



**bipv** korea

**Building  
Integrated  
Photovoltaic  
System**



**SUSTAINABILITY MADE EASY**

# BEAUTIFULLY SUSTAINABLE

## WHAT IS BiPV

While traditional solar panels usually don't provide any actual structural function to the buildings they're installed on, **BiPV** does. At its core, **BiPV** is categorized as a dual-purpose solar product, both generating solar electricity and working as an integrated structural part of a building.

Today, most **BiPV** products are designed for large commercial buildings, like an apartment complex or community center, however, there's a growing demand for residential homes that wish to retain their aesthetics.

## ADVANTAGES

The obvious benefit of BiPV, it's another way to generate free energy from the sun. Enough solar energy is continually hitting Earth to power our entire planet 10,000 x over, so every extra inch of that surface we can use to generate electricity is a plus.

Aside from solar energy production, the aesthetics of BiPV are a big draw. While some people dislike the noticeable look of traditional solar panels on buildings, BiPV offers a subtler, sleeker way to go solar. For commercial and industrial buildings, BiPV is also a way to showcase a company's or organization's innovation and environmental awareness.

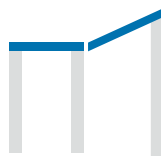


## APPLICATIONS



01

Shade design installed in the upper facade of the building



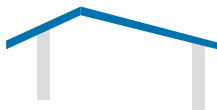
02

Roof Integrated Form in Roof Daylighting Window



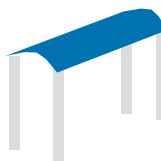
03

The form of a roof that is installed on a building's roof



04

Architectural finish form fitted and coupled to steel structures



05

Design installed in the parking lot of the building



06

Wall-integrated wall shape (translucent or opaque)



# SUSTAINABILITY MADE EASY

## BiPV MANUFACTURING FACILITY

BiPV Korea acknowledge that if they wish to grow a global presence, they not only have to build relationships, but also form joint ventures (JV) in the form of shared investment in manufacturing plants for the bulk of their products.

They have now entered in to their first JV in the Philippines, where there is a 70/30% ownership with a local entity to manufacture BiPV products under license. (Local entity 70% BiPV 30%).

## FINANCIALS & TIMELINE

- The final estimate cost of the project will cost **US\$550,000** (This will vary based on local taxes and eventual capacity of the plant)
- From time of payment, the plant will take **3-months** to produce, ship and assemble in the Philippines. Thereafter **1-month** training.
- Manpower is very light and only requires 1 Electrical Engineer and 4 Operators.
- The plant will cover roughly **3,000sq/m** and requires no special building facilities.
- Power required will be roughly **300kw** when in full production.
- Products that can be produced are as follow... (See TDS for these items attached)

