bipv korea

Building Integrated Photovoltaic System

www.bipvkorea.com

Best building solution for carbon reduction

Buildings Make Their Own Electricity!

"The outer wall of a building should not be ugly Because if it is it will be shunned by the market."

BIPVKOREA under the slogan "A building makes electricity on its own," continues to grow into a BIPV business with continuous R&D, and fulfillment of its corporate and social responsibilities. Along with becoming a BIPV specialized company, it is also developing by securing new global markets by making partnership agreements with domestic and foreign BIPV-related specialized industries and academic research institutes. In addition, through BIPV, a new paradigm of renewable energy, we will take the lead in developing various materials and designs that can harmonize with existing buildings and provide eco-friendly energy without worrying about carbon emissions.

HISTORY

2012

- Establishment of Sejong International Co.,Ltd.
- Import and Export of Interior and Exterior Materials in Building

2015

- China Double Star Group OVERSEAS DEALER AGREEMENT

2016

- Launching a New and Renewable Energy Business
- Philippine Pampanga State Business Agreement
- Singapore ISOTEC (AH BLOCK) Korean Distributor
- Korea Construction Technology Institute's Family Enterprise Selection
- Korea Energy Technology Assessment Service "Development of BIPV Integrated Solution System for Building Exterior Wall"

2019

- HANERGY Korea's official agency
- Participation in leading technology projects in response to the 4th Industrial Revolution in Chungcheongbuk-do
- Order for BIPV Solibro of Kyunghyun General Construction Co., Ltd BIPV Modular Housing Demonstration by the Institute of Construction Technology

2020

- BIPV51KW Construction of Youth Housing in Seoul Station Area
- A member of the BIPV Division of the Korean Solar Power Association
- Spain_Solar Innova Signs Official Partner in Korea 2020 Korean Electrical Society's "Study on Polycarbonate Solar Modules with Flexibility, Toughness and High Temperature" Paper Award

2021

- Seoul Bus Stop 'Future Bus Stop_BIPV'
- Roof-Integrated Solar Panel Selection
- Signed an MOU with Canada's Targray Group
- KEPCO International Invention and Patent Technology Competition
- Grand Prize Governor of Chungcheongbuk-do Commendation for Energy Saving Merit Award

2022

- "Business cooperation agreement for commercialization and R&D cooperation of high-output shingled type BIPV technology" with KITECH (Korea Institute of Production Technology)
- Gimcheon City 2022 Regional Specialized Pilot Project - Solar Integrated Interworking Facility House Installation Construction
- Construction of BIPV orders for Hyangrin Church in Naesu-dong, Seoul
- Awarded the 11th Chungbuk Solar Festival for Distinguished Service

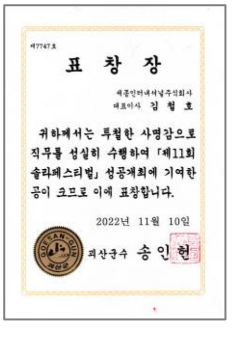
2023

- Construction of efficiency apartment BIPV in Cheongna District, Incheon city
- India, Philippines, Romania Joint venture agreements
- Establishment of BIPVPhilippines Inc. (Philippines)
- Establishment of BIPV mockup system at Korea Institute of Industrial Technology (KITECH)

2024

- Philippine BIPV production plant established (Angeles)
- BIPV Joint Venture Agreement with the U.S. company Lumen Geo
- BIPV Snap sliding system patent registration
- BIPV-related watertightness, wind resistance, durability from KOLAS (KCL, TP) institutions testing
- The roof-integrated solar power (Soltile, cigs flexible) in the golf villa in Incheon Metropolitan City's Jack Nicklaus G.C Passing the landscape review, under construction

