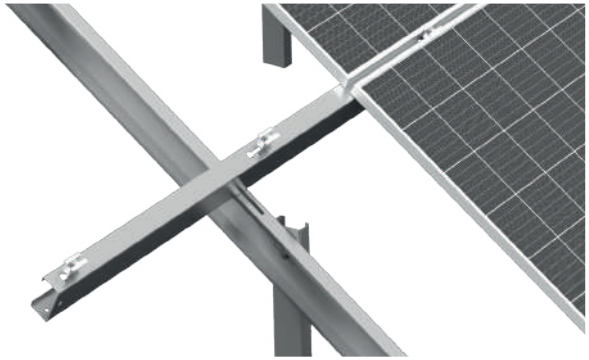
BIFACIAL - WITH TWO SUPPORTS

- Vertical arrangement of two modules.

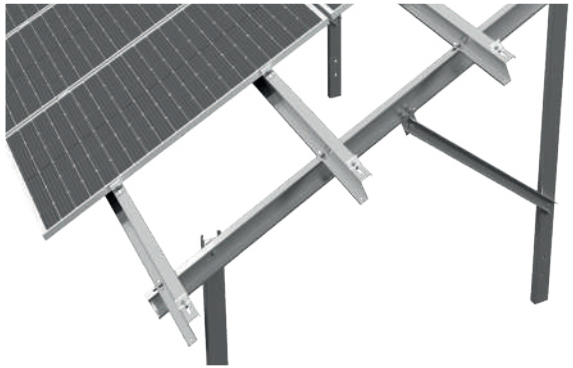


DRIVEN IN – WITH TWO SUPPORTS

- Horizontal arrangement of four modules.

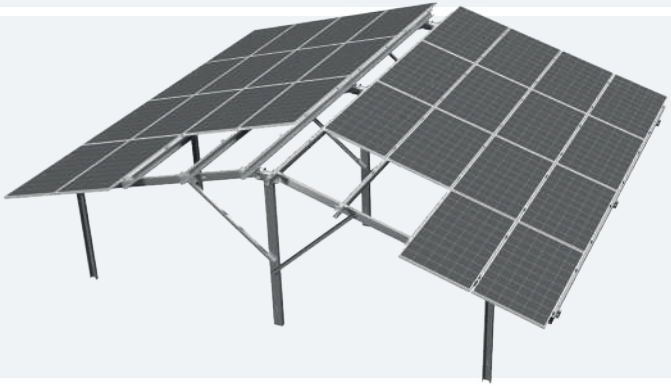


Ground-Mounted **STRUCTURES**



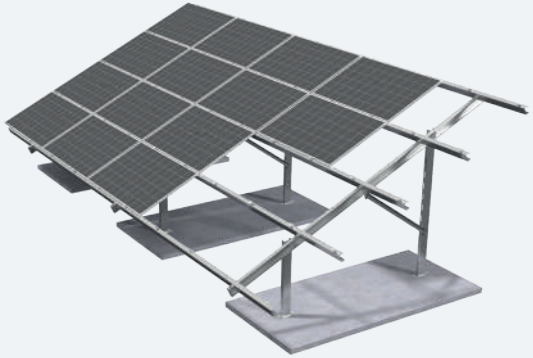
Pile-driven - WITH TWO SUPPORTS

- Vertical arrangement od two modules.



Pile-driven - WITH THREE SUPPORTS EAST / WEST

- Horizontal arrangement of four modules.



MECHANICALLY FIXED - WITH TWO SUPPORTS

- Horizontal arrangement of four modules.
- Option for a different configuration of the modules.

Roof SYSTEMS

FOR FLAT ROOF

FOR PITCHED ROOF

What are the roof systems?

Roof systems are solutions in which a **roof is used as a surface for fixing of photovoltaic modules.** The installation method is selected according to the **roof structure** and **decking**.

When selecting the roof fixing system, the following aspects are particularlyimportant:

- roof load bearing capacity, i.e., its acceptable load,
- roof tightness, being a precondition for the use of an invasive system.

Extensive range

The systems offered for flat roofs (the incline of up to 5°) include Ekierki Eco, with a ballast or fixed mechanically, as well as ballast aerodynamic systems Aero S and Aero EW.

We also offer systems for pitched roofs (the incline exceeding 5°), selected individually for each type of roof decking. With a small number of elements, the roof systems are quick and easy to assembly.