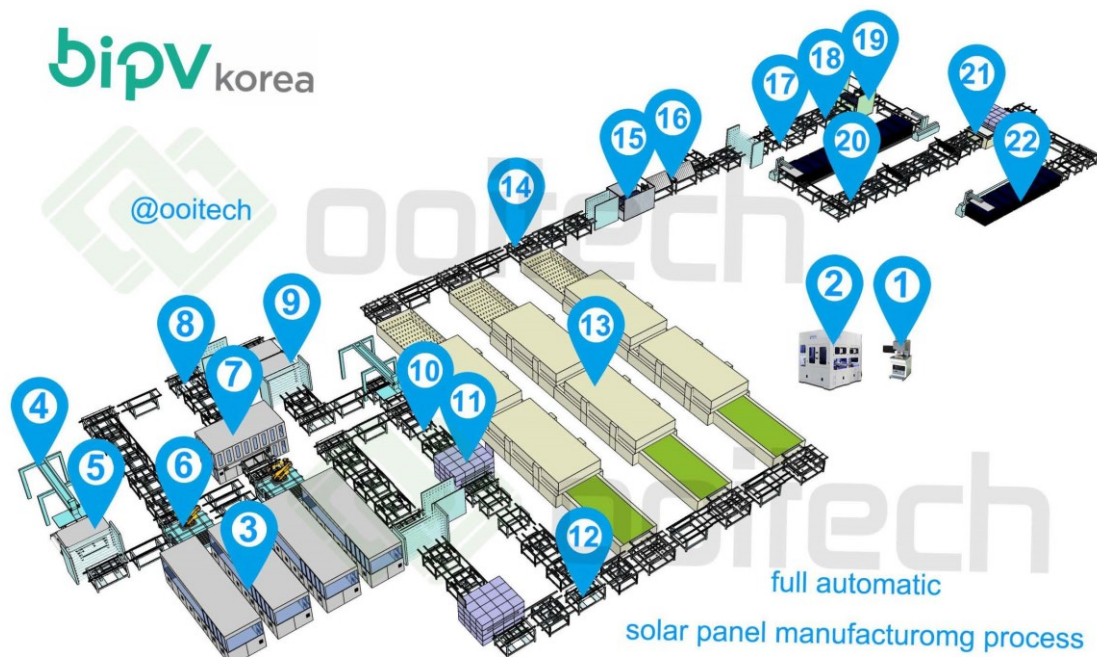
**SOLWALL**

**SOLTILE**

**POSSOLAR**




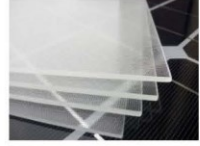

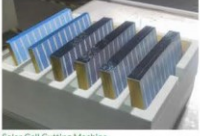






**CIGS Flexible Panel**



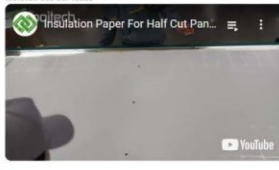

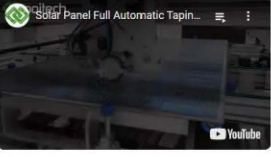







- Production materials will be a mix of local, Korean and Chinese parts for the products.
- The estimated output of the plant will be **5 to 20Mw** per annum, depending on the product mix.



