



MIR SUNCOL BIPV
PRIVATE LIMITED

**BUILDING INTEGRATED
PHOTOVOLTAICS**

ITALY • SWITZERLAND • UAE • INDIA

Partners for Sustainable Urban Regeneration



MIR Group is a holding company and benefit corporation committed to Sustainable Urban Regeneration, transforming and redeveloping urban areas with a strong focus on environmental responsibility, energy efficiency, and carbon neutrality. Our mission is to create livable, dynamic communities by integrating innovative design, sustainable development, real estate management, and consultancy.

With a holistic approach, we ensure that every project aligns with Net Zero Energy Building (NZEB) goals, utilizing energy-efficient solutions and responsible urban planning to minimize environmental impact. Our highly skilled team manages the entire lifecycle of real estate development, from strategic consultancy and operational design to on-site construction, ongoing testing, and maintenance.

By prioritizing low-carbon solutions, renewable energy integration, and eco-friendly materials, we deliver projects that not only enhance the urban landscape but also contribute to a greener, more sustainable future.



07

Offices Worldwide

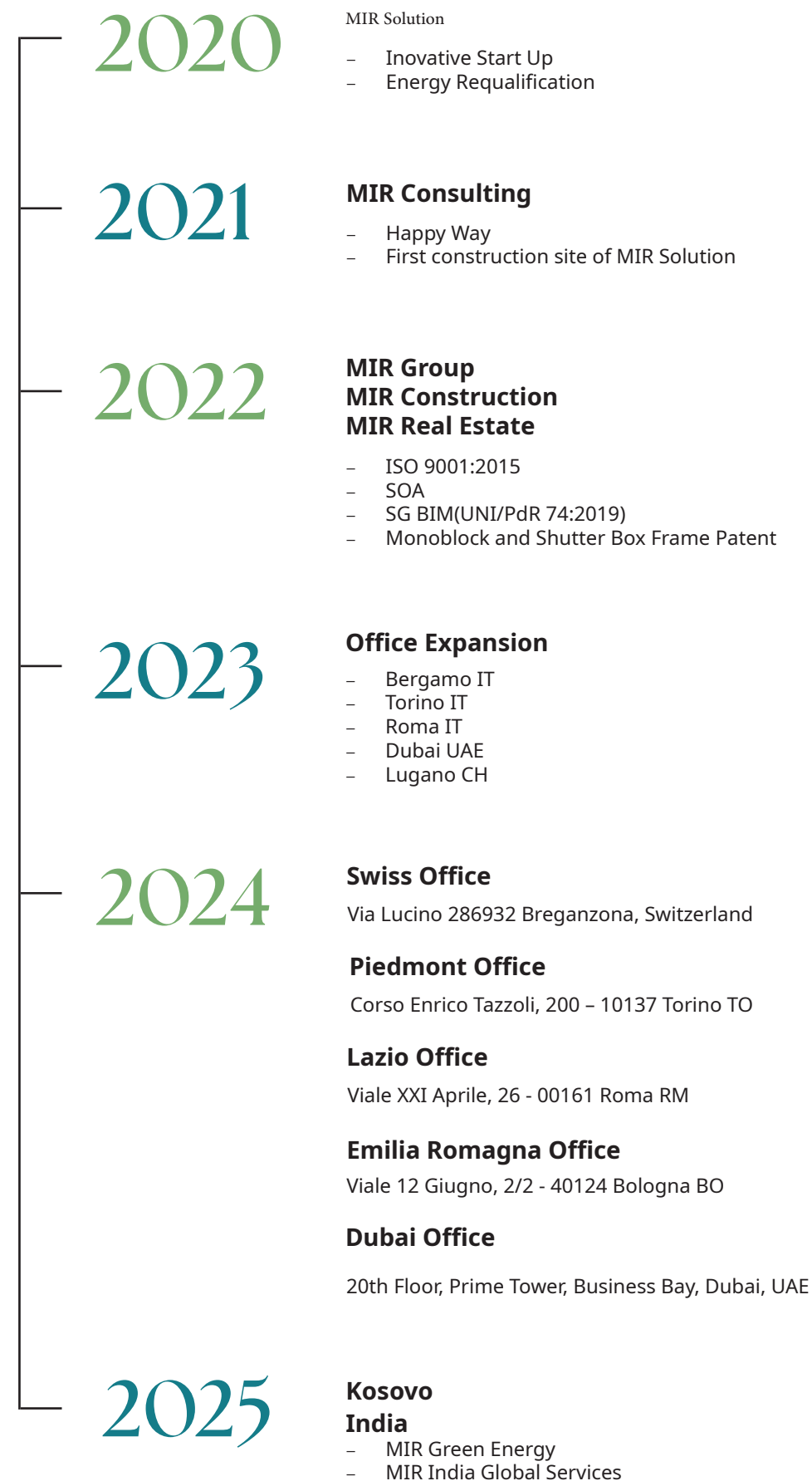
70+
Professionals

12
Division

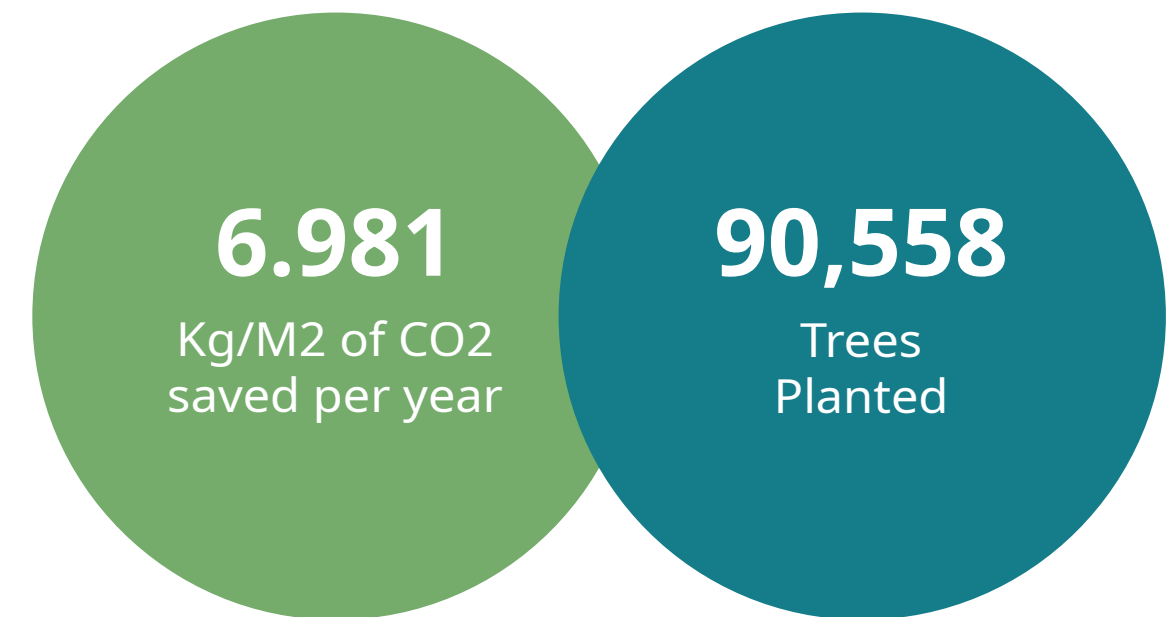
Areas of Expertise

- EPC
- Energy Requalification
- Advanced Design & Construction
- BIM Services
- Project Management
- In-depth Analysis
- Financial, Tax, & Insurance Consulting
- Green Building Certifications
- ESG Certifications
- ISO and SOA Certifications
- Green Building Material Supply

Timeline



One Mission One Vision One Purpose



Mission

Our mission is to regenerate cities and buildings through sustainable and innovative solutions, responding to new global climate changes. We design energy-plus, negative emission buildings to improve people's quality of life and promote the sustainable development of communities. We focus on environmental and social well-being and living comfort.