Resistance to corrosion

Roof structures are made of **high quality aluminium profiles**, with all connecting elements manufactured from **stainless steel**. This type of connection is the best solution for structures exposed to adverse weather conditions, ensuring an **excellent resistance to corrosion.**

a 10-year guarantee
for the systems

vertical or horizontal
layout of the modules

structures adopted to
glass-glass modules

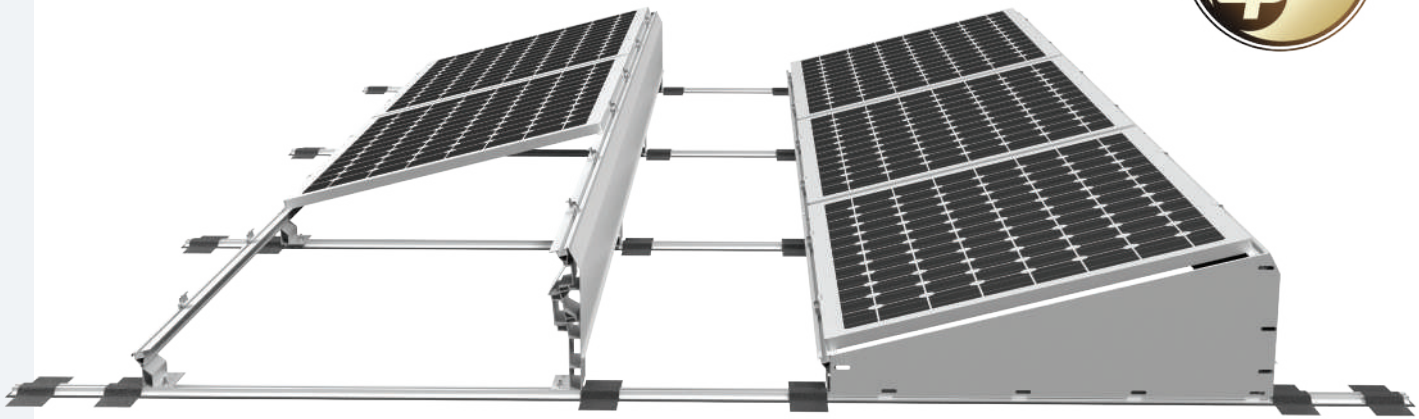
Systems
FOR FLAT ROOFS

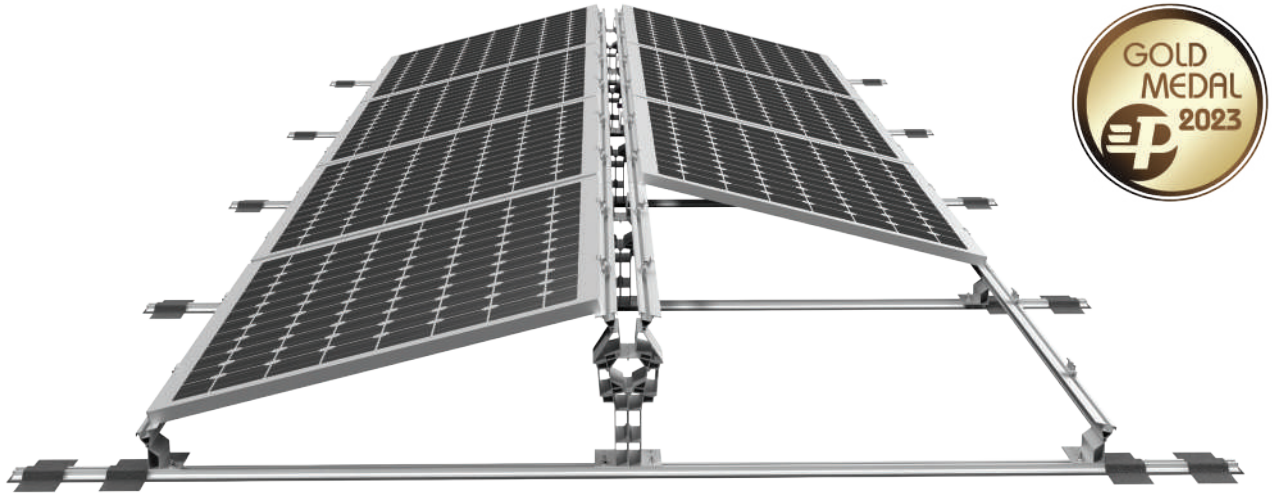
AERO S - INCREASED HEIGHT
SOUTH

AERO EW - INCREASED HEIGHT
EAST/WEST

- Aerodynamic systems on a support of the increased height allow to maintain 10-centimetre distance between the module frame and the roof surface. The systems include individually designed AERO profiles. Special connections in profile joints enable adjusting rotation to ensure precise adhering to the module surface. The systems of the increased height for a flat roof ensure better air circulation and protection of cables, thus guaranteeing that fire-prevention conditions of module manufactures are met.

  Fixing method: glueing or heat sealing / weighing down with ballast





Possibility of mounting both on the short* and long side of the module

* Horizontal installation of large modules on their short side is only possible when a manufacturer of the modules allows it.

Systems
FOR FLAT ROOFS

AERO S – GLUED*

SOUTH

AERO EW - GLUED*

EAST / WEST

- The Aero S / EW system glued to membrane is based on glueing of fixing components from the same material as the roof decking. This way, a stable structure can be formed without unnecessary loading of the roof. The installation does not interfere with the roof decking.

