



ENERGYKA

**BIPV SOLUTION**

ENERGYKA SRL - ENERGYKA ELECTROSYSTEM SRL - ENERGYKA ENGINEERING SRL - ENERGYKA TRADING SARL - ENERGYKA LTD  
Via G. Ferraris, 52 – 31044 Montebelluna (TV) – Italy - P. Iva IT-04341330266 - TEL : +39 (0) 423 602405  
[www.energyka.com](http://www.energyka.com) - [info@energyka.com](mailto:info@energyka.com)

### Summary

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# Global Solar | POWER FLEX



### PV Modules Specification :

- Global Solar Energy is a Leading manufacturer of flexible CIGS solar cells (Copper Indium Gallium DiSelenide). Global Solar high efficiency CIGS solar modules are designed for rooftops. The flexible module fits all roof shapes, is lightweight, and requires no roof perforations or mounting hardware.

#### **Integrates with roofing surface:**

- No mounting hardware;
- No roof penetrations;
- No wind load.

#### **Flexible module:**

- Fits all roof types and shapes;
- Durable, non-breakable.

#### **Light weight :**

- 2.5 kg/mq;
- No structural reinforcement required.



**Global Solar Energy, Inc.**  
8500 South Rita Road  
Tucson, Arizona, 85747, USA  
Phone: +1 (520) 546-6313  
Fax: +1 (520) 546-6318  
[info@globalsolar.com](mailto:info@globalsolar.com)

**Global Solar Energy Deutschland GmbH**  
Am Studio 16  
12489 Berlin, Germany  
Phone: +49 (30) 81879-9200  
Fax: +49 (30) 81879-9222  
[info@de.globalsolar.com](mailto:info@de.globalsolar.com)



## PV Modules Specification :

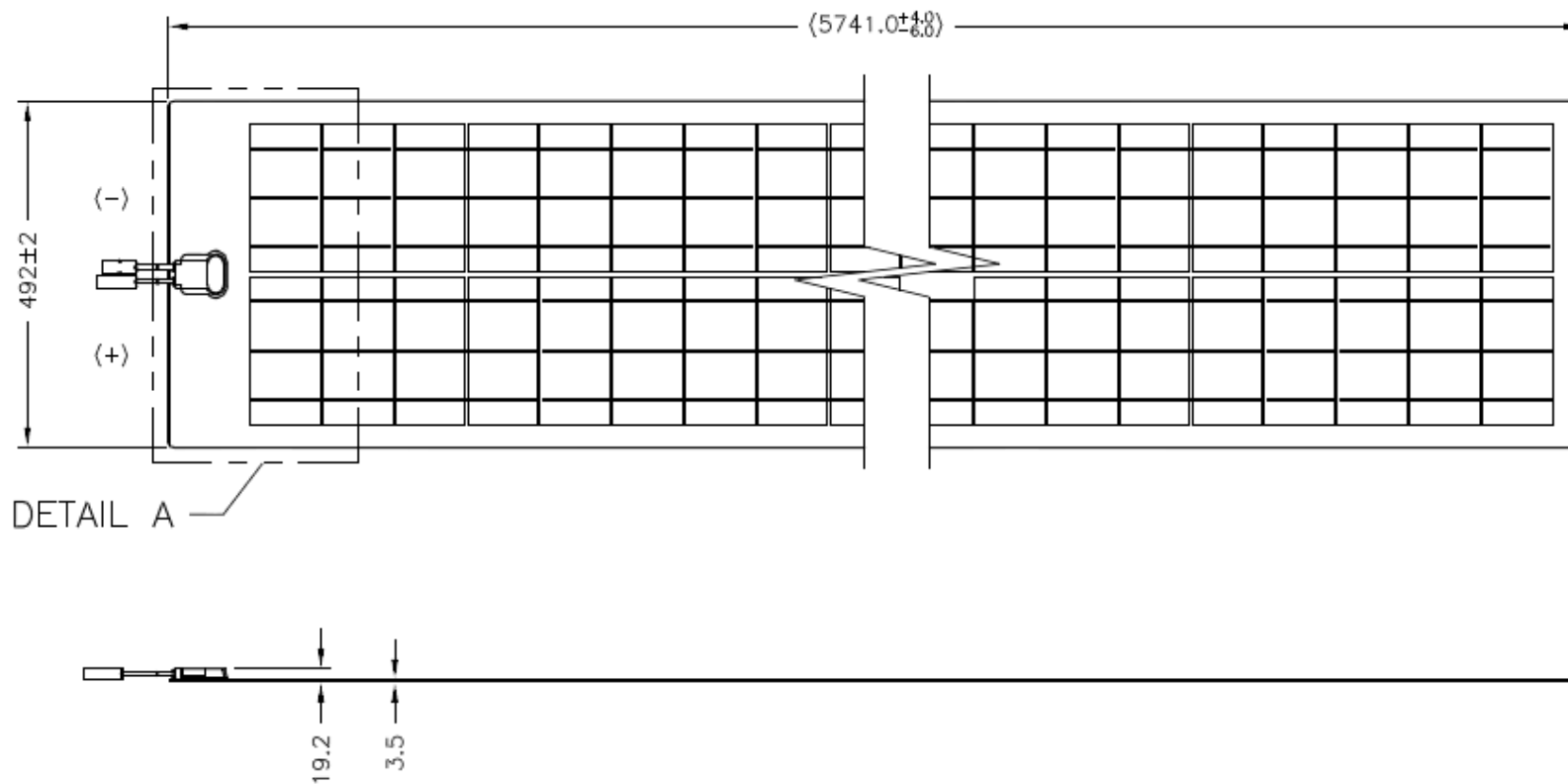
- IEC Certifications :