Purpose

Our aim is to improve people's lives and the environment in which we live, creating innovative, safe and comfortable spaces. We aim to generate along-term positive impact on communities and the global ecosystem, fostering sustainable and responsible development.

Vision

Our vision is to be a trusted partner in innovation and sustainability, putting our multidisciplinary skills at the service of customers at every stage of projects. We are committed to solving global energy problems by offering efficient and sustainable solutions, contributing to the creation of a greener future.

Goal

Our goal is to create healthier and more environmentally friendly urban environments, adopting an integrated approach in sustainable urban regeneration.

Press & Media



Mary's Meals

Feeding Education for a Better Future

We are proud to partner with Mary's Meals, an association dedicated to providing school meals to children in developing countries. Through our support, we have adopted two schools: the Kamanda School in Liberia, which welcomes 152 pupils, and the St. Betty School in Zambia, with 1,392 children. Thanks to our contribution, these children receive a daily school meal, a small gesture that makes a big difference. A simple meal not only nourishes, but encourages learning, improving opportunities for growth and future for young students. We believe that supporting children's education and nutrition means investing in the future of communities, helping to create a more equitable and prosperous world.



Time 4.2

Sport as a Pillar of Growth and Integration

In addition to education and nutrition, we are convinced that sport plays a crucial role in the development of young people. For this reason, we support Time 4.2, a sports association that actively operates in Bergamo and its province. Founded in 2015 by a group of passionate coaches and parents, Time 4.2 promotes sports among young people, organizing multi-sport courses and events that promote social integration. We share the ideal that sport should be a pillar of growth, education and training, as well as being a tool for fun for every child.



CORRIERE DELLA SERA



EUStartup.riens

THE ECONOMIC TIMES



As a benefit corporation, MIR Group places social commitment at the heart of its mission. We believe that a company's success is not only measured by its bottom line, but also by the positive impact it can have on society. For this reason, we have chosen to support two organizations that share our values and actively work for the well-being of communities.

BIPV Solutions

A Fusion of Aesthetics and Energy



Facade

Cover the entire building facade without aesthetic or structural limits. From the infinite permutation of colors, dimensions and finishes, freely create your energy facade.

Free dimensions
Max: 2000 x 3000 mm
Min: 200 x 300 mm

Free collections
All Material Collections
All Essence Collections



Puzzle

A modular system of building blocks to compose your architectural facade. From the combination of selected colors, dimensions and finishes, create your facade composition.

3 prefixed dimensions
730 x 1100 mm / 360 x 1100 mm /
360 x 545 mm

4 selected colors
Natural black / Silver gray / Orange
brown / Traffic white

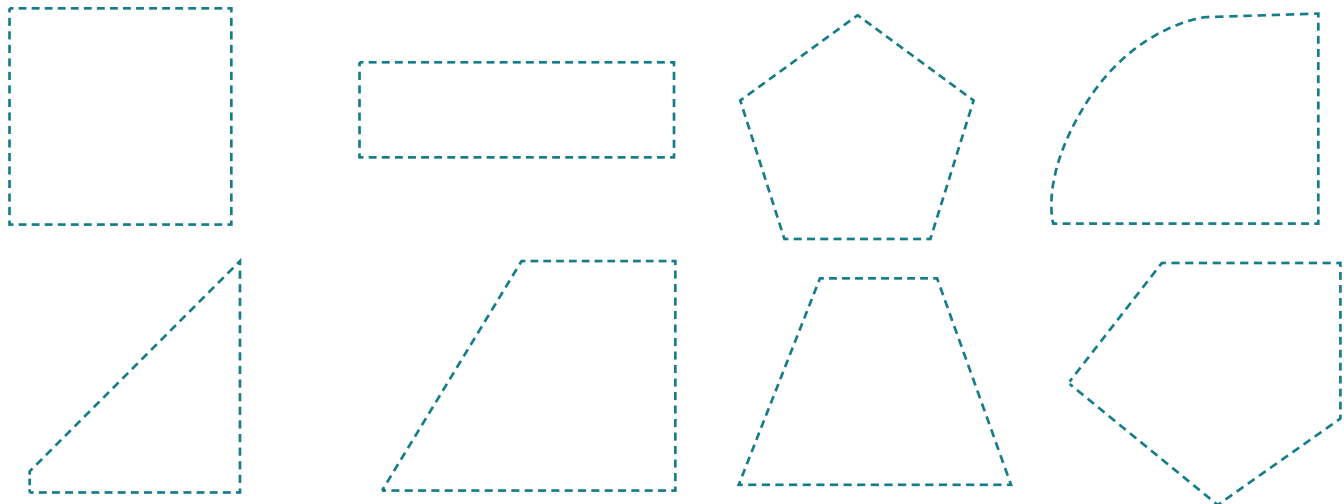


Tile

Transform every roof into an energy surface perfectly integrated into the building. From the combination of selected colors, dimensions and finishes, create your energy roof.