Fixing method: glueing or heat sealing

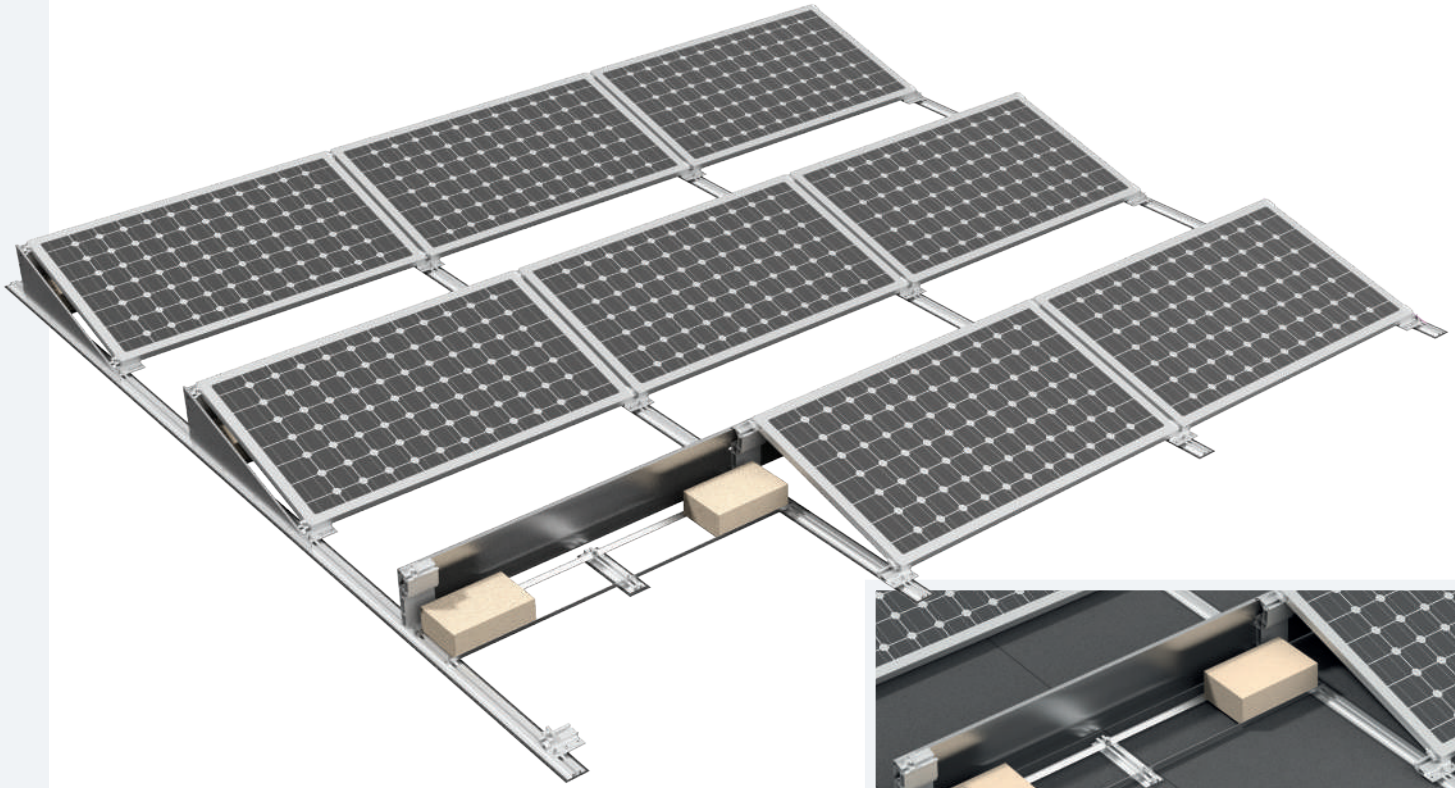
Possibility of mounting both on the short* and long side of the module

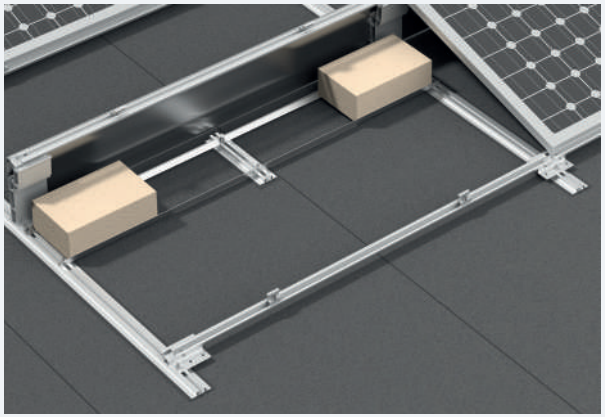
* Horizontal installation of large modules on their short side is only possible when a manufacturer of the modules allows it.

Systems
FOR FLAT ROOFS

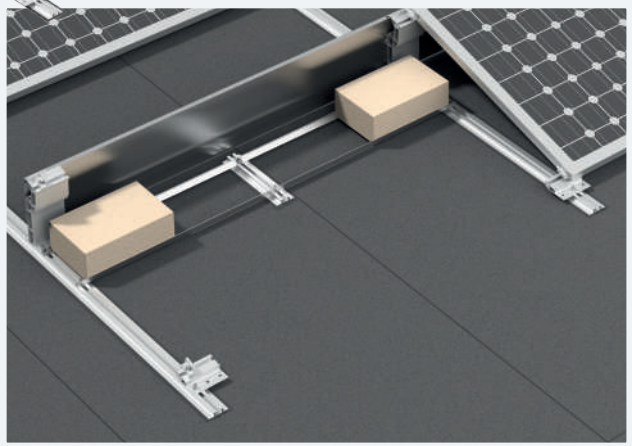
AERO S* SOUTH

- An advantage of the Aero S is a permanent connection of rows and the use of side and rear covers, which minimise the wind influence on the structure, help to reduce the amount of required ballast, and in consequence, decrease the roof load. The installation does not interfere with the roof decking.