AWARDS AND PATENTS



SOLTILE

Casting A New Solar Roof, Beautifying Every Roof

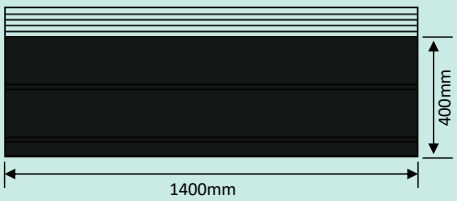
Features

- 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

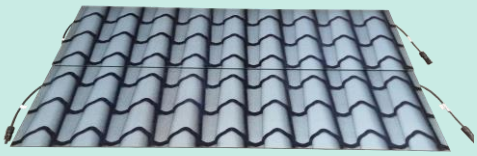
Specifications

Power Out	90W	Thickness	8mm
Length	1400mm	Weight	9kg
Width	400mm		

Technical Drawing



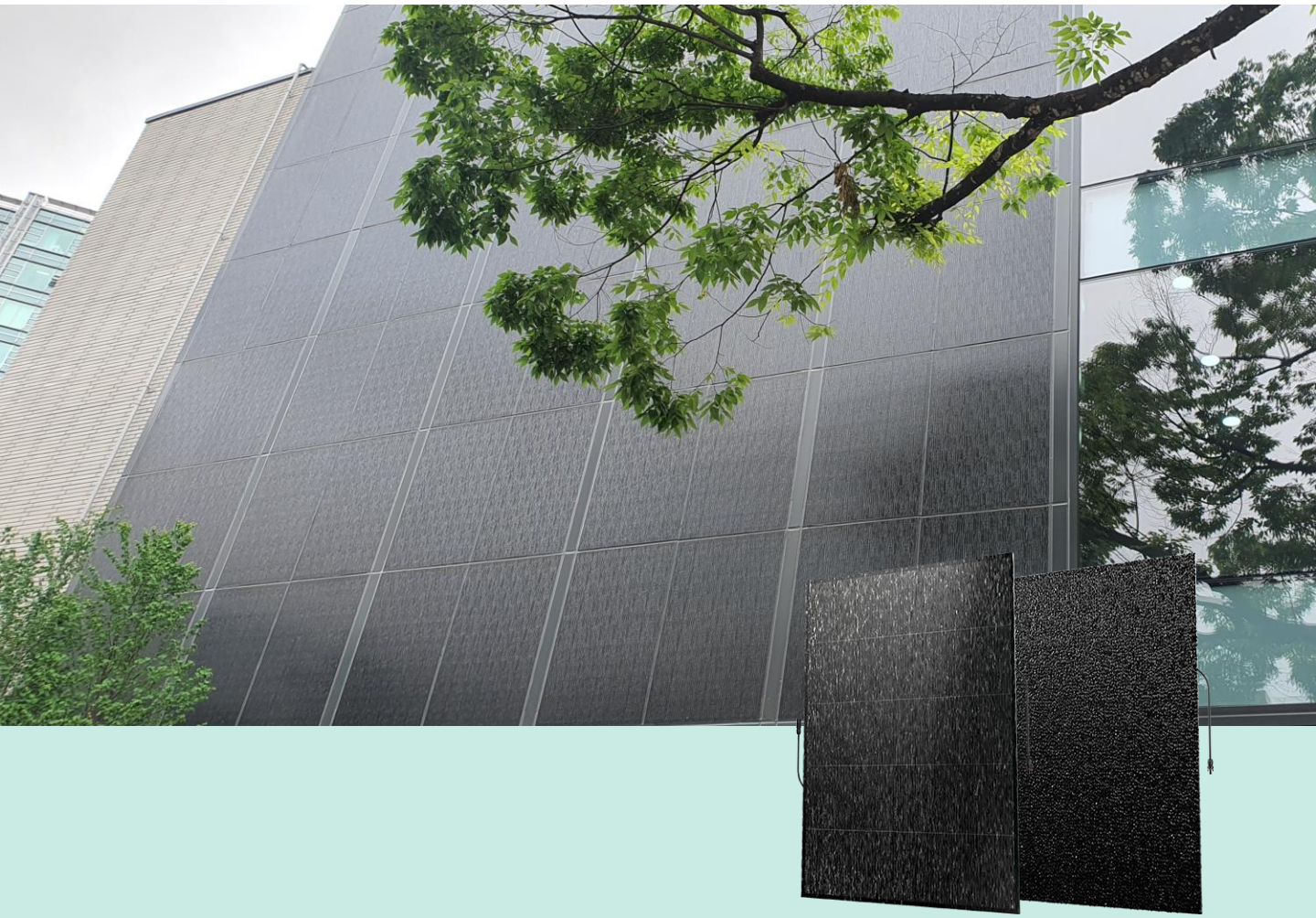
Rainy pattern



Hanok(Traditional tile)

SOLWALL

Casting A New Landmark



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

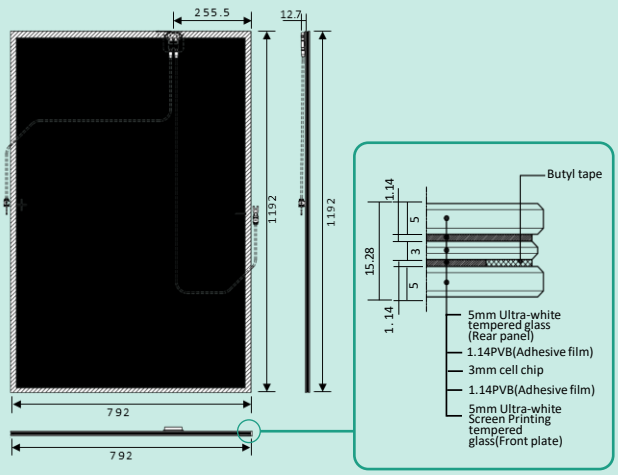
HANWALL

Building Mobile Energy

Features

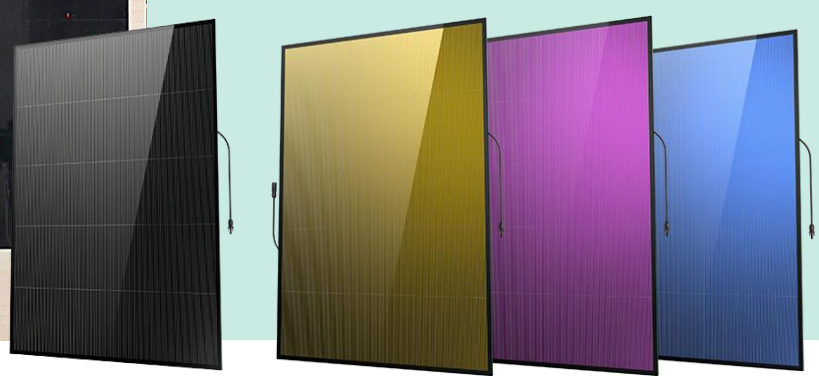
- Exterior wall integrated solar curtain wall type
- High aesthetics, multiple colors
- High wind load (5,000 Pa/Sec), durability, and easy workability
- CIGS Flexible Cells are less affected by the direction and angle of the sun and shadows keeping higher power generation efficiency

Technical Drawing



Specifications

Power Out	120W
Cell	Copper, Indium, Gallium, Selenium(CIGS)
Length	1192(+1/-1)mm
Width	792(+1/-1)mm
Thickness	15(±0.2)mm
Weight	33kg