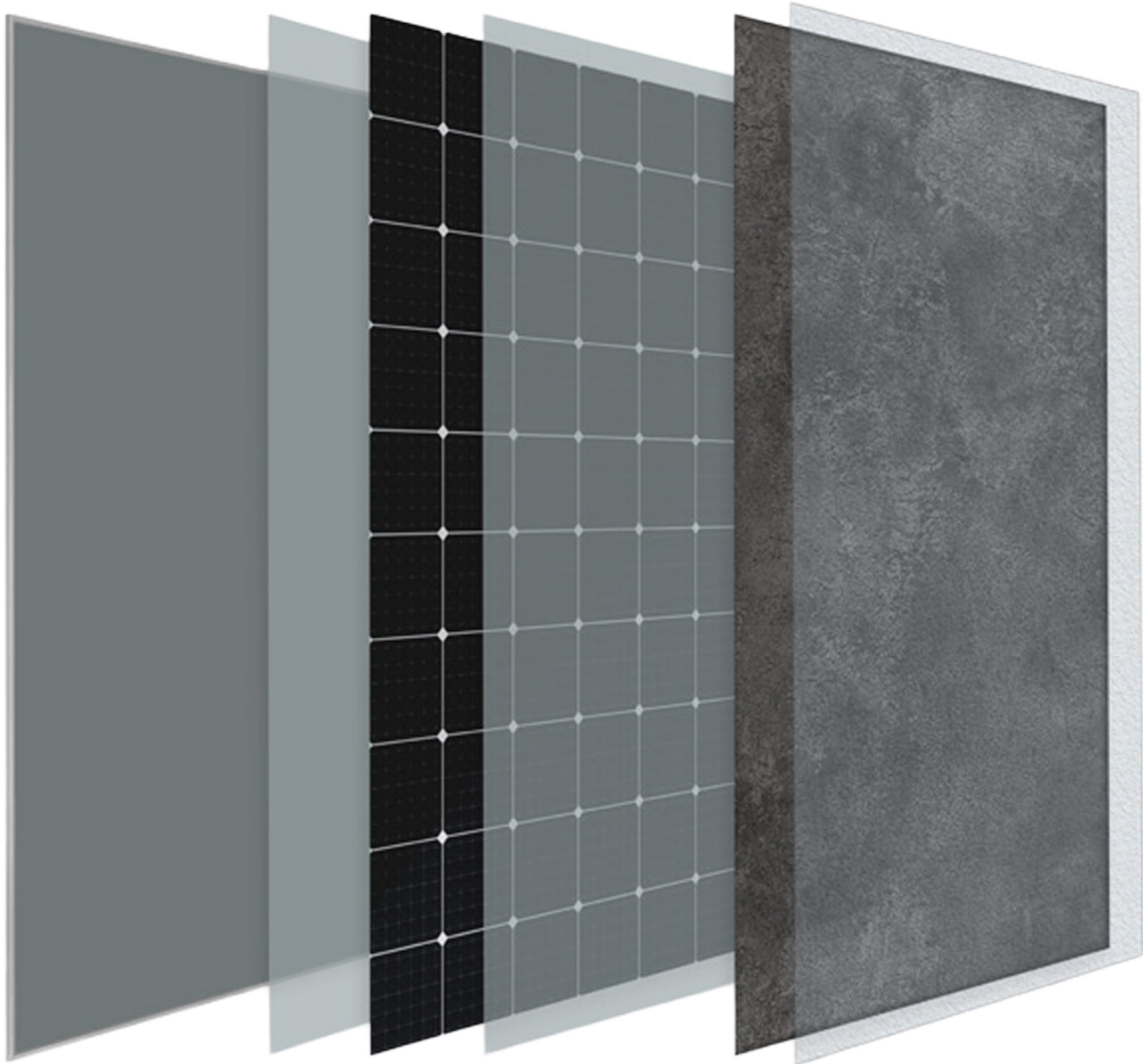
4 prefixed dimensions
1376 x 820 mm / 1376 x 450 mm
/ 686,5 x 820 mm / 686,5 x 450 mm

5 selected colors
Natural black / Silver gray / Orange
brown / Mahogany brown / Oxide red



BIPV Solution

The next generation energy surface



Layer 3

Back glass

Back float clear glass
4mm, most of time
with black color.

Layer 2

Encapsulant + Cells + Encapsulant

M6 HC da 166x83 Back Contact
Invisible ribbon black colour with JB
IP 67 - connector MC4.

Layer 1

Front glass + tactile surface

Front glass 4mm, tempered,
edge grinded, corners
cropped with coating.

Maximum efficiency

225Wp/sqm

Maximum Power / Watt peak

96.9%

Up to efficiency
(compared to a PV panel)

30+

Years of full power lifetime.
After 30 years, energy
productivity could decrease
by up to 20%

1250h

Of solar transmittance,
 $\Delta E \leq 0,001$

5000h

Of solar transmittance,
 $\Delta E \leq 0,002$

250h

Of solar transmittance,
 $\Delta E \leq 0,001$





Dimensions

A broad range of panel diameters are available to meet varied architectural needs, transforming whole structures into active, energy-generating surfaces. Options include big panels measuring 2000 x 3000 mm and smaller forms as small as 200 x 300 mm. Additionally, bespoke sizes can be given upon request via the facade solution.

While the facade system allows for custom scaling, other alternatives, such as the Puzzle and Tile variations, are available in standard proportions. This strategy simplifies production, saving substantial time and money.

For unique facade layouts, our staff will assess your desired dimensions and propose the best surface area for solar cell integration. This guarantees that your system produces as much energy as feasible.

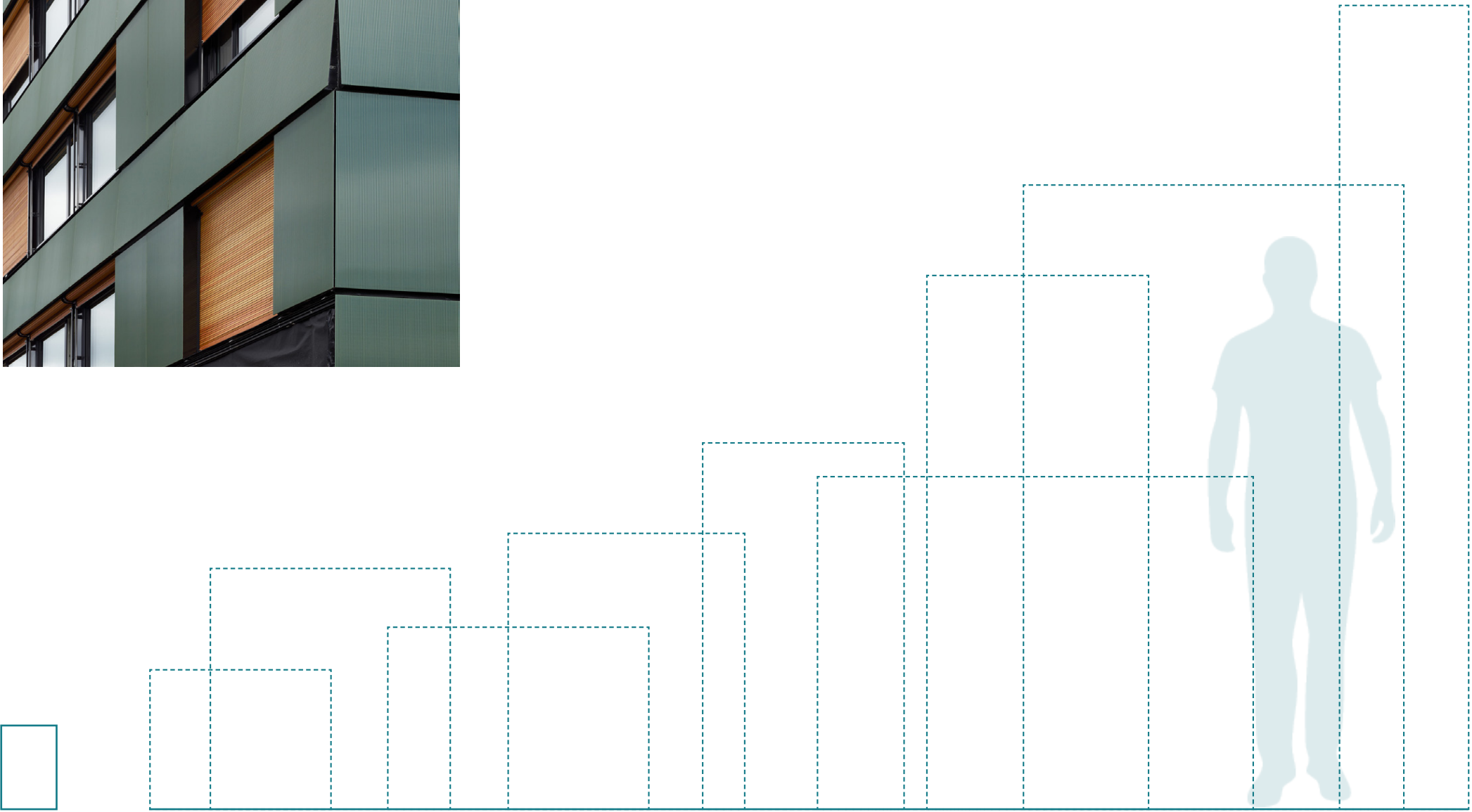
Complex Puzzle Compositions

For those who value geometric precision and design versatility, the Puzzle system provides panels in three carefully selected standard dimensions. These predefined sizes are engineered to support a wide variety of geometric arrangements across nearly any facade type. With just three module formats, it's possible to create limitless and distinctive compositions, adding both structure and creativity to architectural surfaces.