# SUSTAINABILITY MADE EASY

## 22 EASY STEPS

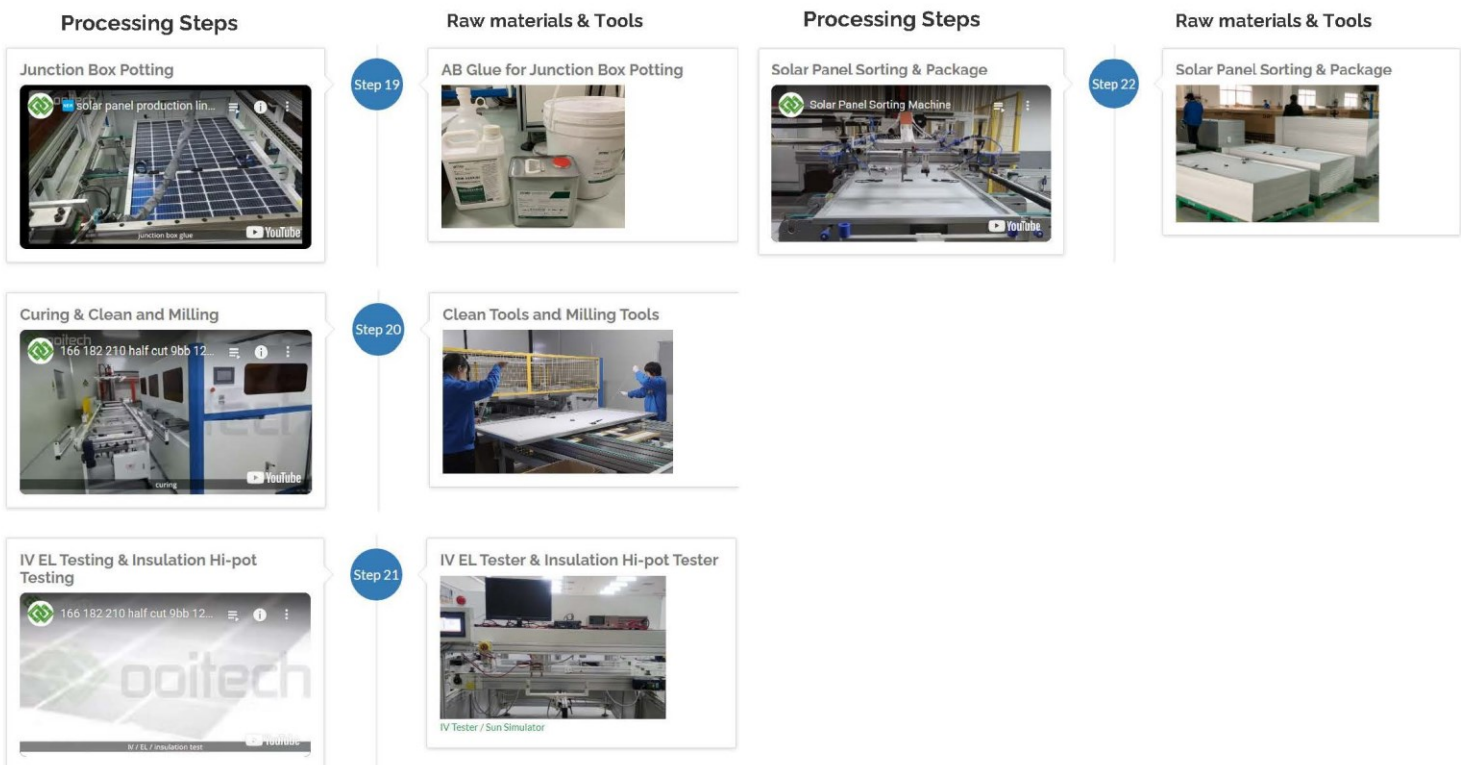
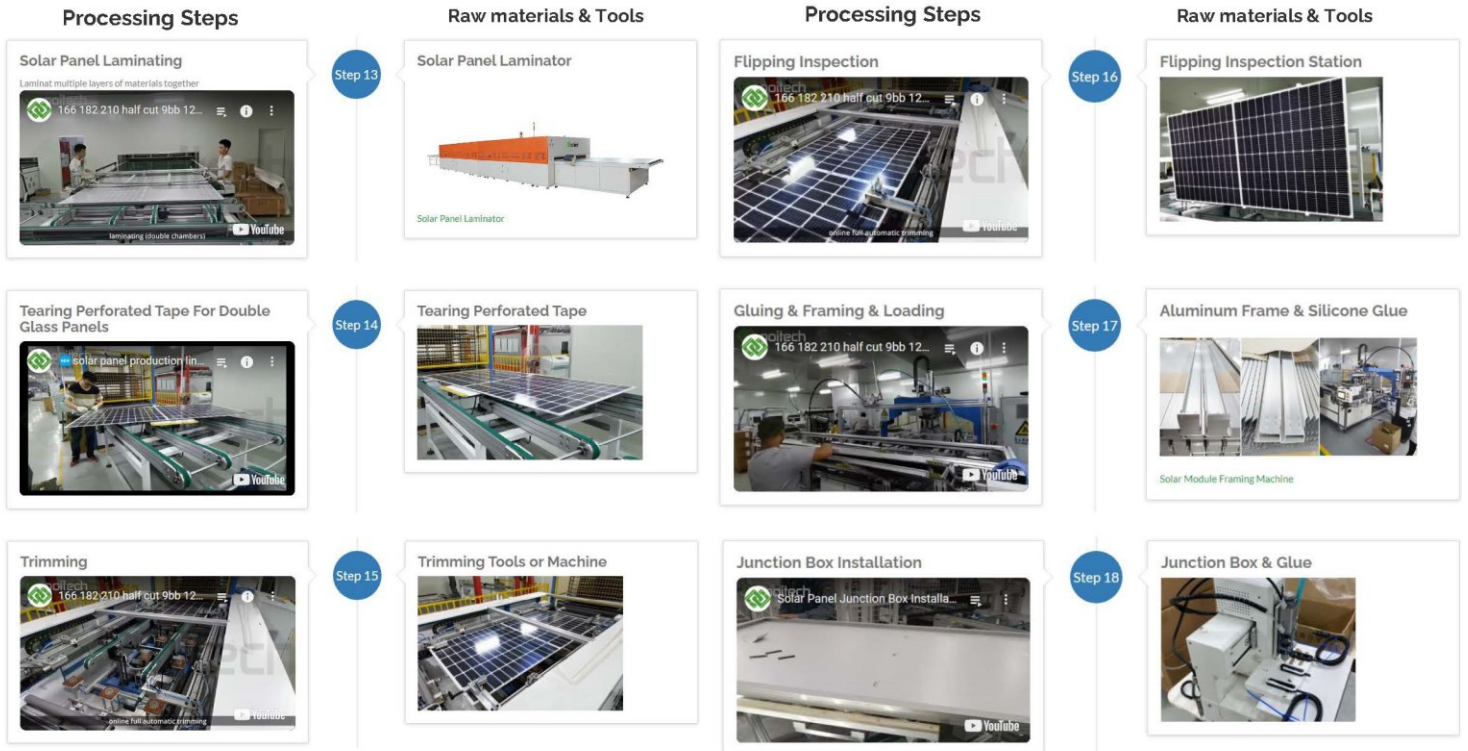
Processing Steps	Raw materials & Tools	Processing Steps	Raw materials & Tools
<b>Solar Cell Testing</b> Test solar cells before welding 	<b>Step 1</b> 156-230 Solar Cells  Solar Cell Tester	<b>Step 4</b> Glass Loading 	<b>Step 4</b> Solar Panel Glass 
<b>Solar Cell Cutting</b> Cut solar cells to half (2.5.4) and more 	<b>Step 2</b> Solar Cells  Solar Cell Cutting Machine	<b>Step 5</b> First EVA Layup 	<b>Step 5</b> Solar EVA Film 
<b>Solar Cell Welding &amp; Tabbing</b> Tabbing solar cells to solar strings 	<b>Step 3</b> Solar Cells & Ribbons & Flux  Tabber and Stringer Machine	<b>Step 6</b> Layout, Solar Cell Strings Layout 	<b>Step 6</b> Solar Cell Strings  Solar Stringer Lay Up Machine