Global Solar PV Modules are certified According IEC **61646** and **61730 1/2**

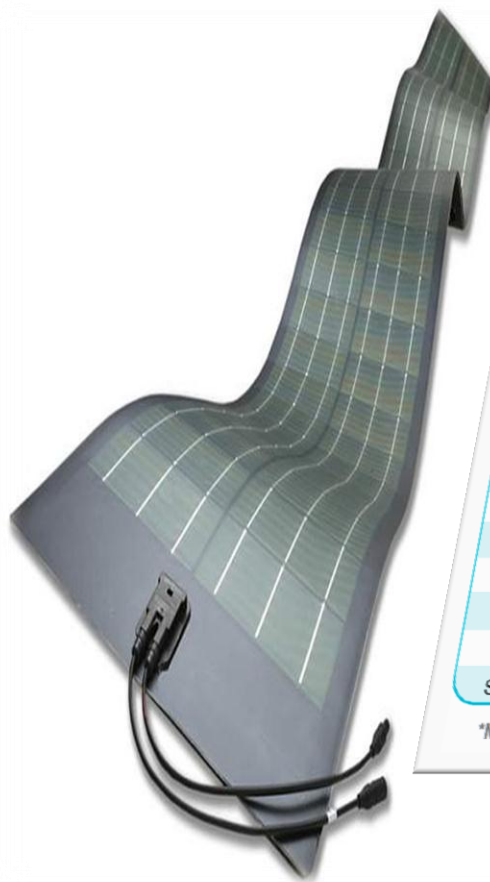


### PV Modules Specification :

- **Dimensions**



## PV Modules Data Sheet:



### Mechanical Specifications

Dimensions	5740x490x3 mm (226x19.3x0.12 in)
Weight	10.0 kg (nominal weight with adhesive) 3.5 kg/m <sup>2</sup> (0.5 lb/ft <sup>2</sup> ) with adhesive
Junction Box	Junction box with bypass diode
Cables	Locking
Front Sheet	ETFE
Solar Cells	108 CIGS cells (210x100 mm)
Frame	None

### Electrical Specifications\*

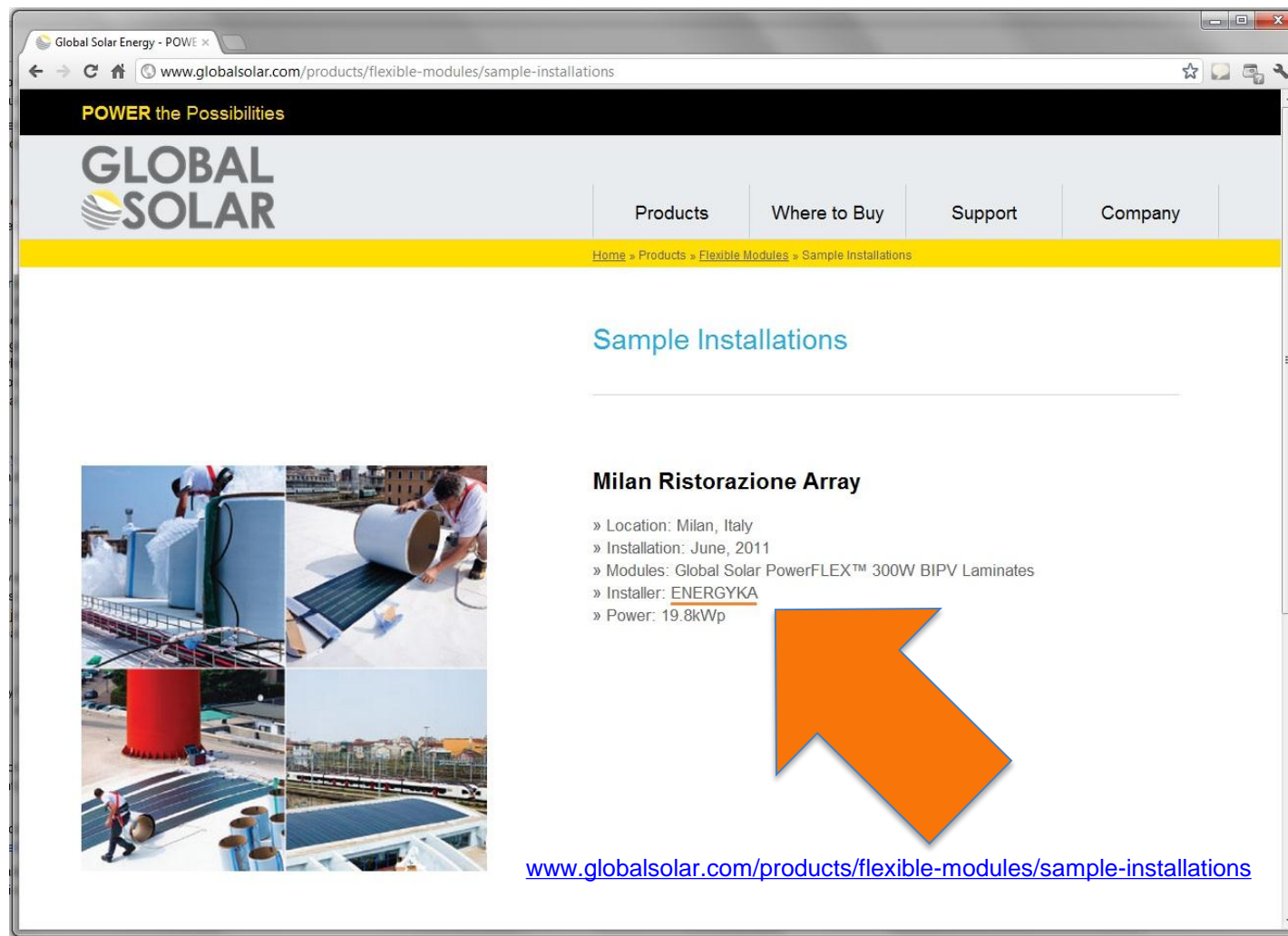
Capacity rating	P <sub>max</sub>	300 W	275 W	250 W
Tolerance of P <sub>max</sub>	%	± 5%	± 5%	± 5%
Module aperture area efficiency	%	12.6%	11.5%	10.5%
Rated voltage	V <sub>mpp</sub>	51.7 V	50.0 V	47.2 V
Rated current	I <sub>mpp</sub>	5.8 A	5.5 A	5.3 A
Open circuit voltage	V <sub>oc</sub>	71.0 V	67.7 V	64.5 V
Short circuit current	I <sub>sc</sub>	6.5 A	6.4 A	6.3 A