CIGS Flexible Module

Lightweight, Adoptable

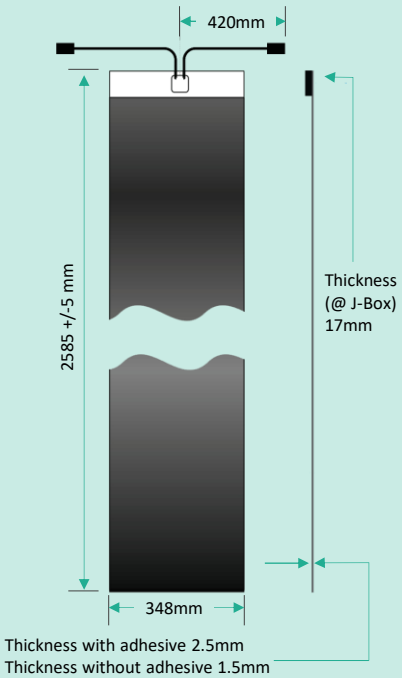
Features

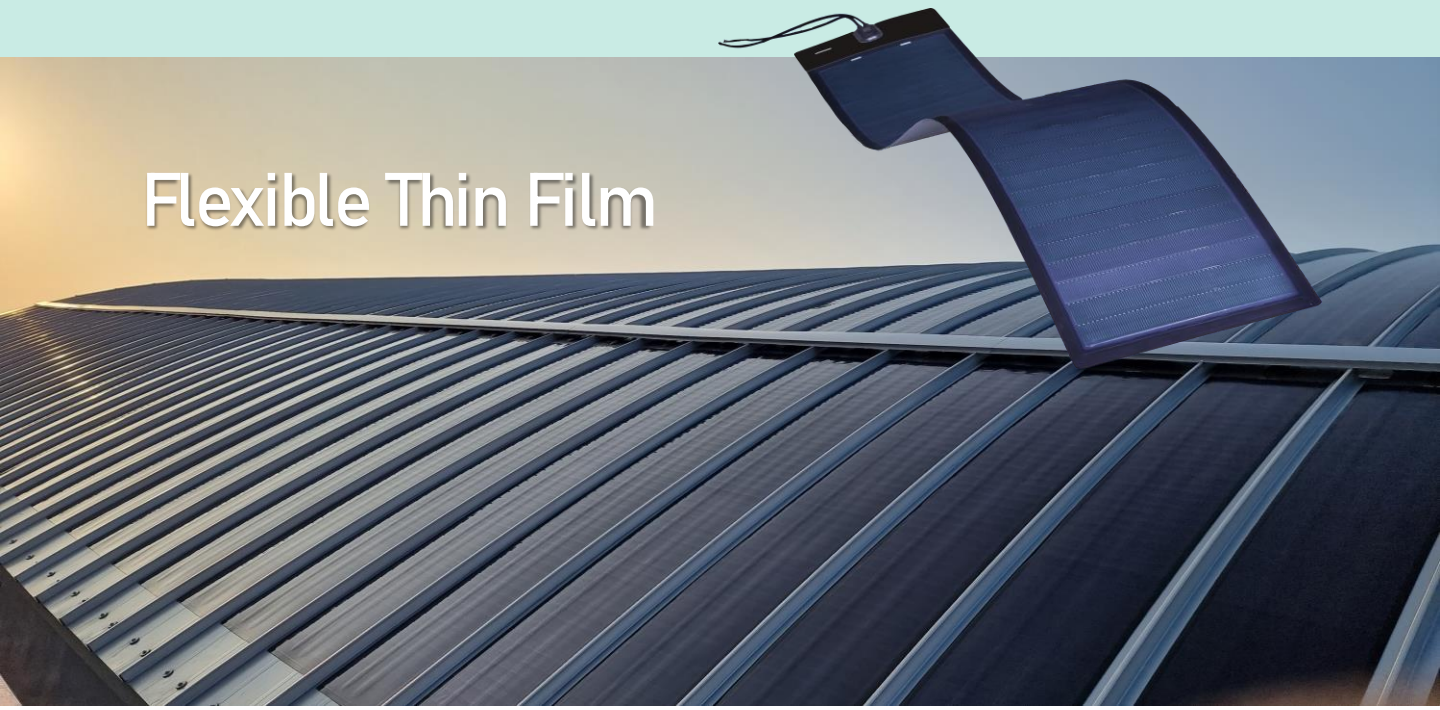
- Up to 16% cell efficiency
- Installation weight less than 2.4 kg/m2
- No extra structures required for construction
- High wind resistance, earthquake resistance, durability, and easy construction

Specifications

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

Technical Drawing



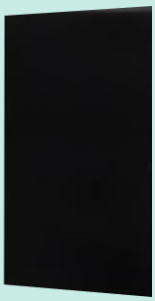


CIGS Power Glass

Make every building a miniature power plant

Advantages

- Low power temperature coefficient, more advantageous for power generation in humid and hot weather
- Passed the highest fire rating
- Rich colors, various colors available
- 0~60% adjustable transparency
- Hollow design for insulation and noise reduction
- Low carbon emissions, green and eco-friendly, safe, non-toxic



STANDARD SERIES

Modest and decent
Good power generation

COLORED SERIES

Various and customized

STONE IMITATION SERIES

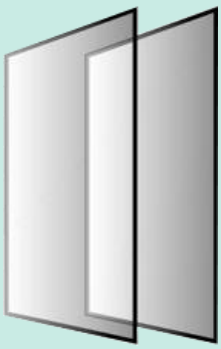
Subtle and steady Nature-friendly

TRANSPARENT SERIES

Lively and good-looking
Neat and elegant

TRIPPLE GLASS SERIES

Windproof and pressure resistant safe and reliable



HOLLOW SERIES

Energy-saving and heat-preserved
Sound Insulating and noise reduction

HANTILE

Beautifying Every Roof

Features

- HANTILE combines existing roof and thin-film solar cells to harmonize with existing roof tiles.
- HANTILE realizes zero-energy architecture, minimizing the building's energy requirements and fitting in with a variety of architectural styles.
- Roof-integrated solar/traditional roof shape
- Excellent aesthetics, high wind resistance, durability, easy construction
- CIGS flexible cell

Specifications

Power Out	30W
Chip type	Copper, Indium, Gallium, Selenium(CIGS)
Dimension	721*500*41mm
Weight	9.5kg