Processing Steps	Raw materials & Tools	Processing Steps	Raw materials & Tools
<b>Bussing</b> Interconnection Soldering 	<b>Step 7</b> Busbar Ribbon & Flux  Solar Panel Interconnection Soldering	<b>Step 10</b> Insulation Sheet For Half Cut Panel Isolated bus bar leads 	<b>Step 10</b> Insulation Sheet 
<b>Taping</b> 	<b>Step 8</b> High Temperature Taps 	<b>Step 11</b> Visual Inspect & EL Defect Test 	<b>Step 11</b> EL Tester  Solar Panel EL Defect Tester
<b>Second EVA and Backsheet or Glass</b> 	<b>Step 9</b> EVA and Backsheet Films or Glass 	<b>Step 12</b> Taping for Bifacial Solar Panels Taping for double glass panels 	<b>Step 12</b> Perforated Tape for Bifacial Solar Panels 



# SUSTAINABILITY MADE EASY

## 22 EASY STEPS







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Photovoltaic  
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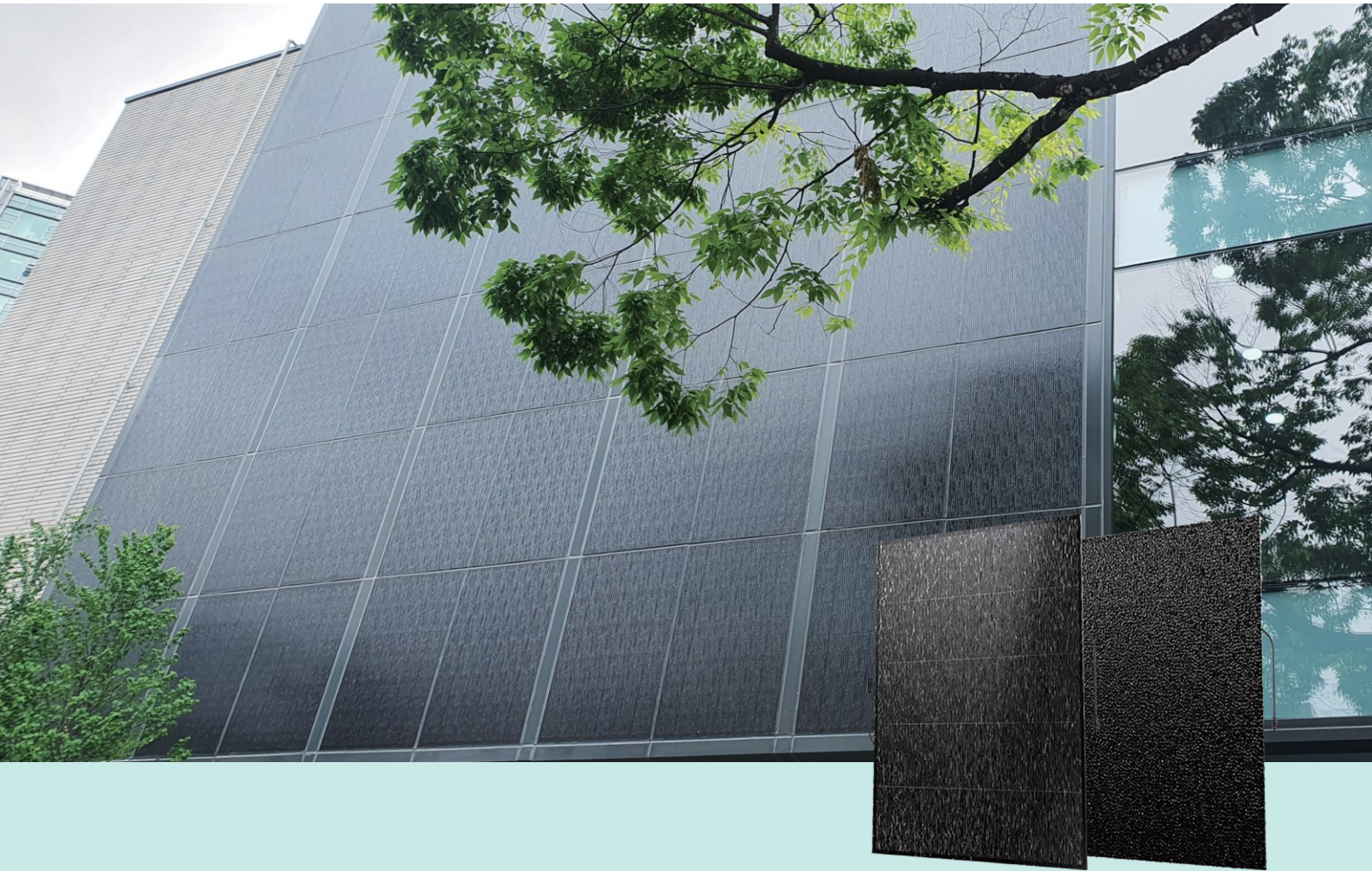
**THE COMPLETE  
SOLAR SOLUTION**