\*Measured at (STC) Standard Test Conditions: 25°C, 1 kW/m<sup>2</sup> insolation, AM 1.5





**ENERGYKA official Global Solar partner for developing BIPV solutions :**





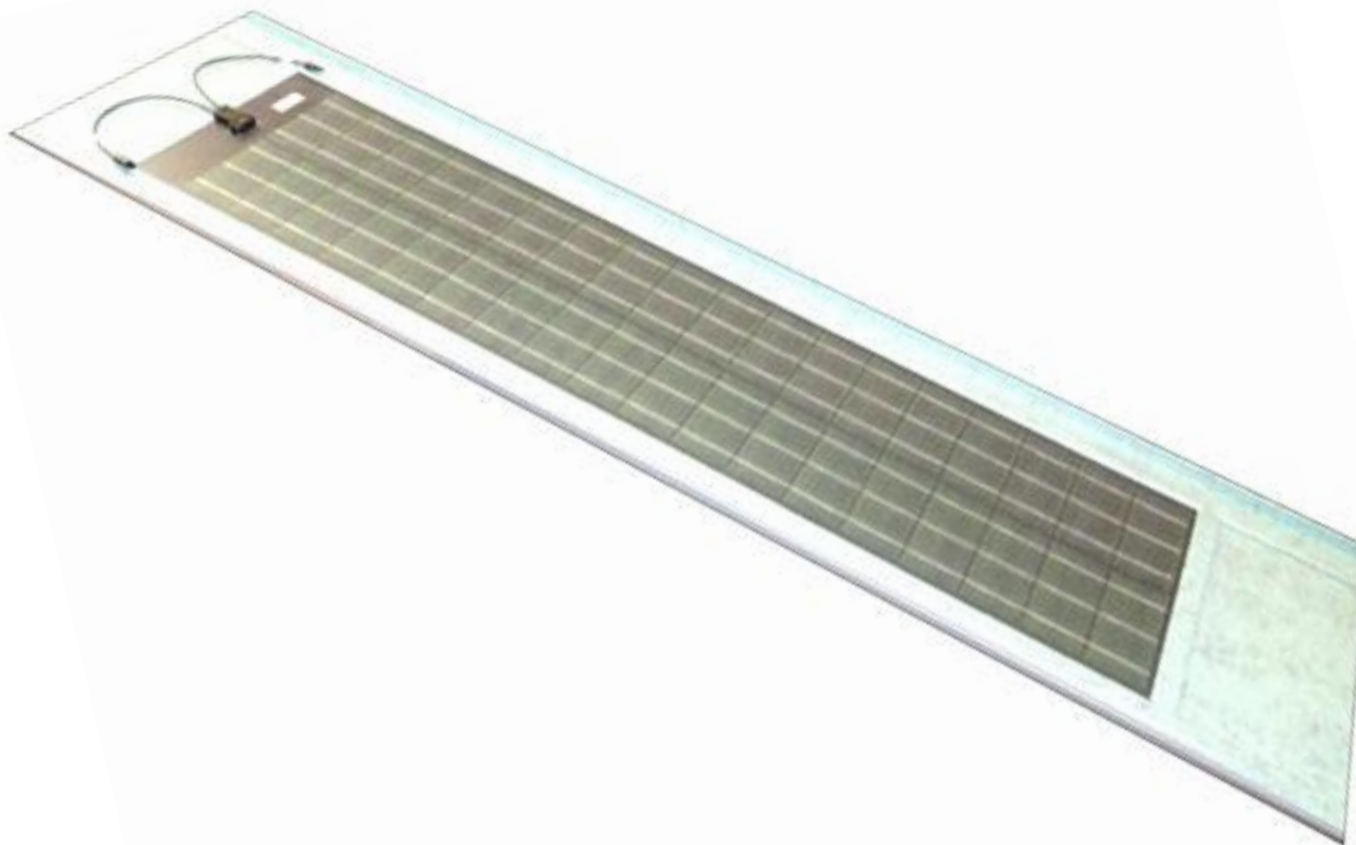
### PARIS BATIMAT 2011 | GOBAL SOLAR STAND



[www.globalsolar.com/products/flexible-modules/system-requirements](http://www.globalsolar.com/products/flexible-modules/system-requirements)