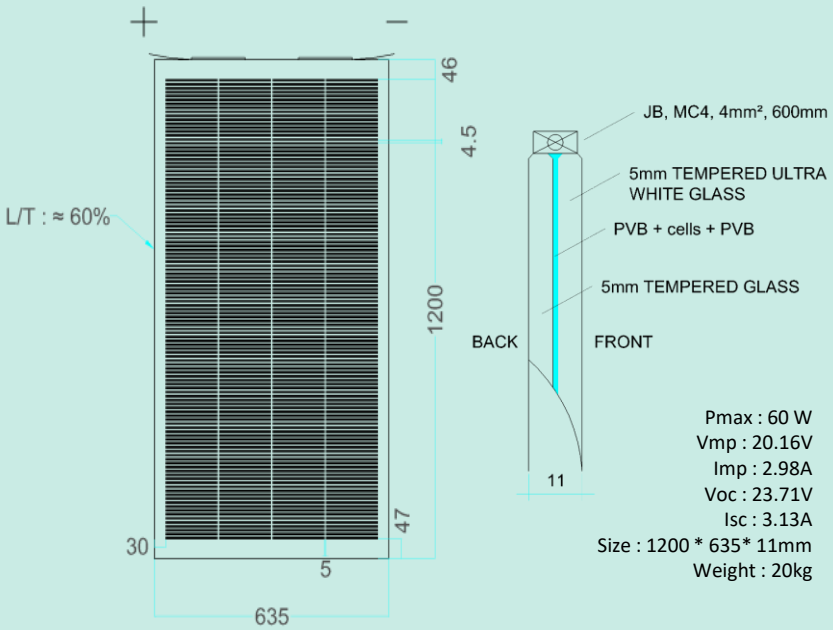
SOLAR WINDOW

Transparency Module

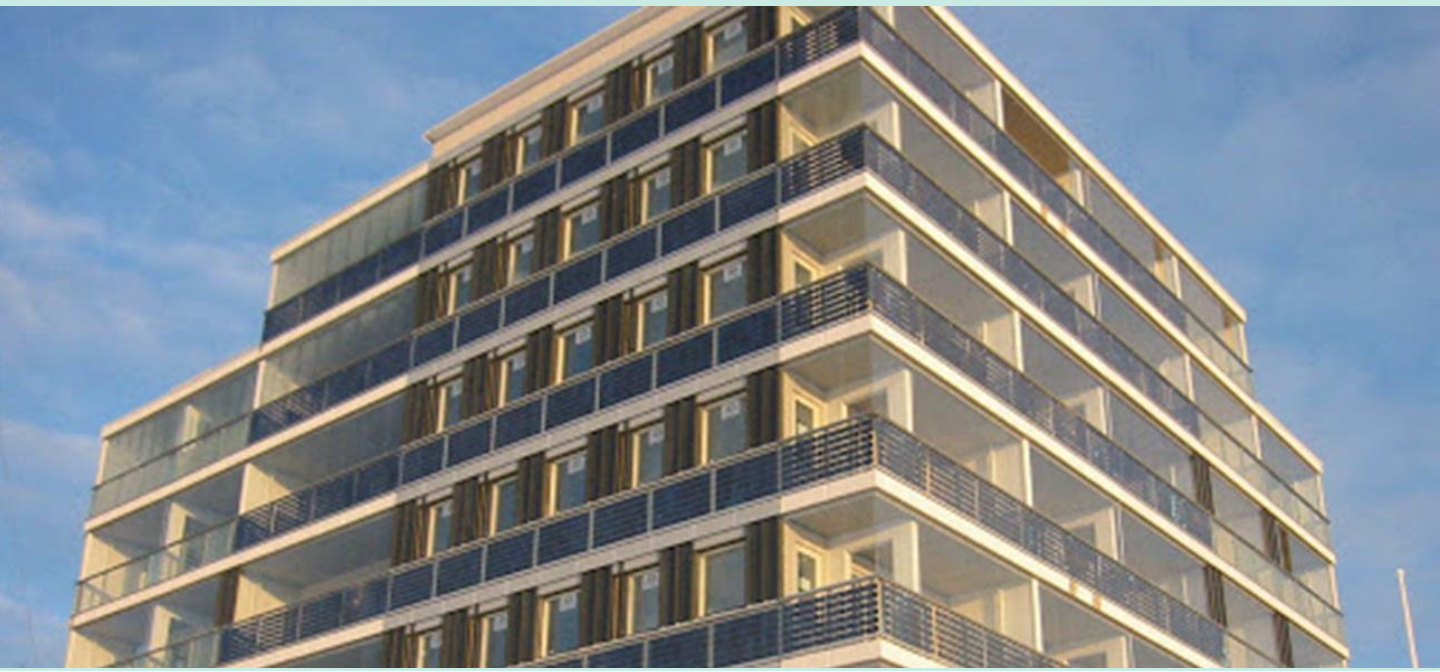
Highly See-Through Transparent Solar Curtains

Features

- Architecturally integrating solar panels into a building provides aesthetic and functional benefits.
  It becomes possible to create glass surfaces that generate electrical energy.
- Can be manufactured according to design, Flood function with blind function, Solar window features with high aesthetics ,
  High wind load, high durability



Pmax : 60 W
Vmp : 20.16V
Imp : 2.98A
Voc : 23.71V
Isc : 3.13A
Size : 1200 * 635* 11mm
Weight : 20kg



POSSOLAR

Casting A New Roof Design

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

MONO FLEX MODULE

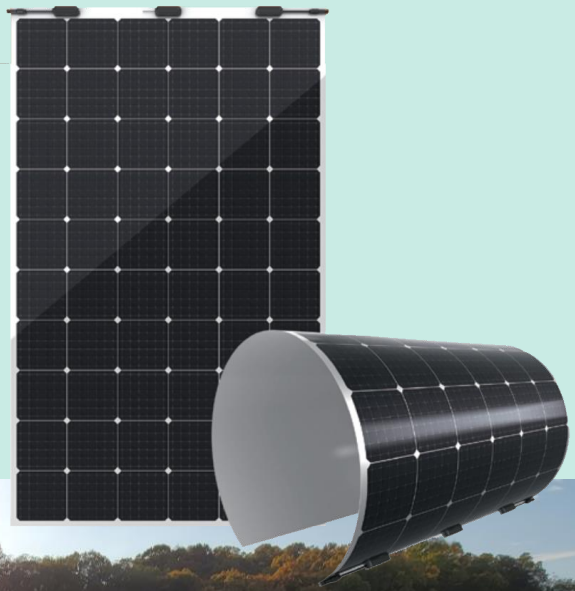
Lightweight Solar Module

Features

- Areal weight : 2.9kg/m2, 70% reduction compared to conventional glass solar module
- World's only C-Si flexible module which can endure hail-strike without cell cracks and power losses
- Thickness: 1.8mm(junction box not included), Only 50% of traditional glass based solar modules
- No need for PV support bracket, modules can be directly bonded to installation surface by weather resistant glue
- Smallest bending radius of 0.3m, No cell cracks and no power losses
- Module's surface and texture can be customized to meet aesthetic requirements

Specifications

Power Out	470W~480W
Efficiency	22%
Size	2250*1130*1.8mm
Thickness	1.8mm(junction box not included)
Weight	2.9kg/m2
Cell Type	Mono PERC 182mm*182mm
Connector	MC4 Compatible
Junction-Box	Triad Junction box IP68
Backbord color	Black/White



Pattern Glass Tech

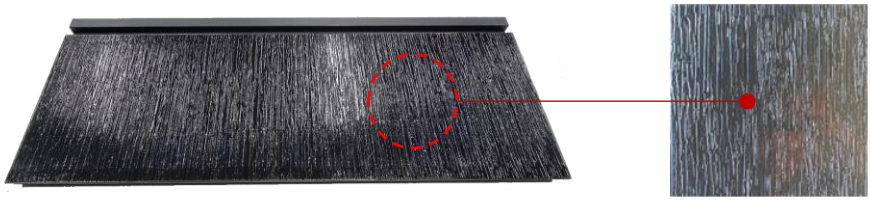
Technical Explanation

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 lowlight and scattered light environments, along with the application of light scattering to the surface of the module

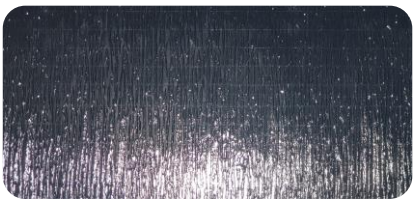
Patent registration number
30-1114798

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

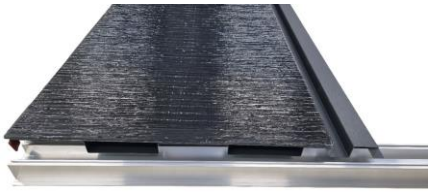
① Waterproof structural frame system and solar module integrated technology

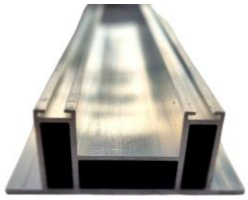
② Cooling function of ventilation prevents efficiency degradation due to temperature rise

③ Galva Zinc Steel Plate Bending Technology + Rainy Pattern Module

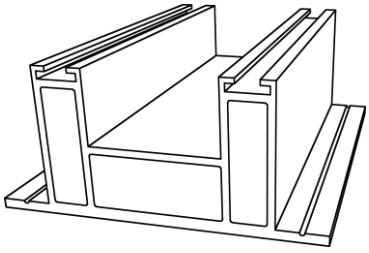
Patent registration number 30-1114797

Patent registration number 30-1114798





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



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.