# SOLWALL

Creating a New Style of Building Landmarks



## Features

- Wall-integrated photovoltaic module
- Customized production based on design drawings
- Module surface pattern technology that solves light reflection (glare) pollution in the city center (patent registration)
- Improving power generation performance by scattering light due to patterning of module surfaces
- Easy construction, durability, earthquake resistance and easy maintenance

## Specifications

Power Output	328W
Efficiency	19.4%
Length	1612mm
Width	1050mm
Thickness	6mm
Weight	28kg





# SOLTILE

## Creating a New Type of Solar Roofing

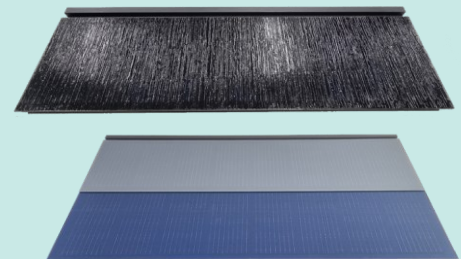
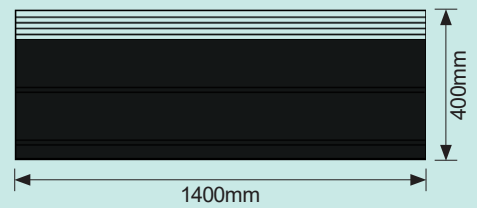
### Features

- Roof-integrated photovoltaic module (Patent Registration No. 10-2490041)
- Customizable by design drawings
- Ease of construction, durability, earthquake resistance and easy maintenance
- Finished roof and solar power without additional structures
- Improved power generation performance by scattering light due to patterning of module surfaces

### Specifications

Power Output	100W	Thickness	8mm
Length	1400mm	Weight	9kg
Width	400mm	Custom made production is possible	

### Technical Drawing



Black, Blue, Grey Color







# POSSOLAR

## Creating New Roofing Designs



### Features

- No additional structure is required, as a building roof finishing material.
- Construction period is shortened because it can be constructed in one go as a building finishing material
- No additional solar construction structure is required
- As a building integrated exterior finishing material, it enhances the aesthetics of a building

### Specifications

Power Output	100W
Efficiency	19.4%
Length	1646mm
Width	350mm
Thickness	6mm
Weight	9kg



# CIGS Flexible Module

## Lightweight & Adaptable Solar Roofing

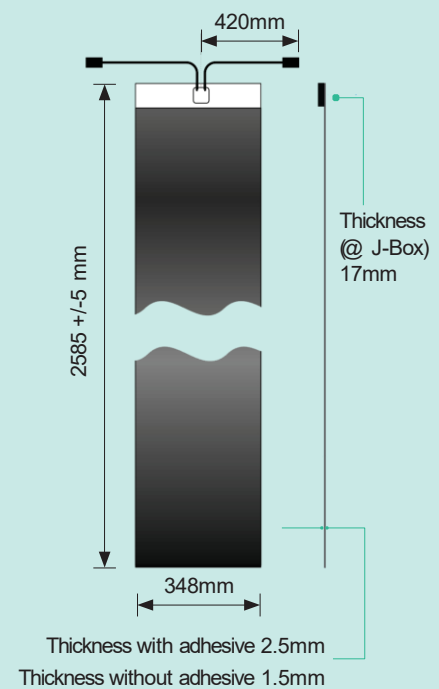
### Features

- Up to 16% cell efficiency
- Installation weight less than 2.4 kg/m<sup>2</sup>
- No extra structures required for construction
- High wind resistance, earthquake resistance, durability, and easy construction