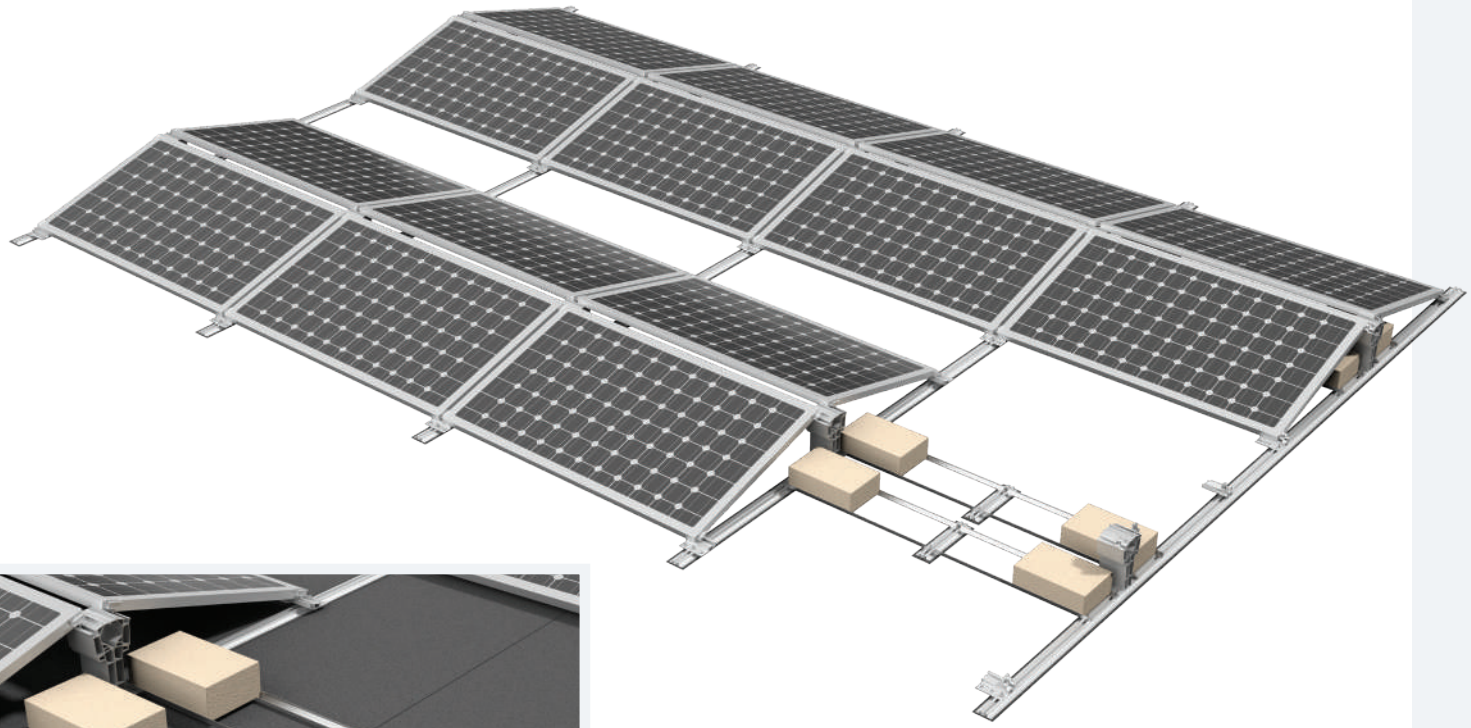
INSTALLATION ALONG A LONG SIDE

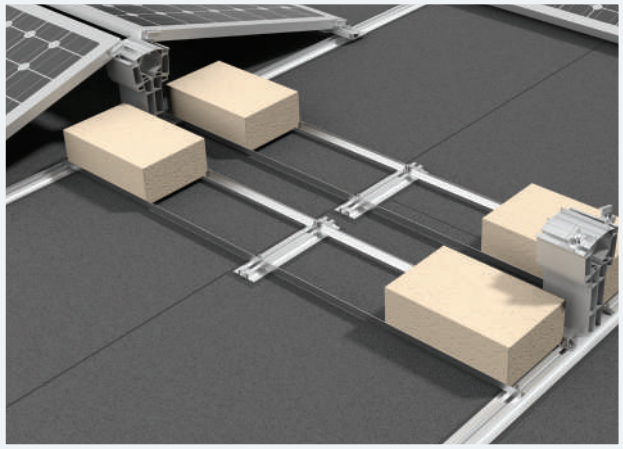


INSTALLATION ALONG A SHORT SIDE

* Horizontal installation of large modules on their short side is only possible when a manufacturer of the modules allows it.