Tile System Compositions

Tile modules are designed for linear, uniform installation by placing identical panels side by side. Each panel is spaced 3 mm apart horizontally and overlaps the panel below by 80 mm. This configuration creates a seamless, continuous surface while effectively preventing the infiltration of atmospheric elements by directing water and debris downward and away from the structure.

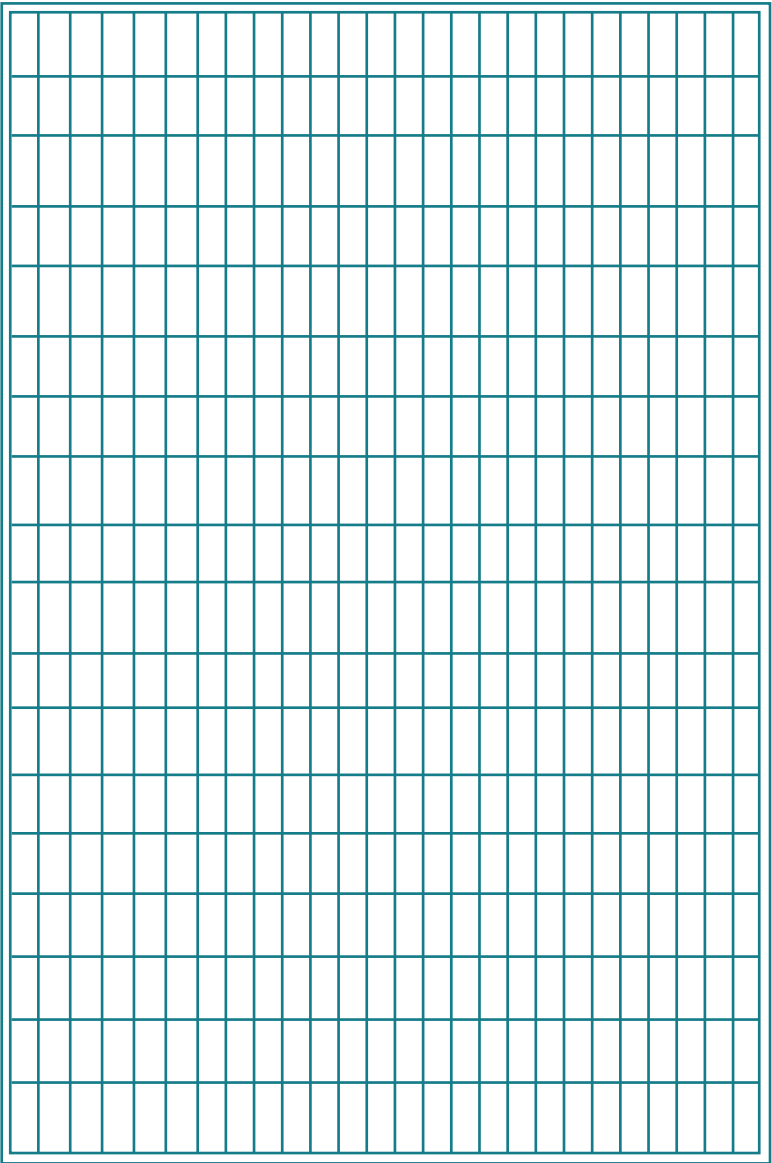
From large-scale panels to small modules, designed to cover the whole architectural exterior with consistent accuracy.



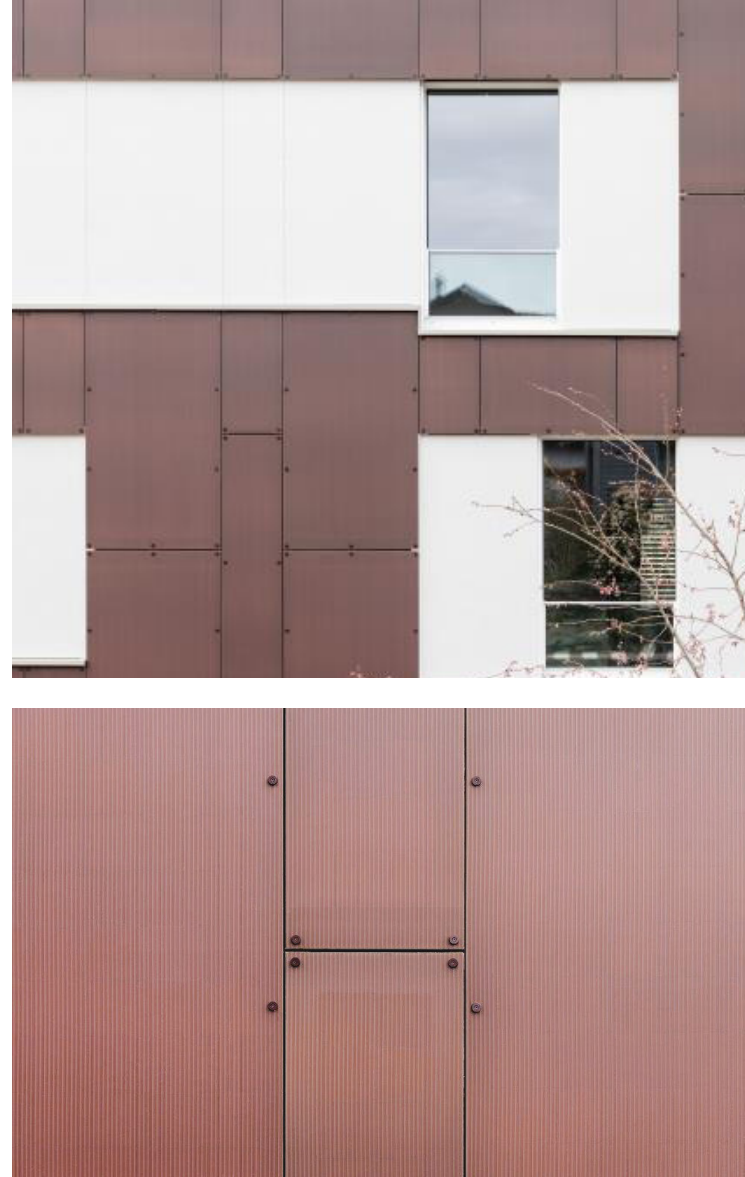
Minimum dimension
200 x 300 mm

All size between, up to

Maximum dimension
2000 x 3000 mm



Photovoltaic cell - M6 HC
da 166x83 mm



The New Aesthetic Solar Cladding

Facade photovoltaic panels are photovoltaic modules that are installed on the façade of a building. Depending on the choices made at the time of planning, it can be decided to place the panels on top of the building structure or to integrate them into the construction.

Transparent and semi-transparent modules are also available, which can be used to cover windows and glazing and to generate energy in these parts of the house as well.