### Specifications

Power Output	125W
Cell	Copper, Indium, Gallium, Diselenide(CIGS)
Length	2585mm
Width	348mm
Thickness	2.5mm
Weight	1.9kg

### Technical Drawing



## Flexible Thin Film







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**PATENTED INTERGRATED  
TECHNOLOGY**



# Pattern Glass Tech

## Technical Explanation

- ① There is an efficiency increase rate of 1-2% due to the difference in refractive index of the surface due to the low-light and scattered light absorption surface treatment methods with Rainy and Diamond design treatments on the tempered glass surface.
- ② To address light reflection, It is a technology that improves power generation performance in low-light and scattered light environments, along with the application of light scattering to the surface of the module



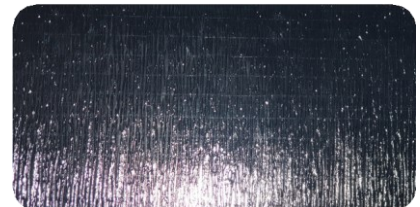
It is a technology that integrates building materials and solar cells by enhancing aesthetics by implementing various pattern designs such as Rainy and Diamond Stone on the surface of tempered glass



It is a technology that solves light reflection by implementing various pattern designs on the surface of reinforced glass



(Generic Module)



(Pattern Module)



## Technical Benefits

- Building-integrated solar panel with glass surface technology of various patterns.
- A technology that combines various patterns of design with durable tempered glass.





# BIPV-Roof integrated PV system

## Technical Explanation

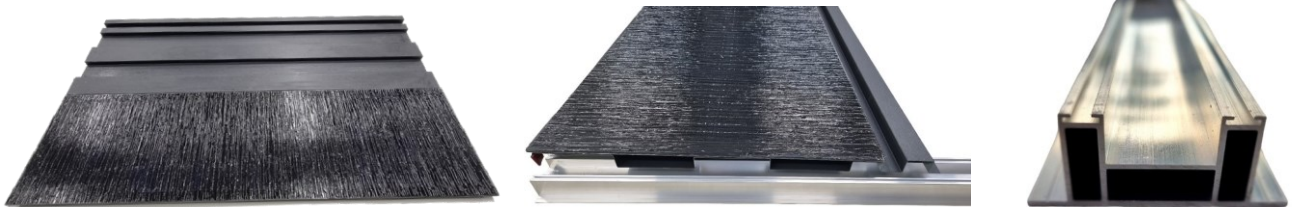
- ① Waterproof structural frame system and solar module integrated technology
- ② Cooling function of ventilation prevents efficiency degradation due to temperature rise
- ③ Galva Zinc Steel Plate Bending Technology + Rainy Pattern Module



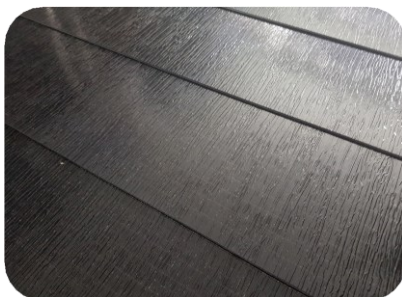
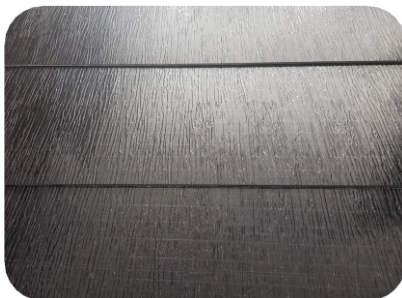
Patent registration number 30-1114797



Patent registration number 10-2490041

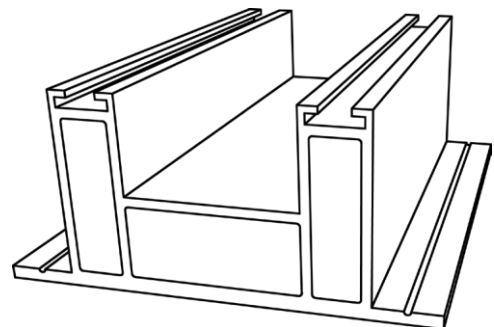


[Steel plate bending structure and PV module bonded together, aluminum fixed stud]



Ventilation

Waterproof



## Technical Benefits

- BIPV Roofing System (Roof Integrated Photovoltaic System) that can be installed in a building without a separate support structure by integrating PV with existing building roofing materials.