# RESCADOR | Standing Seam Roof



Solution for standing seam roof: **RESCADOR**

## BIPV MODULE

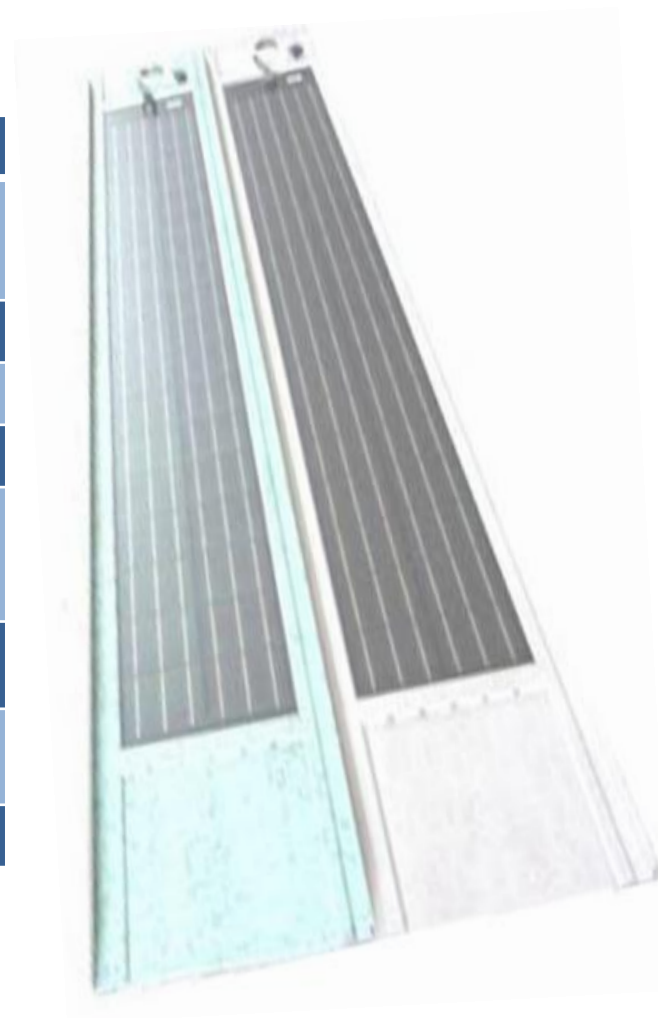


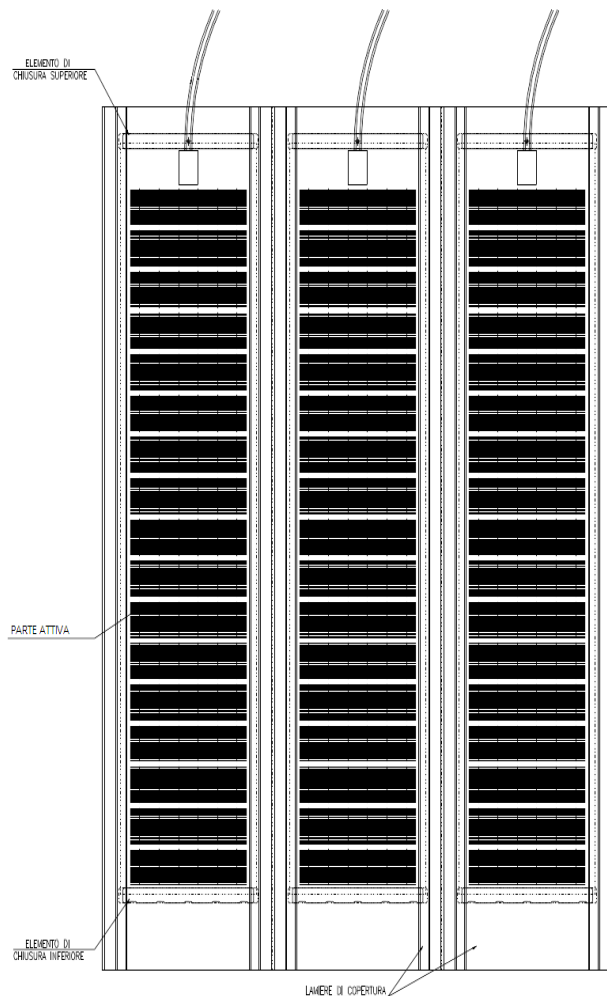
CO-LICENSE GLOBAL SOLAR - ENERGYKA



**Specification :**

<b>PV Modules   Co-License</b>	<b>GLOBAL SOLAR ENERGYKA</b>
<b>BIPV solution</b>	<b>Certified as PV module</b>
<b>Certified</b>	<b>TUV</b>
<b>Patent</b>	<b>REGISTERED</b>
<b>Waterproofing Warranty</b>	<b>40 YEARS</b>
<b>Roofing system suitable to optimize Global Solar Pv modules yield</b>	<b>VENTILATED ROOF</b>
<b>Meet Fire Dept. guidelines</b>	<b>WALKABLE ROOF</b>
<b>Certification for BIPV - GSE</b>	<b>Meet Italian Feed-In Tariff requirements for BIPV</b>
<b>Materials and Colors</b>	<b>Various</b>



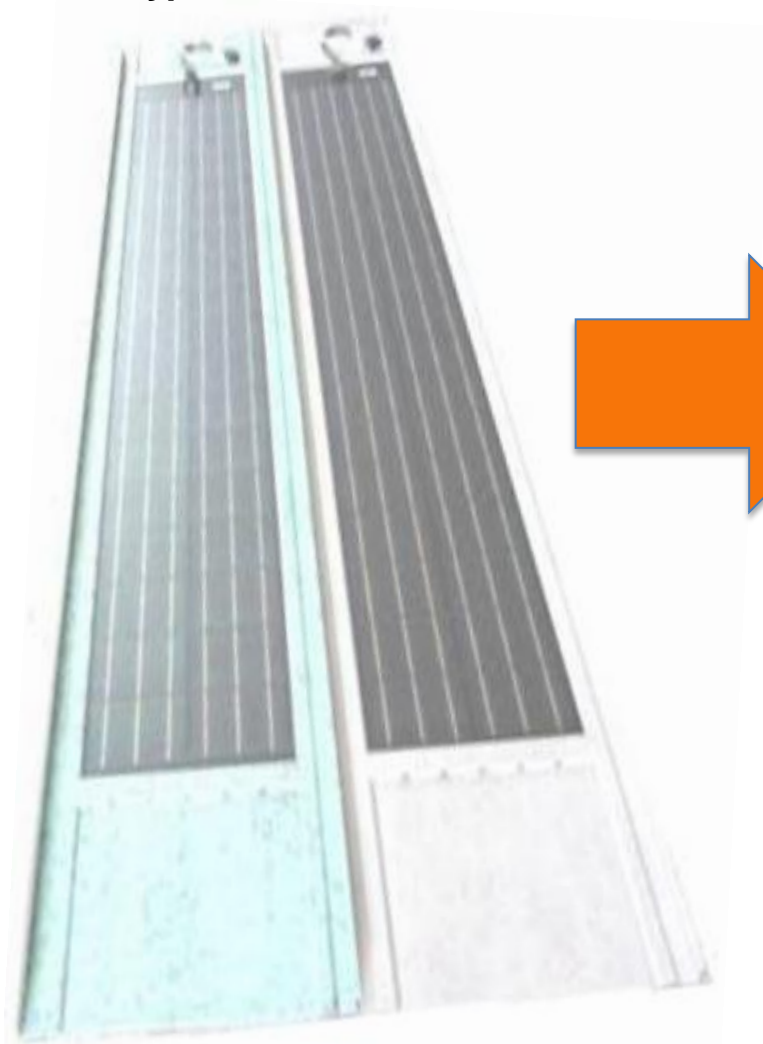
**Specification :****MECHANICAL SPECIFICATION**