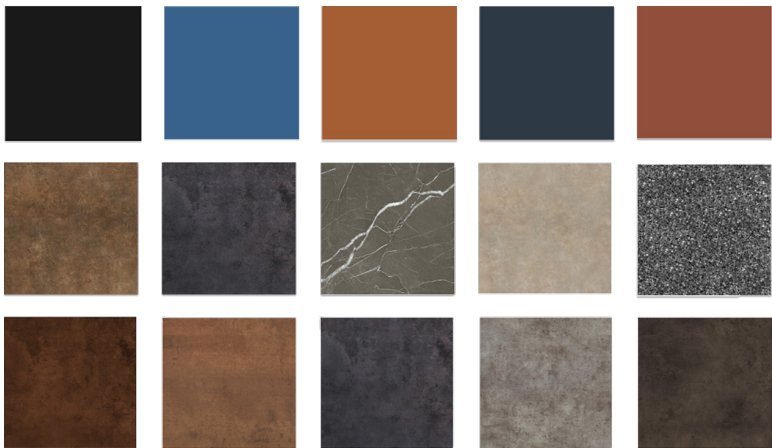
Solar panels can be used as solar facade cladding solution that fits both new facades (for integration) and existing facades for renovation or update of facade, turning it to energy efficient building solution.

Our PV facade modules are lightweight and price competitive, therefore can be chosen as building cladding option to achieve visual appeal and energy efficiency. Our produced solar panels can be customized to fit your preferred system of mounting/fixation to the wall.

Aesthetic Options

We take advantage of the materiality of the glass. MIRFacade offers a wide range of surfaces to better adapt to the characteristics of the project and the urban context.

The surface finishes, in particular the Natural surface, are proposed in combination with specific Material Collections capable of enhancing the veins of the natural world.



Facade collections

Choose between 18 material textures and 18 plain colors to perfectly adapt your project to the urban context. MIR Suncol Facade allows you to express yourself freely with all 36 colors while Puzzle and Tile (at least in the standard version) have a limited selection of colors. Depending on the desired collection, MIR MIR Suncol offers a recommended surface finish capable, as in the case of the material collection, to enhance the grain and textures of the natural world.

Material collection

Metal textures

Calcareous textures

Concrete textures

Stone textures

Granite textures



MIR Suncol uses **completely ecological coloring processes** for all collections.