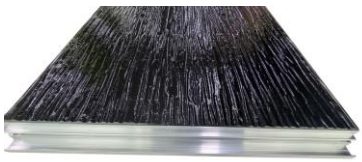
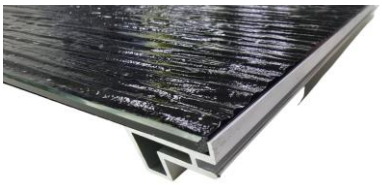
BIPV-Open Joint System

Technical Explanation

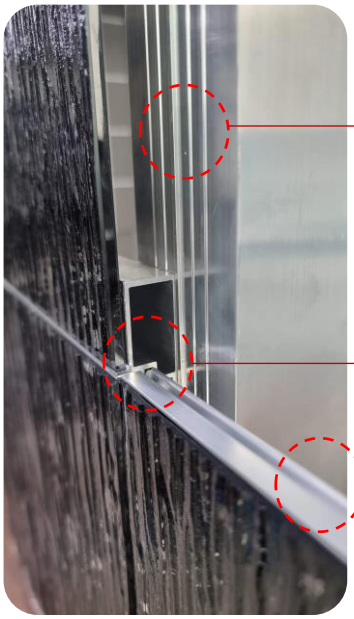
① It is a technology that can be easily fastened to the snap-type (inserted) frame of the solar panel and the truss structure of the steel structure installed horizontally or vertically on the wall, and it is easy to construct by producing various module standards. This technology uses a snap-type (inserted) frame technology on the wall, and the solar panels can be safely and easily installed on the wall.

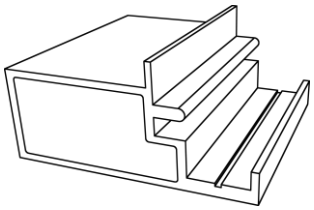
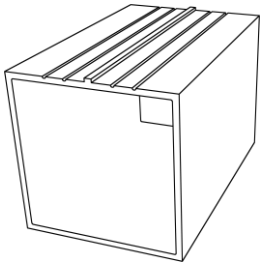
② It is a BIPV installation structure system that does not require existing Norton taping and additional stud structures. We can fasten the aluminum frame design of solar panels to a snap (inserted) frame at the same time which reduces the construction period.

Patent registration number
30-1191269


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



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.

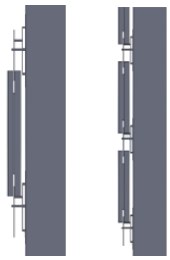
BIPV-Sash Sliding System

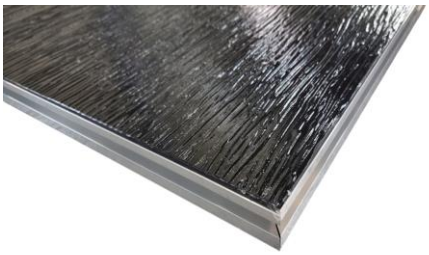
Technical Explanation

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.

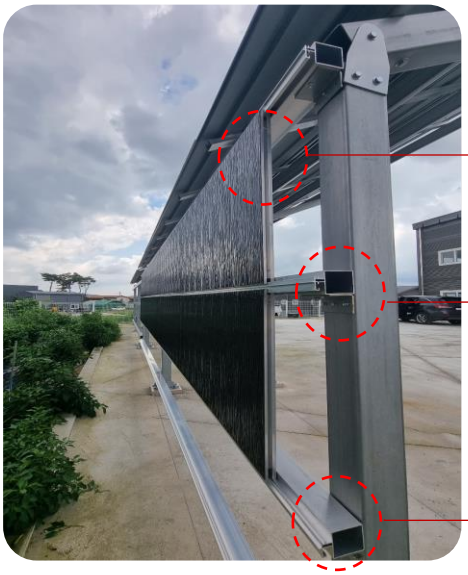
② It is a BIPV installation structure system that does not require existing Norton taping and additional stud structures. We can fasten the aluminum frame design of solar panels to the sash-type stud frame at the same time which reduces the construction period.

Patent registration number
30-1191272



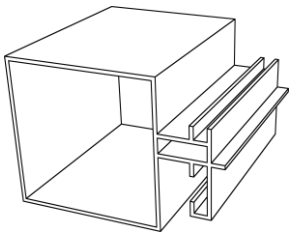


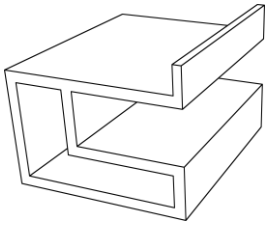
[Sash-type module frames and aluminum fixed studs]



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.

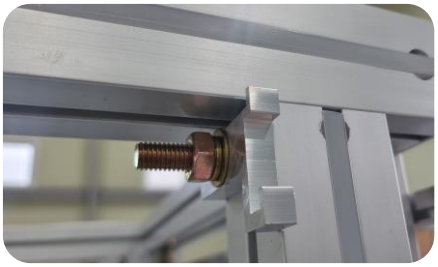
BIPV-Snap Slide type System

Technical Explanation

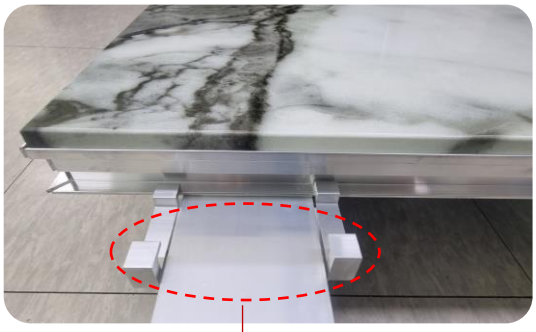
① The module frame integrated with the solar panel is joined to the snap stud frame by the snap action in the up-down direction and the slide action in the left-right direction, so the installation of the grid-type steel structure and Norton tape work are omitted, making the exterior wall construction easy and shortening the construction period.

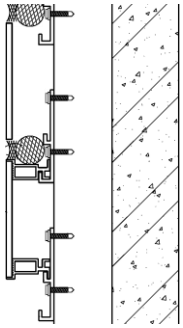
② Unlike the existing solar panel construction method, it can be manufactured and installed in a customized manner according to the architectural design, so it can be installed at a low cost.