Model	RR-BIPV 250	RR-BIPV275	RR-BIPV300
Length (mm)	6000		
Width (mm)	600		
Thickness (mm)	7/10		
Weight(kg/mq)	5		
PV surface coupling	Mechanical , no adhesives used		

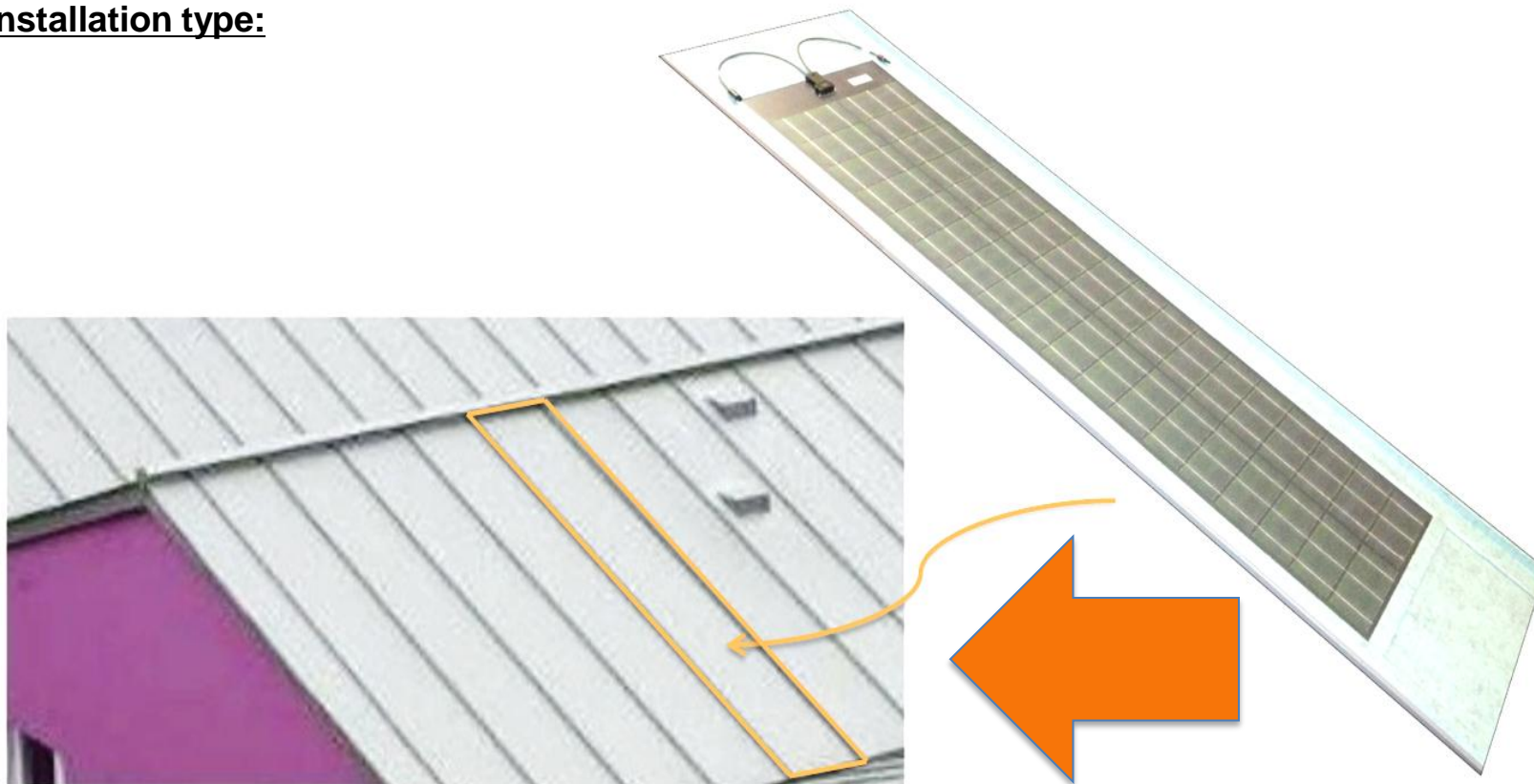




### Installation type:



## Installation type:





**Certification:**

- **IEC European Certification**

Integrated not conventional PV module **RESCADOR** (PV surface over metal sheet) is a single and indivisible building product, having its own brand and model, certified according **IEC 61646 e 61730**.