Essence collection

Brown colors

Blue colors

Green colors

Gray colors

White colors

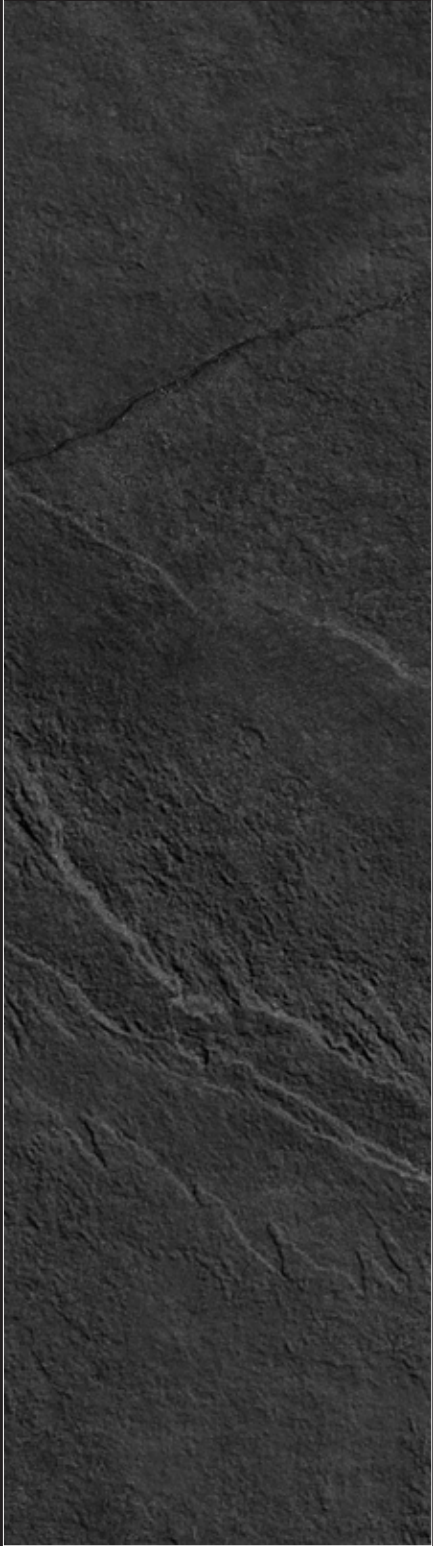
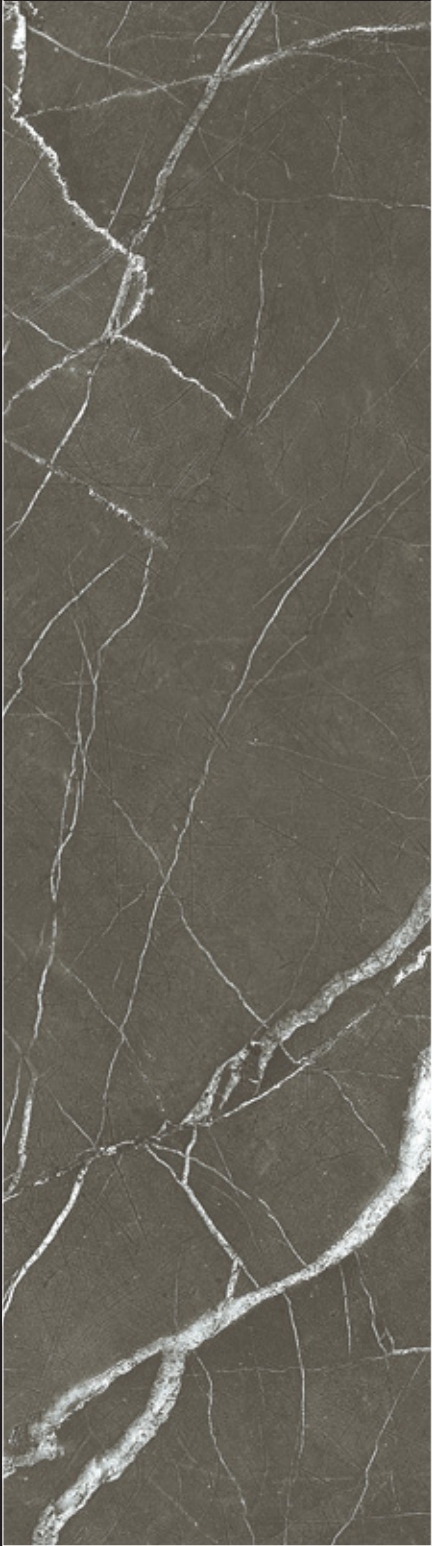
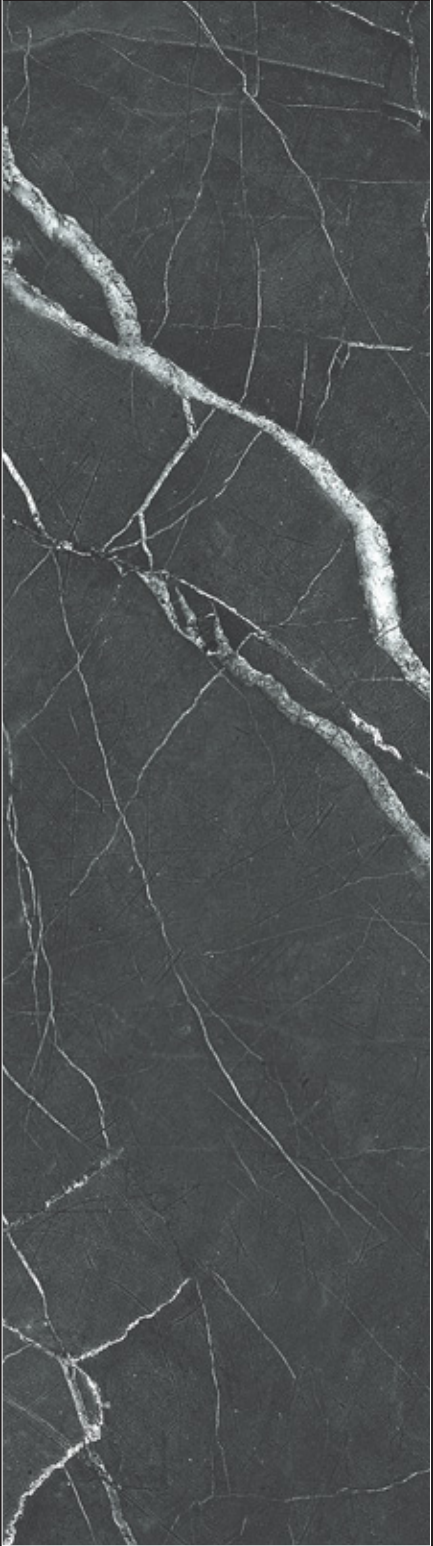
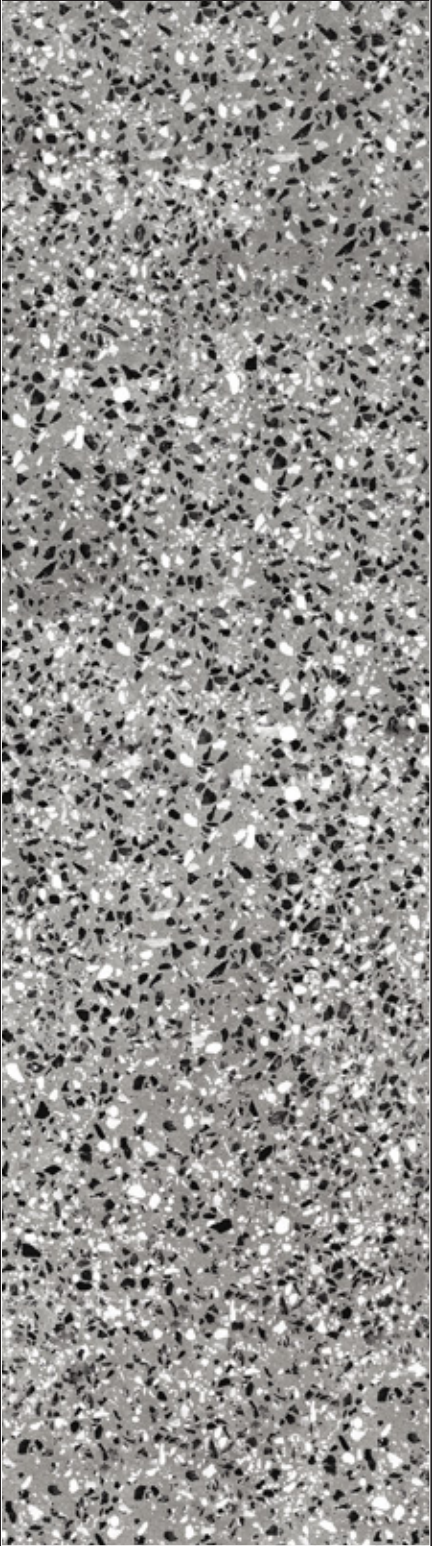
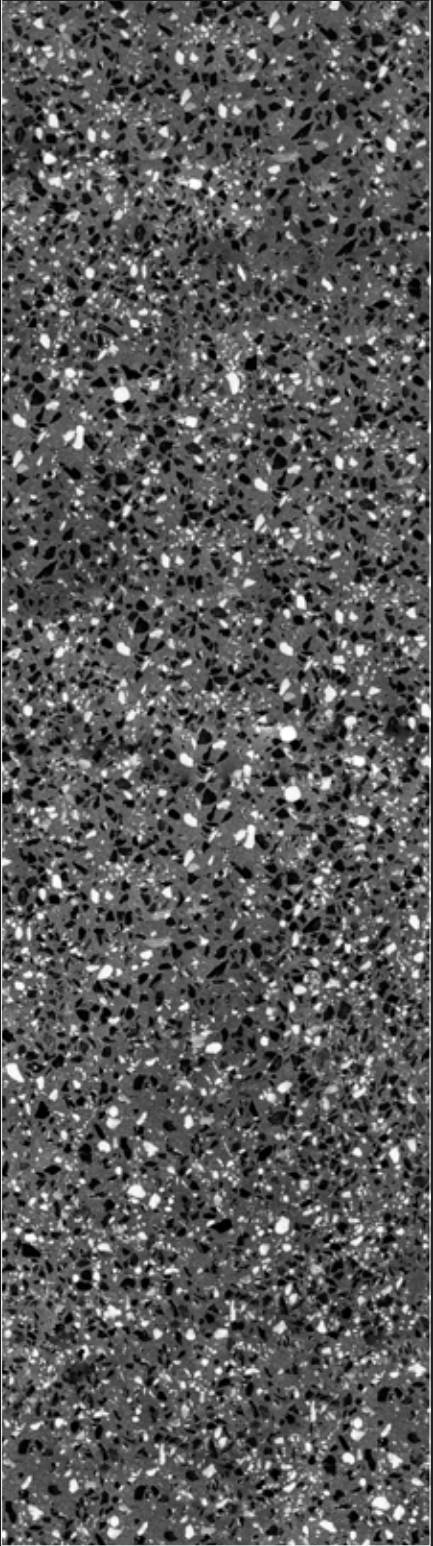
MATERIAL COLLECTION

Burnished Cod: MM-07 Metal textures	Bronze Cod: MM-08 Metal textures	Russet Cod: MM-05 Metal textures	Corten Cod: MM-06 Metal textures	Gray Cod: MC-10 Calcareous textures	Taupe Cod: MC-12 Calcareous textures
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MATERIAL COLLECTION

Cream Cod: MC-11 Calcareous textures	Brown Cod: MC-09 Calcareous textures	Worn sand Cod: MC-04 Concrete textures	Used gray Cod: MC-01 Concrete textures	Vintage taupe Cod: MC-02 Concrete textures	Worked charcoal Cod: MC-03 Concrete textures
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MATERIAL COLLECTION

Slate Cod: MS-13 Stone textures 	Piasentina ocher Cod: MS-16 Stone textures 	Piasentina gray Cod: MS-15 Stone textures 	Graystone Cod: MS-14 Stone textures 	Vintage gray Cod: MG-18 Granite textures 	Vintage dark Cod: MG-17 Granite textures 
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ESSENCE COLLECTION

Mahogany brown Cod: EB-8016 Brown colors	Oxide red Cod: ER-3009 Brown colors	Copper brown Cod: EB-8004 Brown colors	Orange brown Cod: EB-8023 Brown colors	Reddish lilac Cod: EV-4001 Blue colors	Dove blue Cod: EB-5014 Blue colors
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ESSENCE COLLECTION

Bright blue Cod: EB-5007 Blue colors	Grayish blue Cod: EB-5008 Blue colors	Blackish green Cod: EG-6012 Green colors	Olive green Cod: EG-6003 Green colors	Olive gray Cod: EG-7002 Green colors	Olive yellow Cod: EY-1020 Green colors
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ESSENCE COLLECTION

Graphite gray Cod: EG-7024 Gray colors	Basalt gray Cod: EG-7012 Gray colors	Silver gray Cod: EG-7001 Gray colors	Window gray Cod: EG-7040 Gray colors	Traffic white Cod: EW-9016 White colors	Signal white Cod: EW-9003 White colors
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Facade surfaces

We take advantage of the materiality of the glass. MIR Suncol Facade offers a wide range of surfaces to better adapt to the characteristics of the project and the urban context.