Patent number 10-2710866호



[Snap sliding system for easy attachment and detachment]





Bracket for fastening module frames at once

Technical Benefits

▫ The frame of the solar panel can be fastened at once, making construction easy and shortening the construction period.

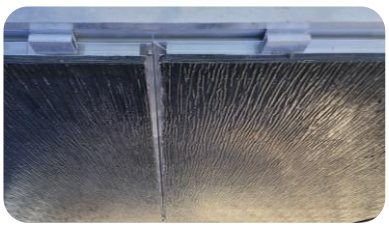
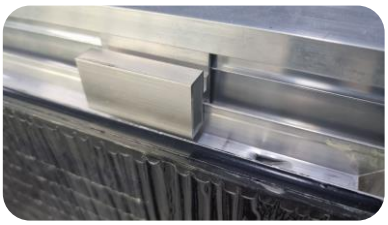
BIPV-Z-Bar Clip System

Technical Explanation

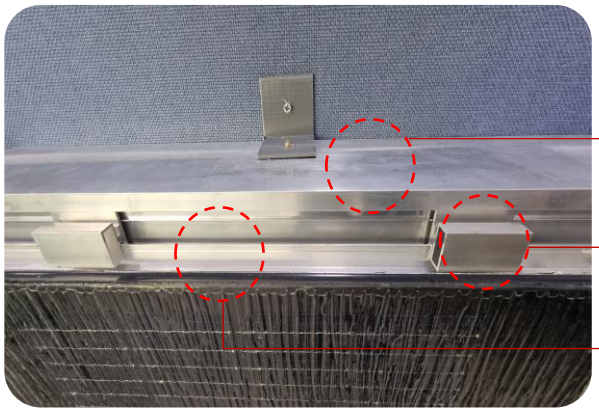
① It is a technology that can be easily fastened to the clip-type frame of a solar panel and the horizontal 'ㄷ'- shaped frame structure of the wall, and it is easy to construct by producing various module standards. This technology uses Clip(insertion) frame technology on the wall, and it is possible to safely and easily install the solar panel on the wall.

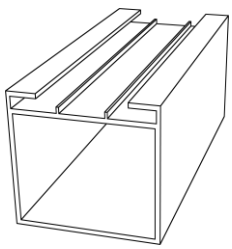
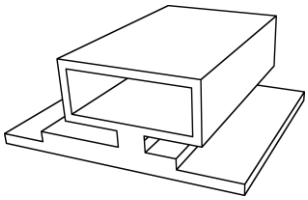
② It is a BIPV installation structure system that not only does not require existing spacer taping and additional stud structures, but also reduces the construction period by fastening aluminum Z-Bar frames to the wall's truss frame unit 'ㄷ'-shaped frames at the same time.

Patent registration number
10-2428517


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



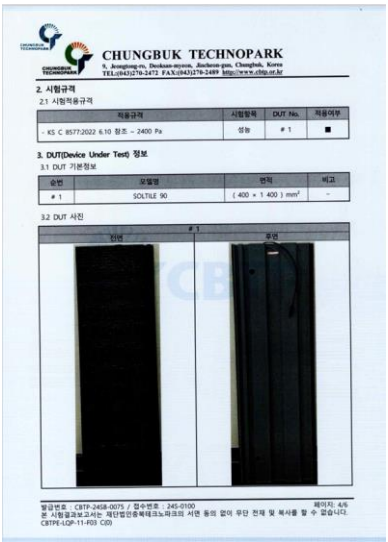



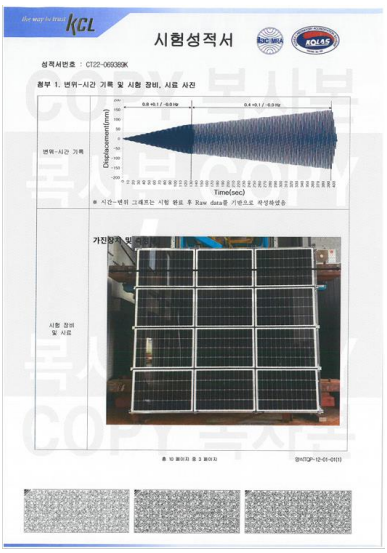
Technical Benefits

▫ Z-Bar Clip type BIPV wall truss system with shortened construction period, economical efficiency And earthquake resistance

Test Report / KCL, TP(KOLAS)

In order to construct the BIPV product, a test report such as waterproofing, wind resistance, durability, seismic design, and output must be submitted from the National Accredited Certification Authority (KOLAS) prescribed by the Building Act.





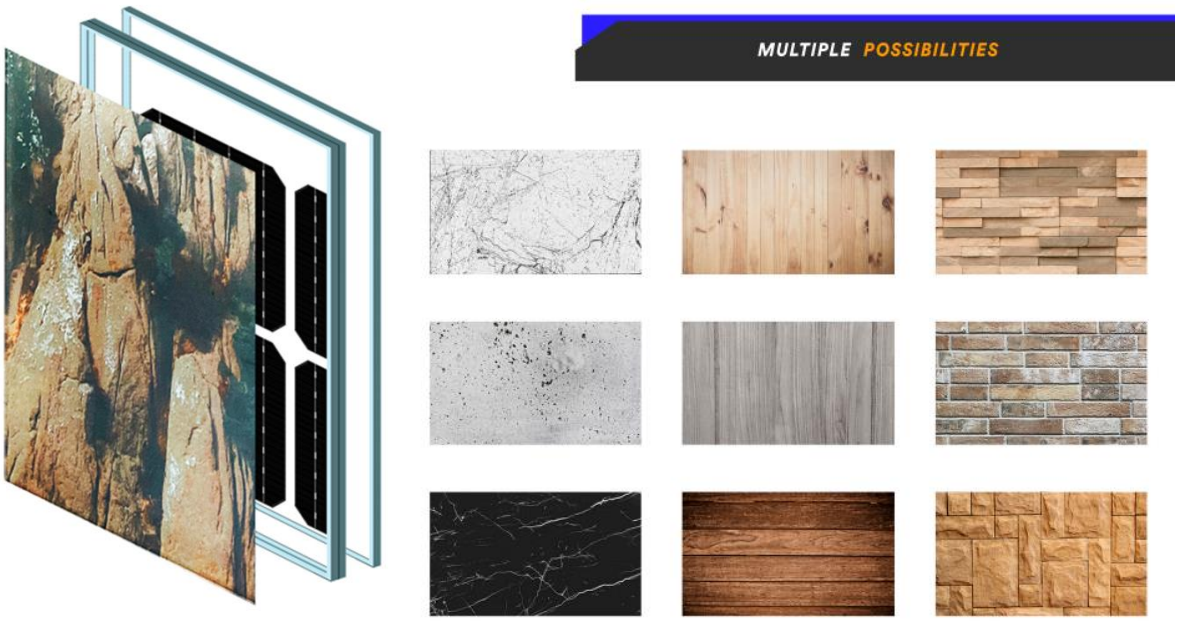
Electric Safety Corporation's prior safety certificate required report(BIPV) _ SOLTILE, SOLWALL, CIGS Flexible Module

KOLAS (Korea Laboratory Accreditation Scheme) is an evaluation organization that evaluates correctional institutions and testing institutions in accordance with the Framework Act on National Standards and ISO/IEC 17025, recognizes them as internationally recognized institutions, and recognizes that test reports issued by recognized institutions have international public confidence.