**Benefits :**

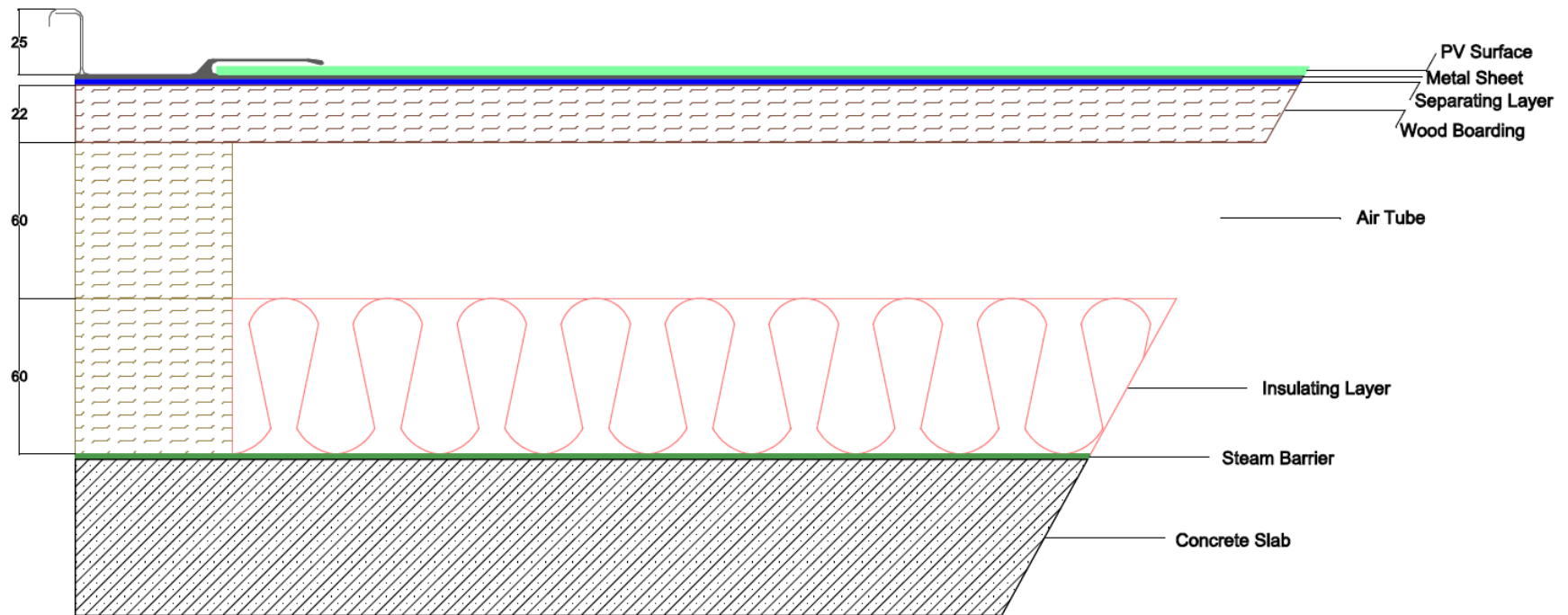
Using not conventional PV module Rescador, leads to following benefits :

- **Waterproofing Warranty extension** up to 40 Years by metal sheet manufacturer, longer than Feed-In tariff period;
- Fully **walkable** roof;
- Support plane can be done by corrugated sheet or wood boarding in order to fulfill different value for **max permitted load**
- **Insulating layer** can be added to increase the roof energy efficiency
- **Ventilated roof** can be realized in order to decrease roof surface temperature that leads to PV generator yield increasing

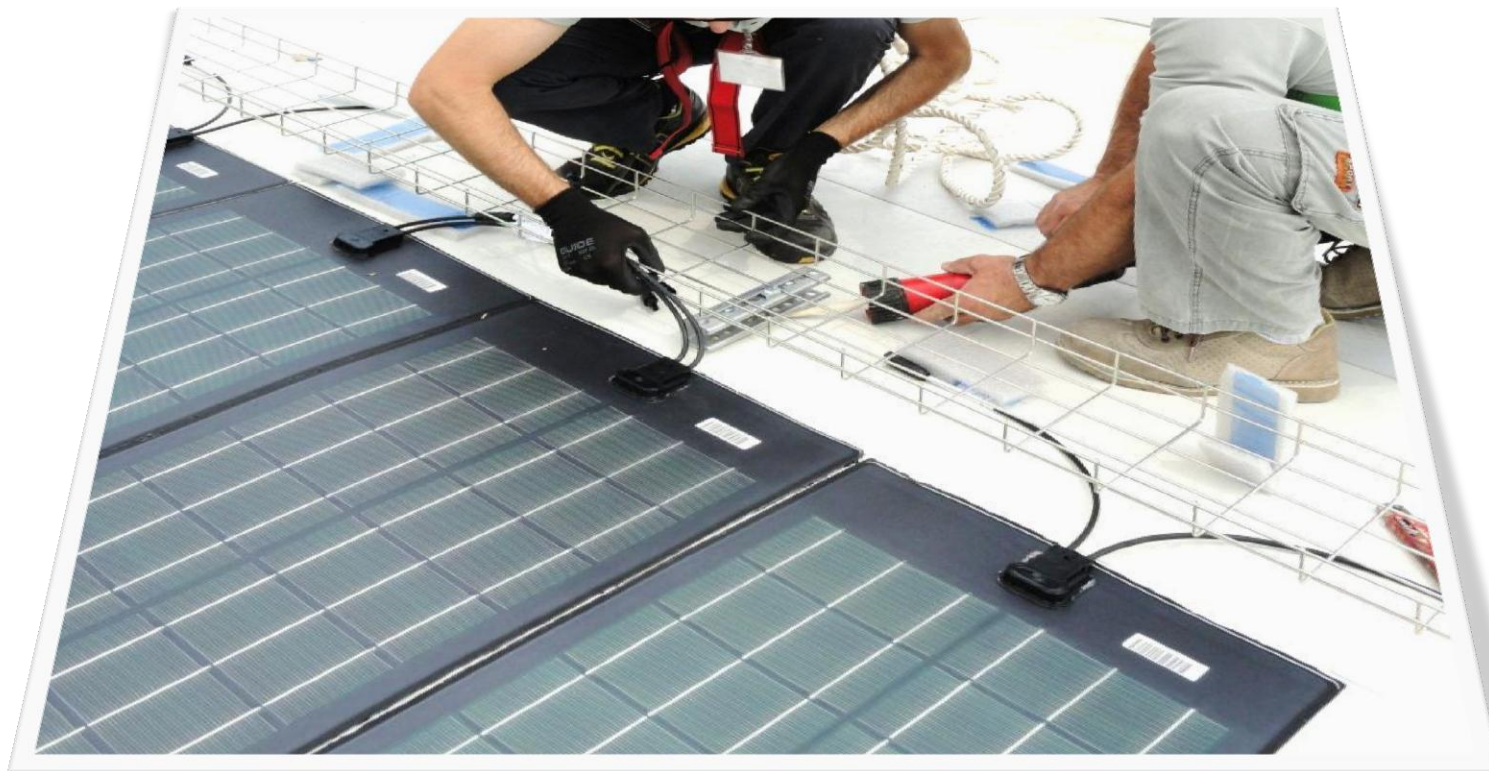


## Installation Example:

### • Roof Stratigraphy



# RIOPOWER | TPO ROOF





TPO Roof Solution:

**RIOPOWER**

**BIPV MODULE**



**CO-LICENSE GLOBAL SOLAR - ENERGYKA**



### Coupling :

- The system for BIPV module **RIOPOWER** is developed for installing flexible PV modules on roof-top and it foresees the setting of a TPO water proofing membrane over the roof surface and the PV modules coupling over the TPO membrane by thermo-chemical process to be done on the PV module border (welding of 2,5 cm external border)
- **RIOPOWER** extends characteristics of original Flexible Photovoltaic Modules adding a new substrate, and realizes a new covering and waterproofing system that substitutes traditional membranes for building covering, becoming integrated part of the covering system. This solution applies to all occurrences for which a waterproofing coverage membrane, or a continuous sealing element is foreseen.
- No adhesives used.
- PV modules coupling to TPO membrane is obtained according Energyka Electrosysten Patented process by heating PV modules border and underlaying TPO membrane part at low temperature and without flames.



## Certification :

- IEC European Certification**

Integrated not conventional PV module **RIOPOWER** ( PV surface over TPO sheet) is a single and indivisible building product, having its own brand and model, certified according **IEC 61646 e 61730**





**Benefits :**

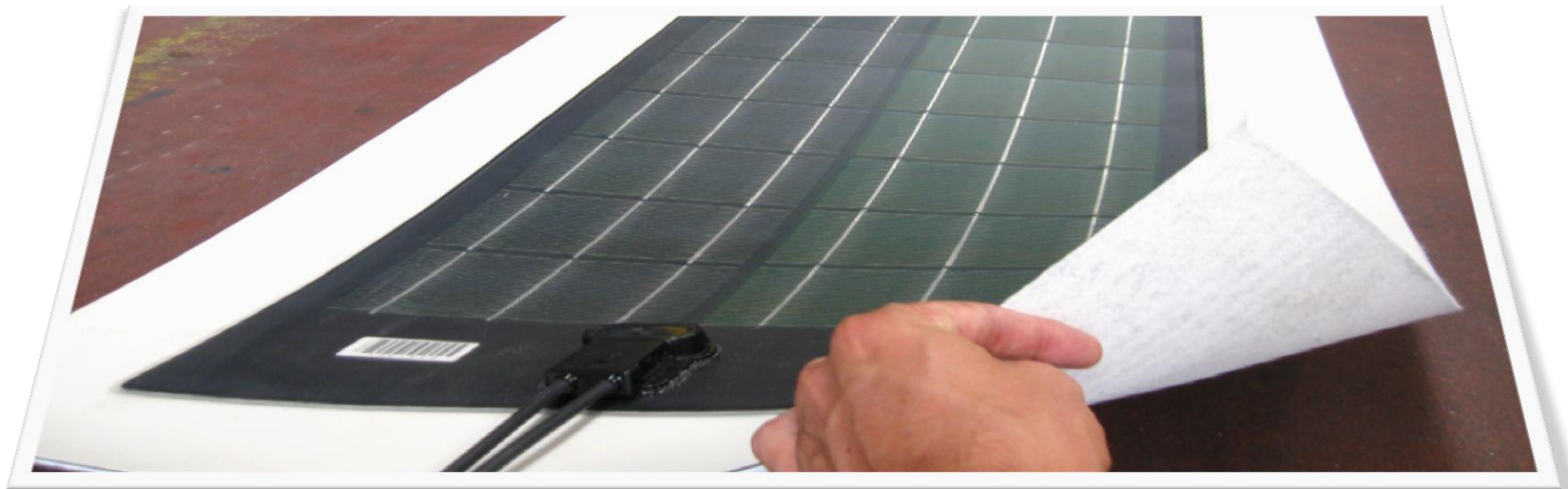
Using not conventional PV module Rescador, leads to following benefits :

- **Warranty extention up to 20 years** (all feed-in tariff period) for water proofing, provided by TPO membrane manufacturer ;
- **High pull-up resistance**: up to **700 kg/mq** tested in our laboratoty;
- Inserction of an **insulating layer** to improve energetic efficiency of the roof;
- **PV Generator efficiency increases** due to roof temperature lower than a standard bitumen roof membrane. From Data retrieved on a TPO installation, max registered temperature on PV Modules backsheet was **62°** during 2011 summer.



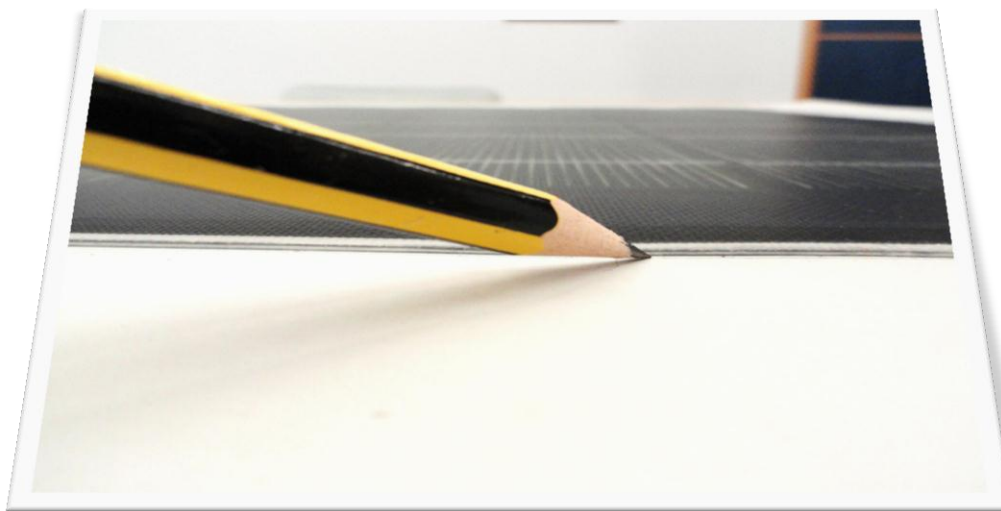
### Benefits :