The surface finishes, in particular the Natural surface, are proposed in combination with specific Material Collections capable of enhancing the veins of the natural world.

You can customize the MIR Suncol surface with different tactile surfaces capable of generating interesting lighting effects.

We also offer Flat and Cannette surfaces available in Glossy, Soft Touch and Matte versions to better adapt to the desired light effect.



Zoom of natural
surface finishes
with Granite effect



NATURAL

A 3D surface, tactile and textured, to enhance the veins of the natural world. (Available in Granite, Corten and Bush hammered effects)



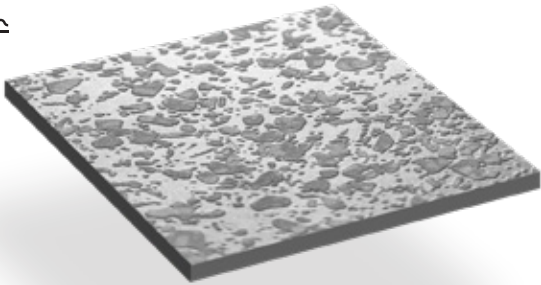
CANNETTE

Wavy surface capable of producing interesting light effects. (Available in glossy, soft touch and matte effects)

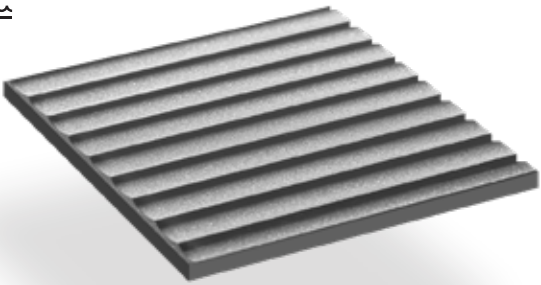


FLAT

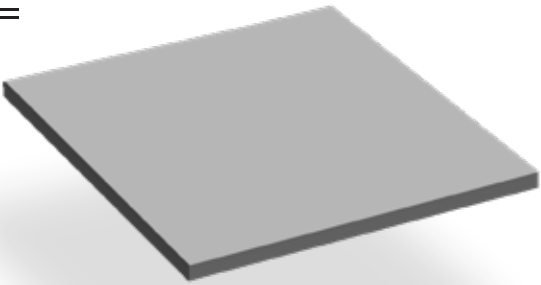
The classic and traditional smooth glass surface. (Available in glossy, soft touch and matte effects)



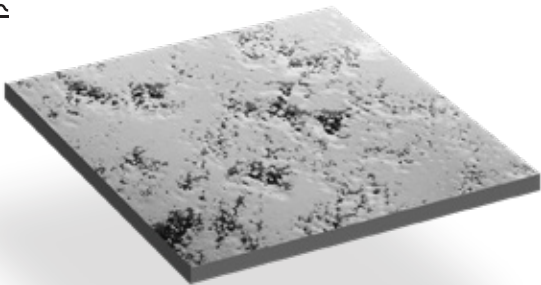
**Natural
Granite effect**
Recommended for
Granite textures



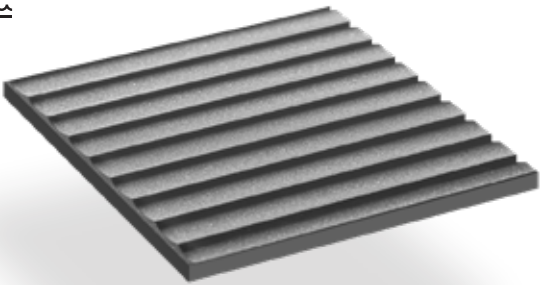
**Cannette
Glossy effect**
Recommended for
Essence colors



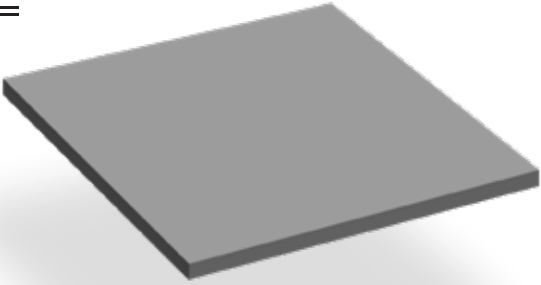
**Flat
Glossy effect**
Recommended for
Essence colors



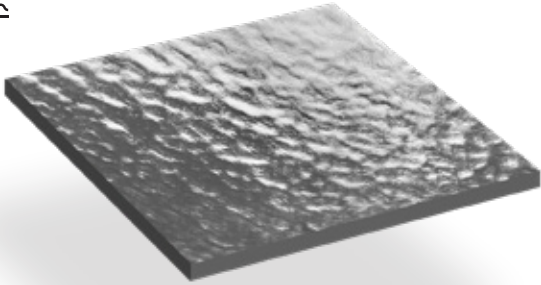
**Natural
Corten effect**
Recommended for Metal
and Concrete textures



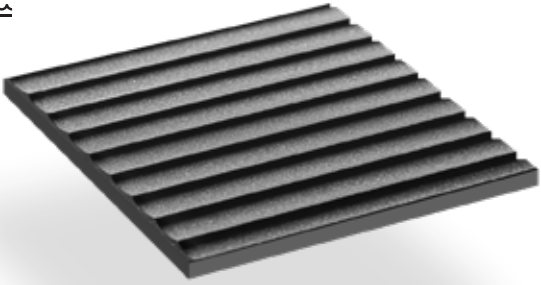
**Cannette
Soft touch effect**
Recommended for
Essence colors



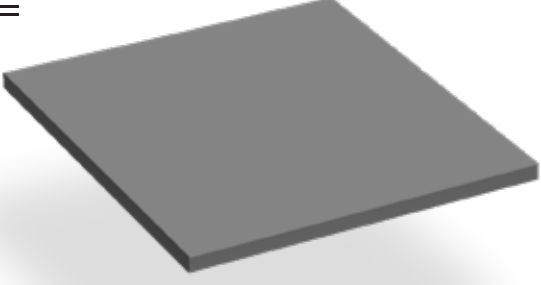
**Flat
Soft touch effect**
Recommended for
Essence colors