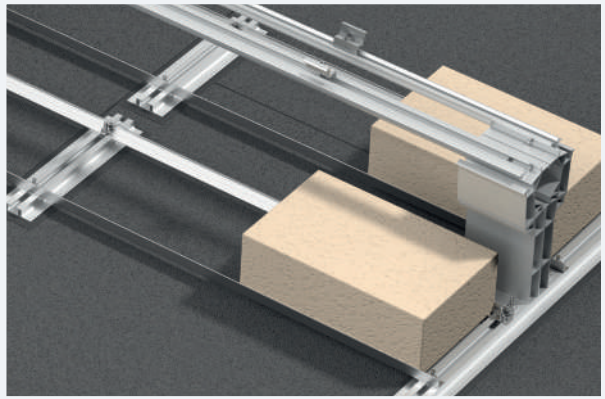
Systems
FOR FLAT ROOFS

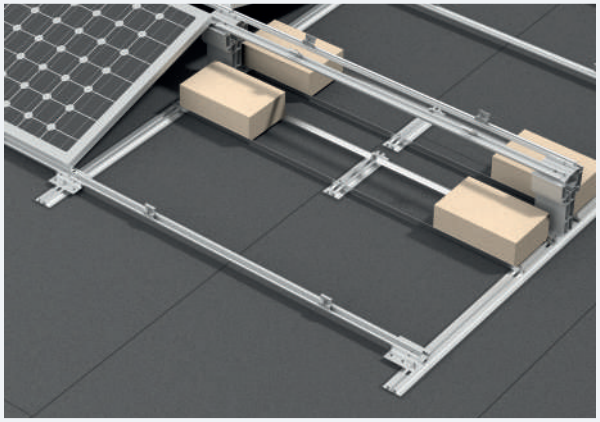




INSTALLATION ALONG A SHORT SIDE

AERO EW* EAST / WEST





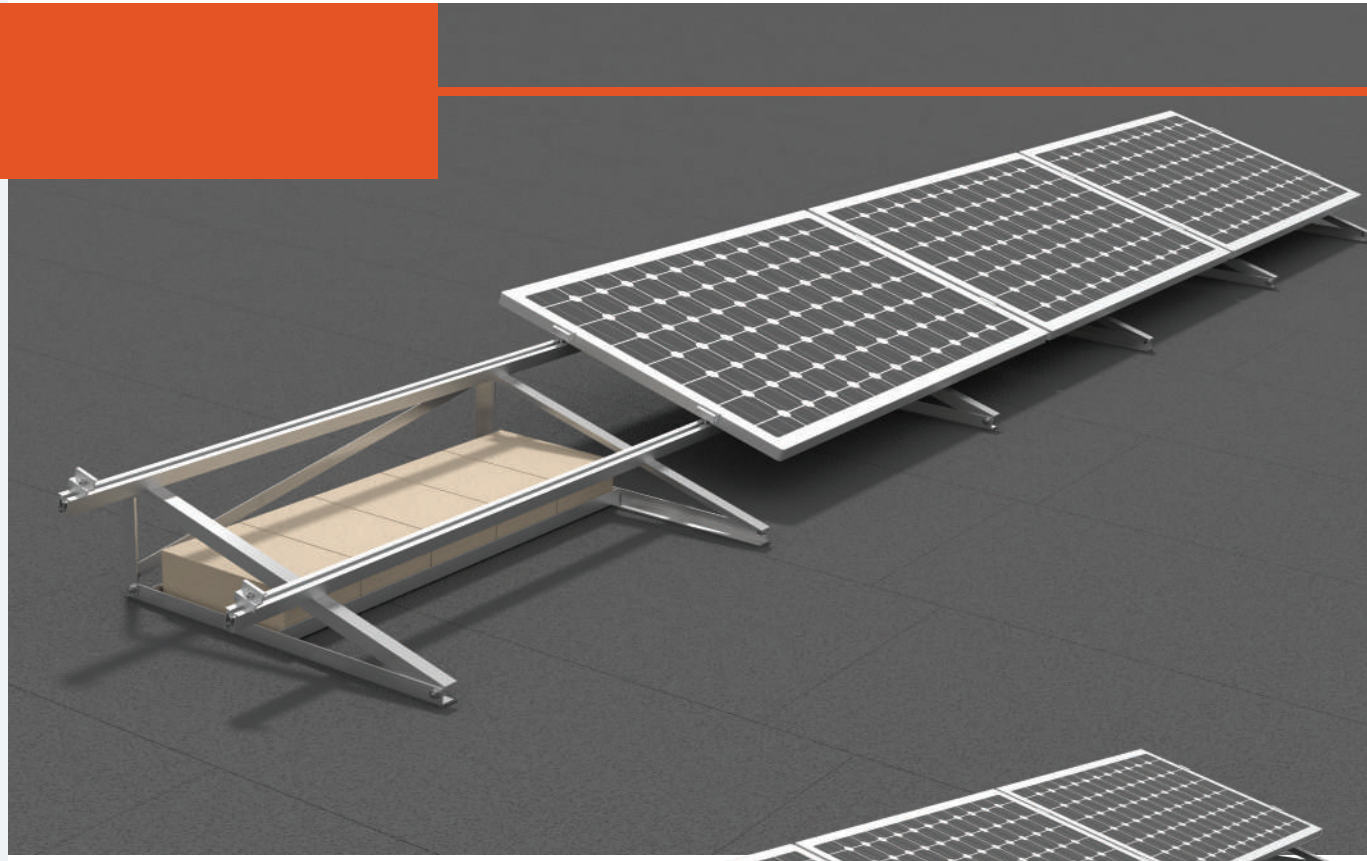
INSTALLATION ALONG A LONG SIDE

* Horizontal installation of large modules on their short side is only possible when a manufacturer of the modules allows it.