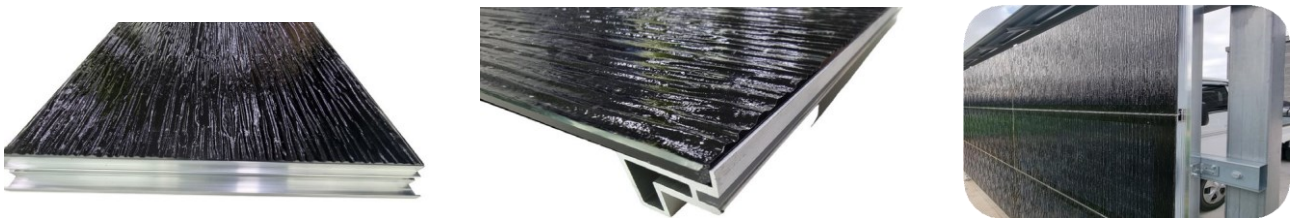
# BIPV-Open Joint System

## Technical Explanation

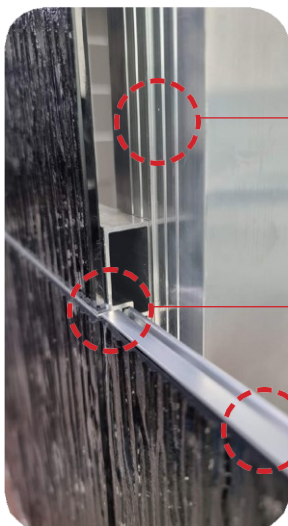
- ① It is a technology that can be easily fastened to the snap-type (inserted) frame of the solar panel and the truss structure of the steel structure installed horizontally or vertically on the wall, and it is easy to construct by producing various module standards. This technology uses a snap-type (inserted) frame technology on the wall, and the solar panels can be safely and easily installed on the wall.
- ② It is a BIPV installation structure system that does not require existing Norton taping and additional stud structures. We can fasten the aluminum frame design of solar panels to a snap (inserted) frame at the same time which reduces the construction period.



Patent registration number 30-1191269



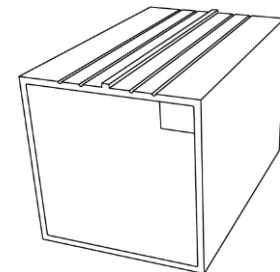
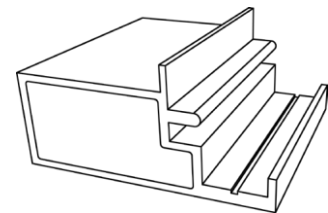
[Snap-type module frame and open joint aluminum fixed stud]



Waterproof structure frame

Snap structure frame

Open joint frame



## Technical Benefits

- Open joint type BIPV panel frame and construction method for easy construction and shortening of the construction period.
- Open-joint BIPV system that innovatively improves the installation method of existing PV panels.





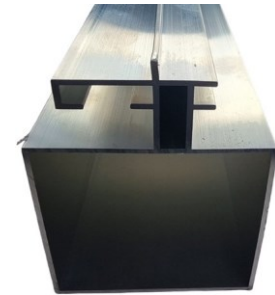
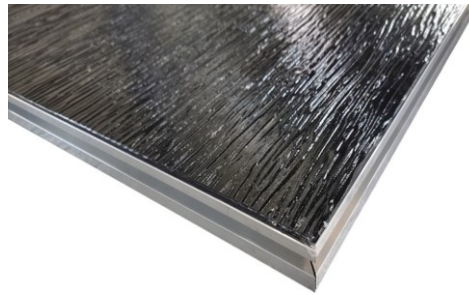
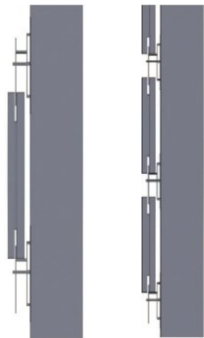
# BIPV-Sash Sliding System

## Technical Explanation

- ① It is a technology that allows the frame of a solar panel and the sash-type stud frame of a wall to be easily fastened, and it is easy to construct by manufacturing various module standards. This technology uses a sash-type stud frame on the wall, and the solar panel can be safely and easily installed on the wall.
- ② It is a BIPV installation structure system that does not require existing Norton taping and additional stud structures. We can fasten the aluminum frame design of solar panels to the sash-type stud frame at the same time which reduces the construction period.