Why should PVB encapsulant be used?

▣ Digital Printed

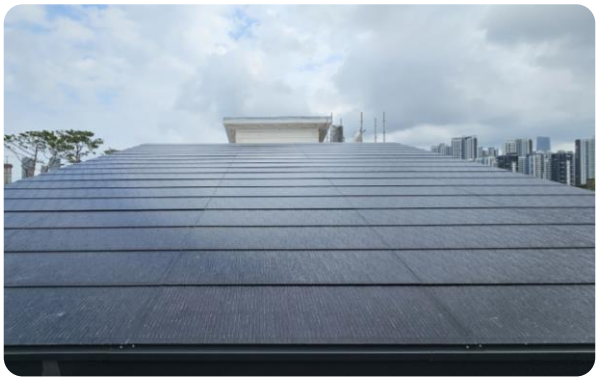
Digital printed photovoltaic panels are a perfect solution as they constitute a range of active technological glass capable to generate electrical energy, which can be used in new construction and renovation buildings, allowing electrical autonomy and energy savings.



Performance comparison between PV PVB, EVA and POE

Item	PVB	POE	EVA	Significance for module
Use history	Long history (more than 50 years)	The shortest history (no more than 5 years)	Shorter history (no more than 20 years) No precedents of building use	Have abundant time to verify
Shock Resistance	No penetration when module is impacted by the ball falling from 4.0m high in falling-ball impact test	Module ruptures when impacted by the ball falling from 4.0m high in falling-ball impact test	Module ruptures when impacted by the ball falling from 4.0m high in falling-ball impact test	The strong shock resistance reduces the occurrence of cell cracks
Anti-PID Performance	Provided with anti-PID performance	Provided with anti-PID performance	Part is provided with anti-PID performance	Prevent PID phenomenon
Bond strength	Good adhesion with glass without adhesive failure on side	Poor adhesion with glass, easy degumming at edges and easy water vapor penetration	Good adhesion with glass, easy degumming at edges and easy water vapor penetration	With module ruptured, stronger bonding strength can effectively avoid injury to human body by the glass tailing
Usable range	Full region and full coverage	Not suitable for building use	Not suitable for building use	Wide application area