Systems
FOR FLAT ROOFS

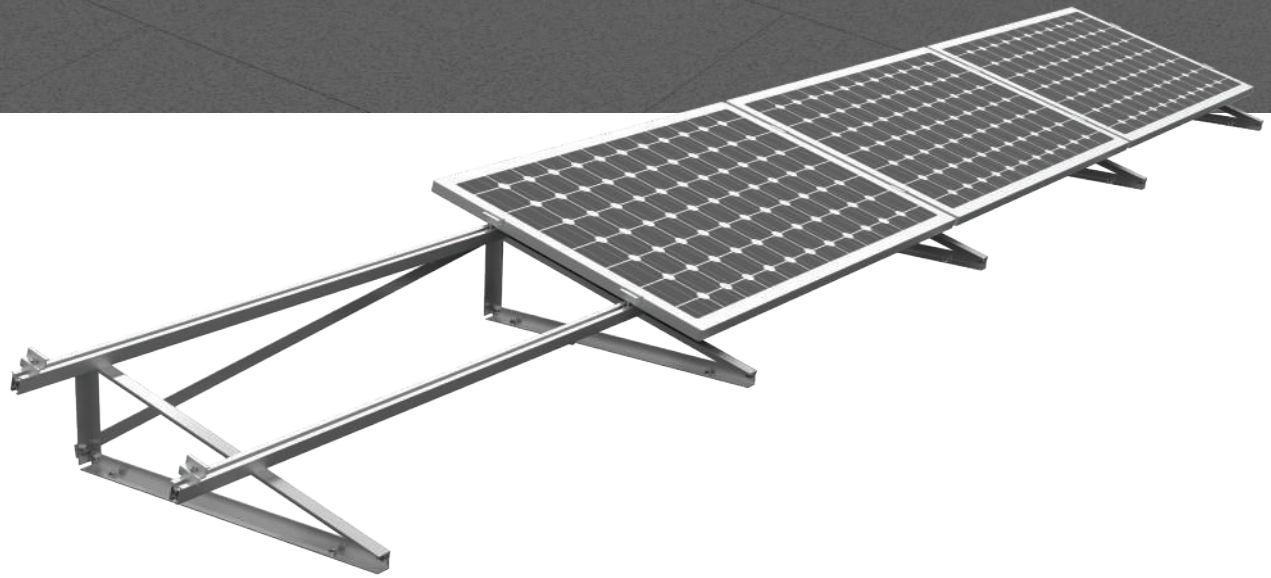
EKIERKA ECO WITH THE BALLAST*

- An advantage of the Ekierka Eco solution is a possibility to install modules horizontally, and to set the structure at different inclines. The installation does not interfere with the roof decking.



EKIERKA ECO - MECHANICAL INSTALLATION*

- An option of vertical or horizontal installation.



* Horizontal installation of large modules on their short side is only possible when a manufacturer of the modules allows it.