- **Original backsheet enhancement:** TPO membrane adheres to EVA backsheet of Global Solar PV module improving its reliability;



**Benefits :**

- **Minimum roof slope required:** the perfect adherence between Global Solar PV module edges and underlying TPO membrane, avoids any water infiltration between TPO membrane and PV surface; that's why RIOPOWER system can be installed over minimum slope roof ( $1^{\circ}$  slope) having a slow water outflow.



### Isocaf Partnership:

ENERGYKA works with the partnership of Isocaf, leader company on roofing and waterproofing installations, for development and laying of RIOPOWER system,



WEB : [www.isocaf.it](http://www.isocaf.it)



## GSE BIPV Guidelines

- By Riopower coupling system, special feed-in Tariff for BIPV can be required. It fulfills requirement described in Italian DM 05/05/11 “Quarto conto energia” and the PV Plants made by this technology can belong to the class: “TITOLO III – Impianti fotovoltaici integrati con caratteristiche innovative”.



GUIDA ALLE APPLICAZIONI INNOVATIVE FINALIZZATE ALL'INTEGRAZIONE  
ARCHITETTONICA DEL FOTOVOLTAICO **QUARTO CONTO ENERGIA**

### ***Modulo fotovoltaico non convenzionale***

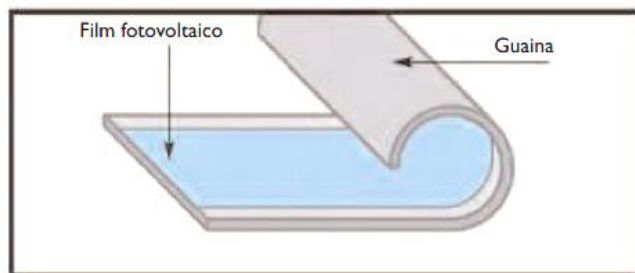
Modulo fotovoltaico il cui impiego è possibile ed efficace solo per applicazioni di tipo architettonico.

**Il modulo fotovoltaico non convenzionale consiste in un prodotto edilizio, unico e inscindibile, commercialmente identificato e certificato ai sensi della normativa tecnica richiamata nell'Allegato 1 al Decreto.**

A questa categoria appartengono:

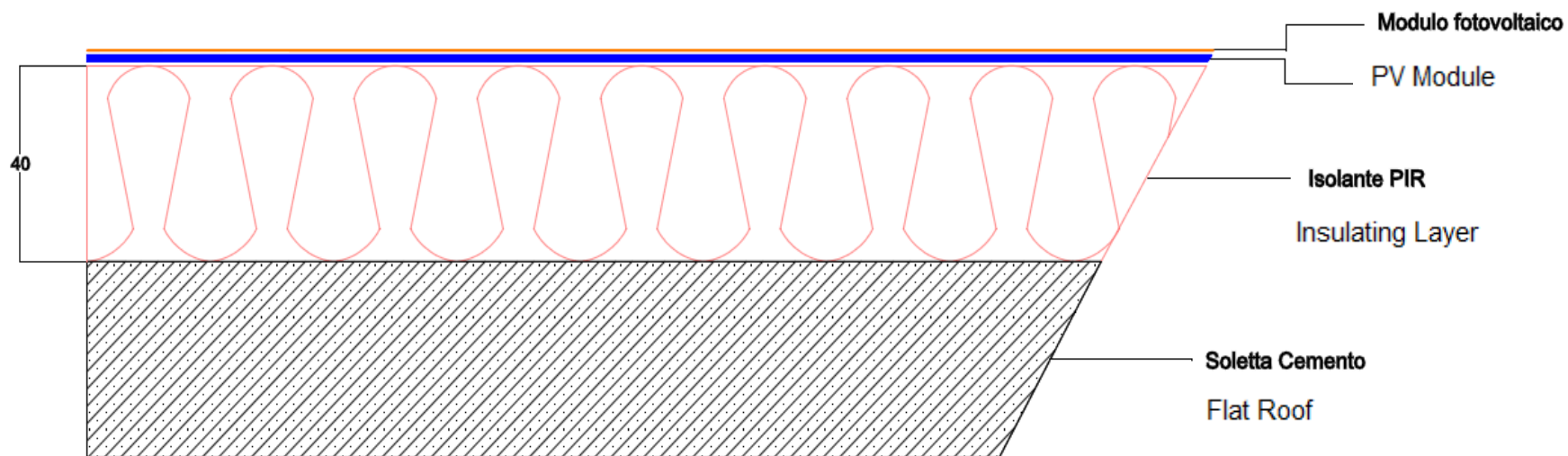
- a) moduli fotovoltaici flessibili;
- b) moduli fotovoltaici rigidi quali:

- nastri in film sottile su supporto rigido;
- tegole fotovoltaiche;
- moduli fotovoltaici trasparenti per facciate, finestre e coperture (opportunamente realizzati e installati per consentire il passaggio della luce all'interno dell'involucro edilizio).



## Installation Example:

### • Roof Stratigraphy



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Via G. Ferraris, 52 – 31044 Montebelluna (TV) – Italy - P. Iva IT-04341330266 - TEL : +39 (0) 423 602405  
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