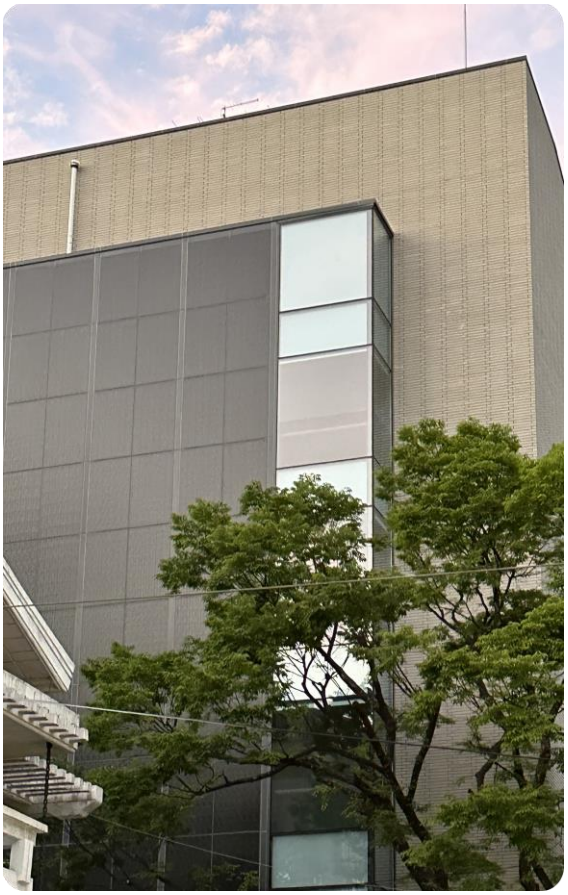
REFERENCE



Jack Niclaus G.C. Golf Village, Incheon City _ Soltile 7Kw

REFERENCE

Yeomchang-dong, Seoul_Hanwall 51Kw



Naesu-dong, Seoul_Solwall 36Kw

9 Smart Shelters in Seoul_Possolar 90Kw

REFERENCE

Sejong City_Solwall 20Kw

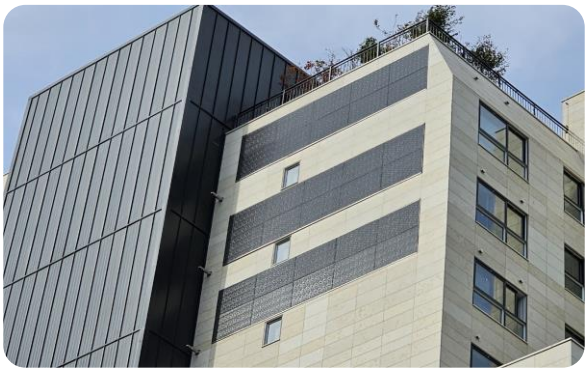
Cheongju City_Soltile 5Kw

Incheon City_Soltile 7Kw

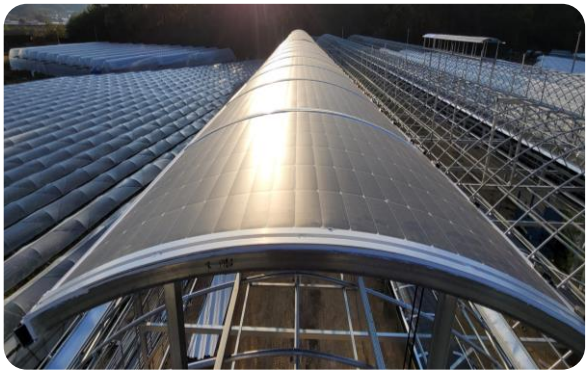
Jinju Bus stop_Mono Flex 9Kw

Roof of a gym_CIGS Flex 32Kw

REFERENCE



Seoul _ Solwall 6.5Kw



Gimcheon-si linked vinyl house_ Mono Flex 30Kw

Sejong city _ Solwall 10Kw

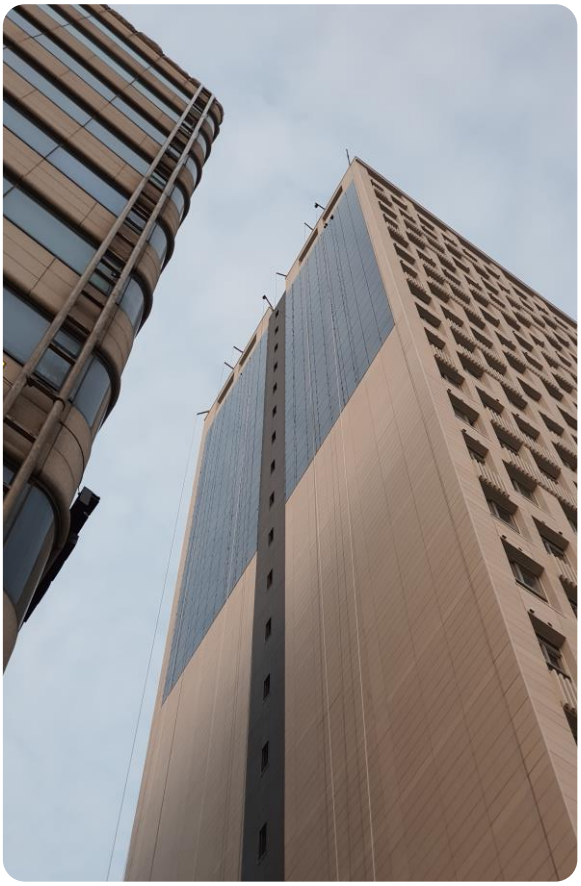
Seoul _ CIGS Flex 18Kw

Incheon City _ Soltile 7.2Kw

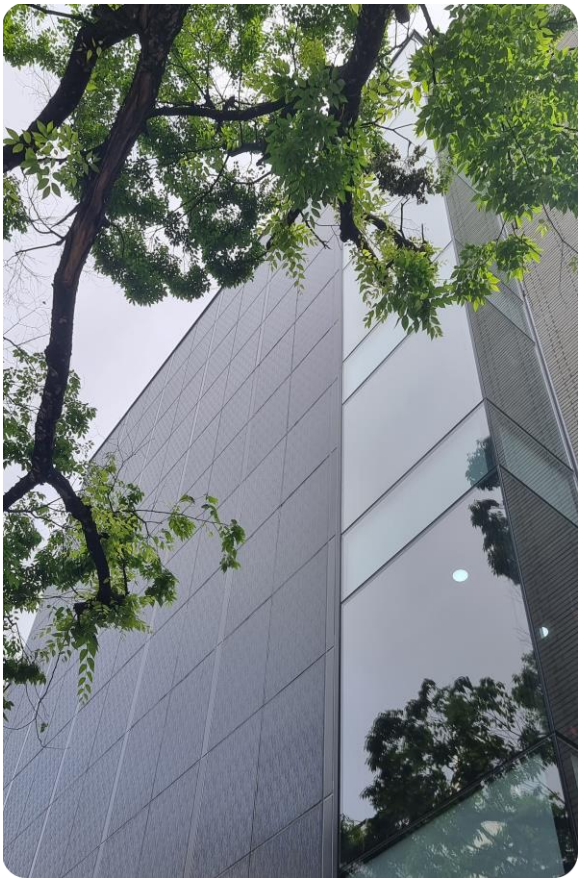
Seoul _ CIGS Flex 6Kw

Incheon city _ CIGS Flex 30.24Kw

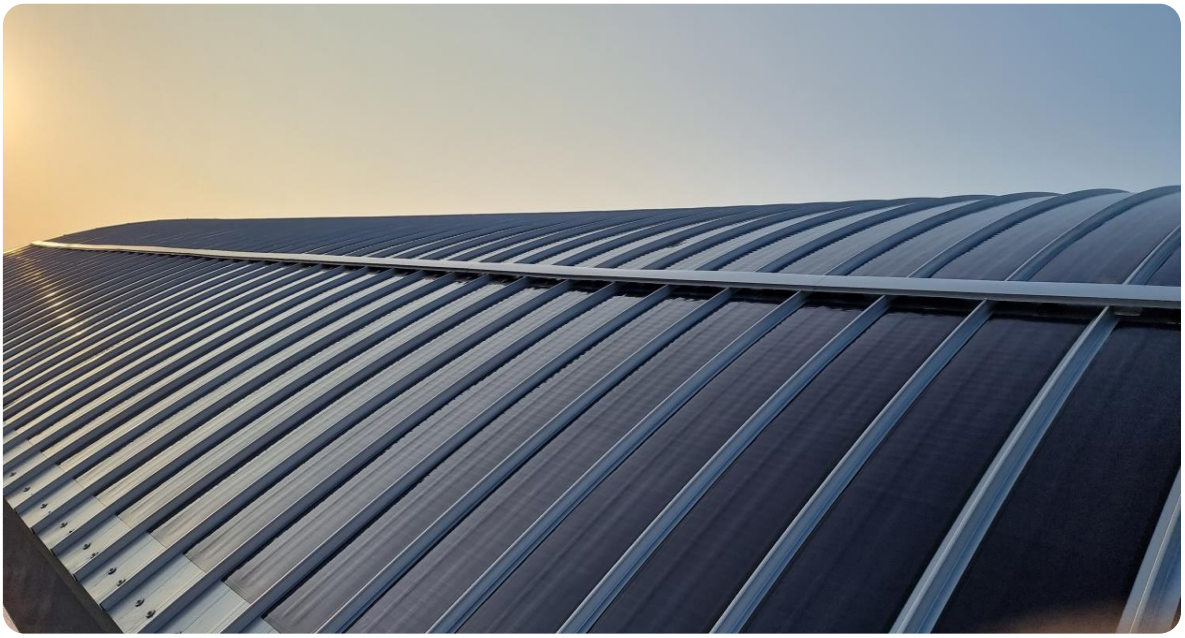
REFERENCE



Seoul _ Hanwall 51Kw



Church in Seoul _ Sowall 30Kw



Sports stadium _ CIGS Flex 32Kw

REFERENCE





CIGS Power Glass


CIGS Power Glass

Swiss Bern (CIGS)
building photovoltaic integration



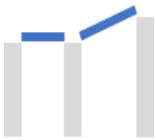
CIGS Power Glass

Photovoltaic integration of German power generation glass buildings

SOLUTIONS

1

Shade design installed in the upper facade of the building



2

Roof Integrated Form in Roof Daylighting Window

3

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

4

Architectural finish form fitted and coupled to steel structures

5

Design installed in the parking lot of the building

6

Wall-integrated wall shape (translucent or opaque)

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