Systems for a roof
COVERED WITH SANDWICH PANELS

Customised design

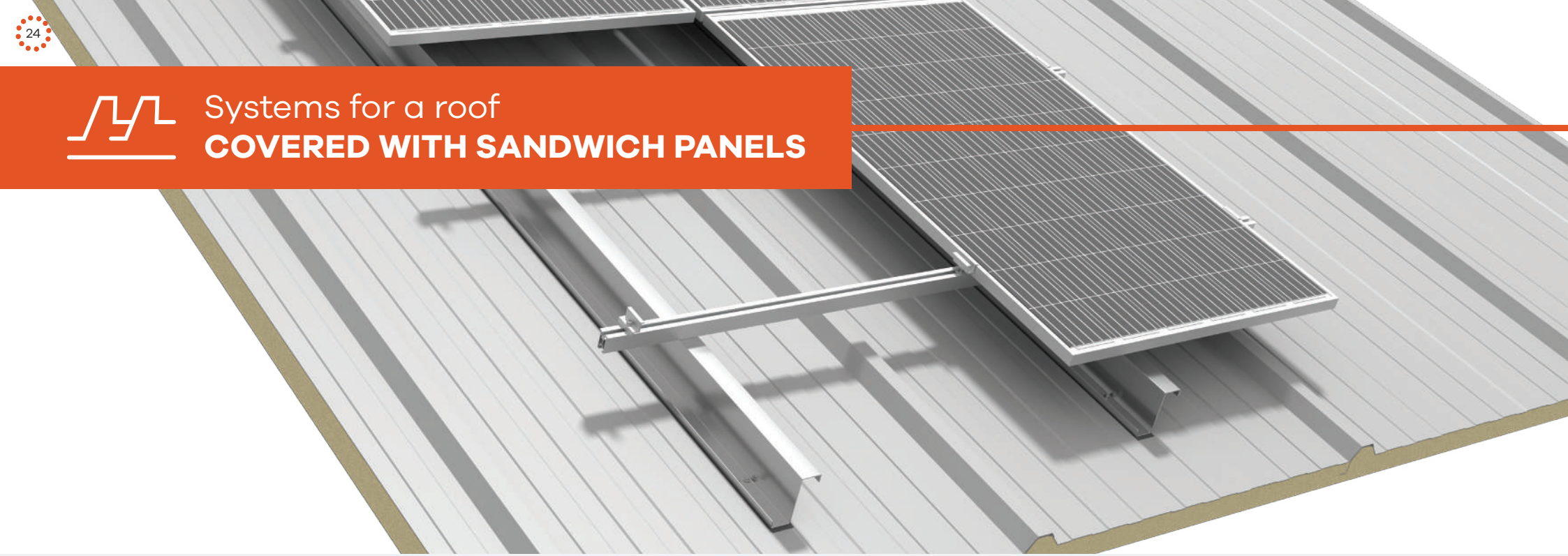
Systems for a roof covered with sandwich panels are fixed to the roof substructure, for example, using roofing screws. The steel profiles fixed to purlins are used - this solution prevents transfer of the load onto the sandwich panel and its permanent damage. Each design is analysed individually, so you can be sure that together we will find the best solution.

a 10-year guarantee
for the systems

vertical or horizontal
layout of the modules

structures adopted to
glass-glass modules

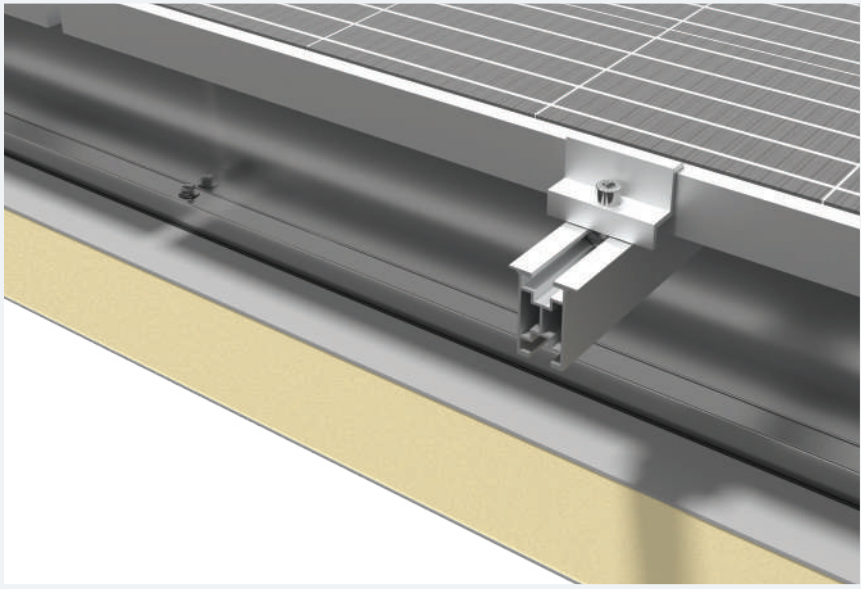
Systems for a roof
COVERED WITH SANDWICH PANELS



PITCHED ROOF SYSTEM

TECHNICAL SPECIFICATION	
System material	Aluminium and Magnelis® steel sheet
Roof type	Pitched/sandwich panel
Module orientation	Vertical
Fixing system	Along the longer side, cross installation
Roof surface area for 1 kW	6.65 m^2 (for the 1650x992 module)
Roof load (a module of 20 kg 250 W was assumed)	103.7 kg/1 kW 15.6 kg/m^2

Note: The calculations did not take into account the snow load and wind pressure/suction