Patent registration number  
30-1191272

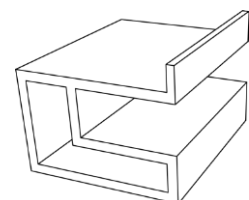
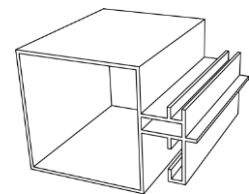


[Sash-type module frames and aluminum fixed studs]



● Sash-type module frames

● Fixed structure frame



## Technical Benefits

- Sash-type solar panel frame and installation structure system applied with easy construction and shortening of construction period.
- A sash-type stud frame system that innovatively improved the existing PV panel installation method.



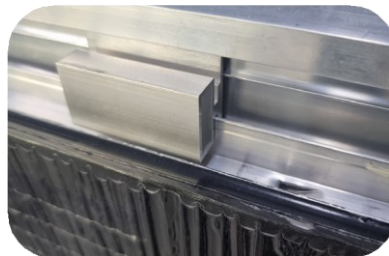
# BIPV-Z-Bar Clip System

## Technical Explanation

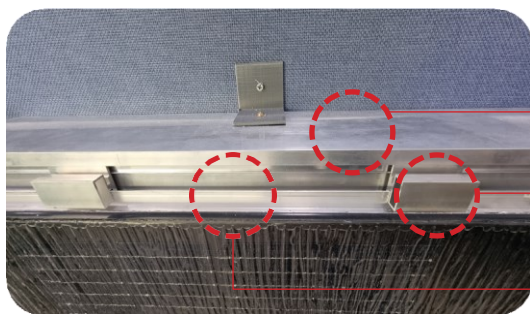
- ① It is a technology that can be easily fastened to the clip-type frame of a solar panel and the horizontal 'C'-shaped frame structure of the wall, and it is easy to construct by producing various module standards. This technology uses Clip(insertion) frame technology on the wall, and it is possible to safely and easily install the solar panel on the wall.
- ② It is a BIPV installation structure system that not only does not require existing spacer taping and additional stud structures, but also reduces the construction period by fastening aluminum Z-Bar frames to the wall's truss frame unit 'C'-shaped frames at the same time.



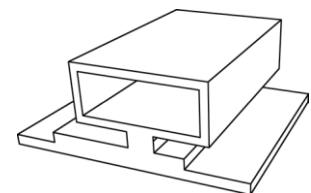
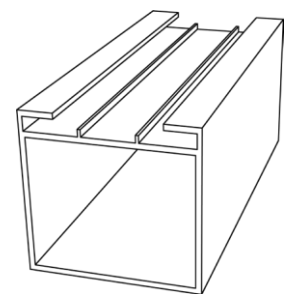
Patent registration number  
10-2428517



[Z-Bar module frame and clip fixed stud aluminum frame]



- Fixed structure frame
- Z-Bar Clip
- Z-Bar module frame



## Technical Benefits

- Z-Bar Clip type BIPV wall truss system with shortened construction period, economic efficiency and earthquake resistance.





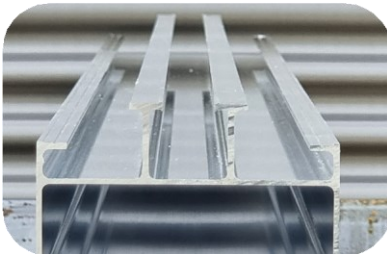
# BIPV-Waterproof System

## Technical Explanation

- ① It is a technology that allows the frame of a solar panel and the integrated stud - frame of the roof to be easily fastened, and it is waterproof and convenient to construct by manufacturing various module standards. This technology uses an integrated stud frame and pattern on the roof, and it is possible to safely and easily install the solar panel on the roof.
- ② By fastening the aluminum frame of the solar panel to the roof-type stud frame at the same time it is a roof-type waterproof installation structure system that not only does it not require an existing additional steel structure, but also reduces the construction period.



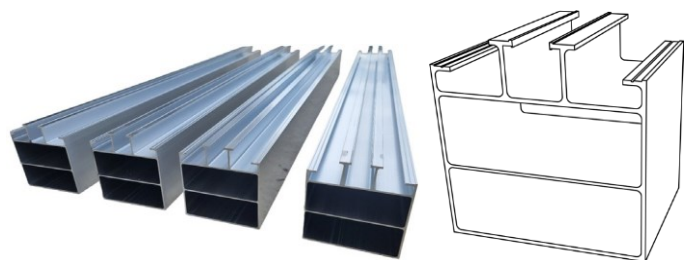
Patent registration number  
30-1191275



[The integrated aluminum frame with a waterproof structure]



● Module integral roof structure frame



## Technical Benefits

- PV Module-Integrated waterproof structure system.

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## SINGAPORE

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**HOMEPAGE** <https://quettil.com/bipv-solar>

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