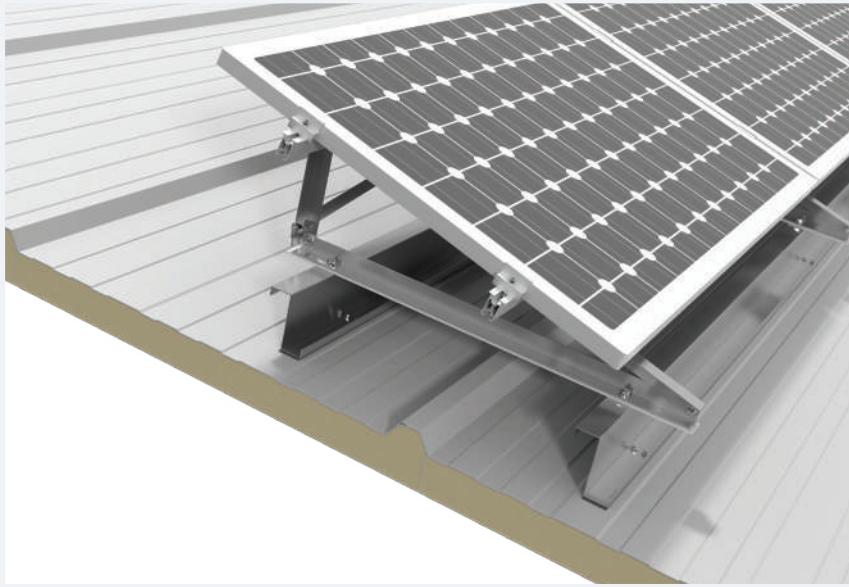


Systems for a roof
COVERED WITH SANDWICH PANELS

EKIERKA ECO - FLAT ROOF SYSTEM SOUTH

TECHNICAL SPECIFICATION	
System material	Aluminium and Magnelis® steel sheet
Roof type	Flat/sandwich panel
Module orientation	Vertical / horizontal
Fixing system	Triangles 10° – 35°
Roof surface area for 1 kW	6.8 m^2 (for the 1650x992 module)
Roof load (a module of 20 kg 250 W was assumed)	135.2 kg/1 kW 19.9 kg/m^2

Note: The calculations did not take into account the snow load and wind pressure/suction



AUTOBOX **SYSTEM**

a 10-year guarantee
for the systems

a structure can be covered with
trapezoidal sheet metal

vertical or horizontal layout
of the modules

a single- or a multi-segmented
shed

What is the AUTOBOX system?

AUTOBOX is a modern ground-mounted carport structure designed for parking areas. It seamlessly combines the functionality of a protective shelter with the efficiency of a photovoltaic system. AUTOBOX transforms parking spaces into energy-generating assets. The system can be integrated with EV charging stations, enabling electric vehicles to be powered directly by clean solar energy produced on-site.

Design and Technical Features

AUTOBOX is available in single-module configurations, covering two parking spaces, as well as in multi-segment layouts tailored to larger installations. The structure features a roof inclination of up to 10°, optimised for efficient water drainage and photovoltaic performance.

The two-point supported load-bearing frame can be finished with trapezoidal sheet metal roofing or designed as an open structure using cold-formed steel purlins. The main carport structure is manufactured from hot-dip galvanised steel, ensuring long-term durability and corrosion resistance. The support components used for mounting photovoltaic modules and connectors are made of high-quality aluminium, combining strength with lightweight precision.

Completed

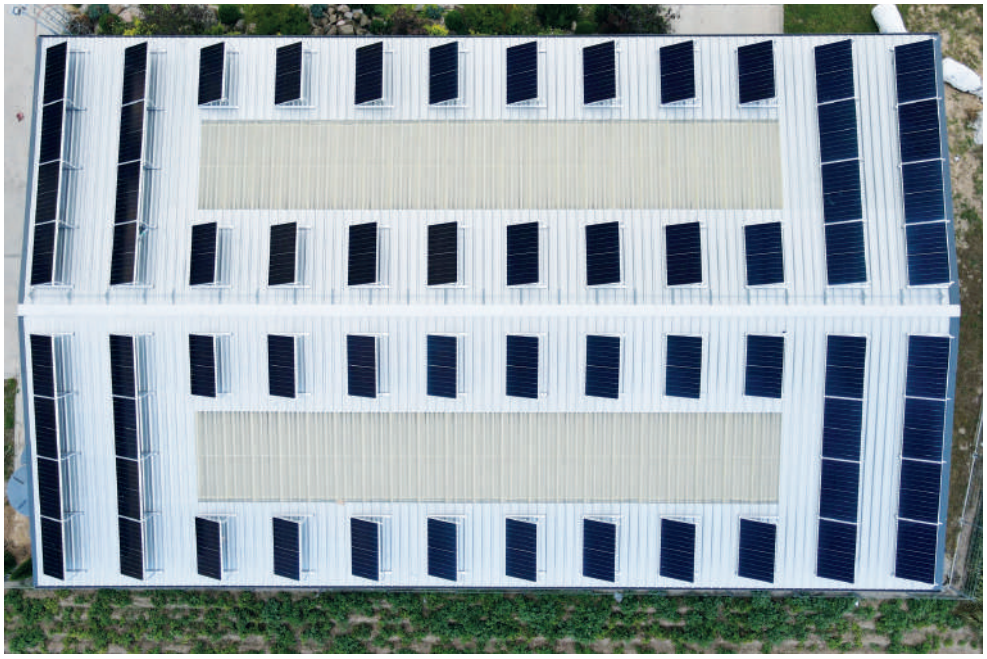
GROUND-MOUNTED STRUCTURES

Completed
GROUND-MOUNTED STRUCTURES

Completed
GROUND-MOUNTED STRUCTURES

Completed
GROUND-MOUNTED STRUCTURES

Completed
ROOF PROJECTS



Wykonanie: www.nc.com.pl

Energy5

FIXING SYSTEMS FOR PV MODULES

+39 349 0771326

+48 882 493 692

+48 604 277 420

office@energy5.pl

WWW.ENERGY5.PL/EN