**Natural
Bush hammered effect**
Recommended for Calcareous
and Stone textures



**Cannette
Matte effect**
Recommended for
Essence colors



**Flat
Matte effect**
Recommended for
Essence colors

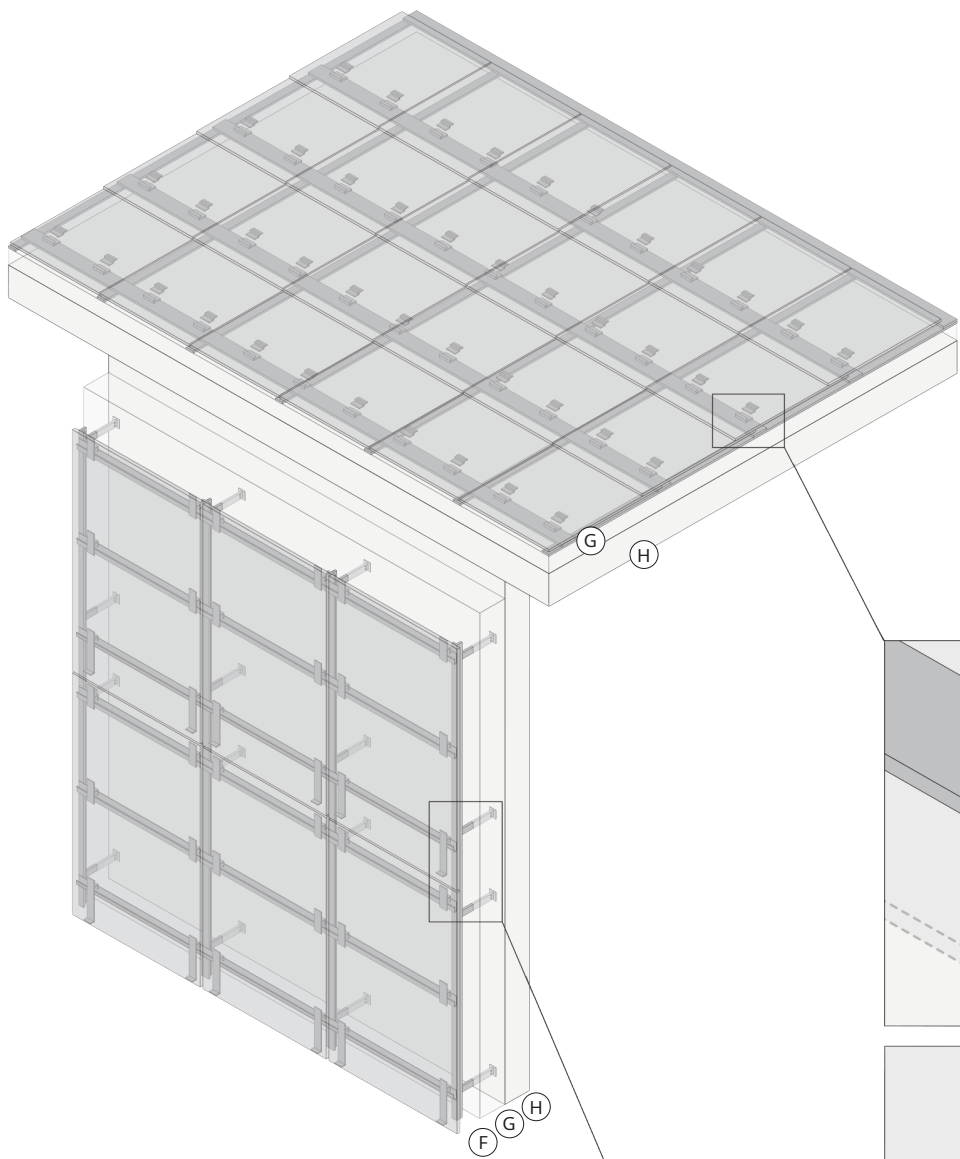
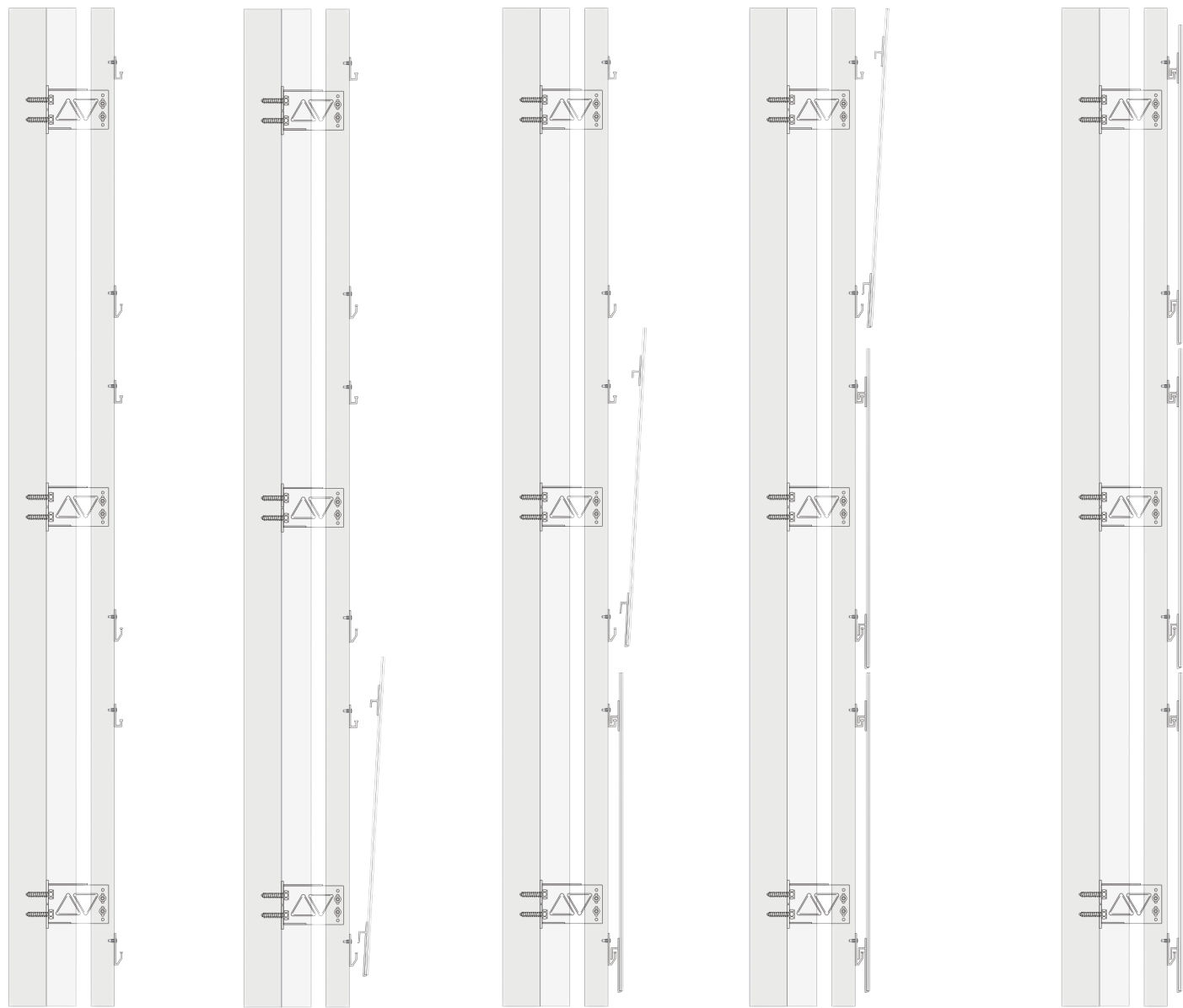
Versatile Mounting for Facades and Roofs

The Easy-Fit system provides a quick and flexible way to attach modules of any size or style on both facades and roofs. It is designed to ease the assembly process while also allowing for the most creative and customizable design options.

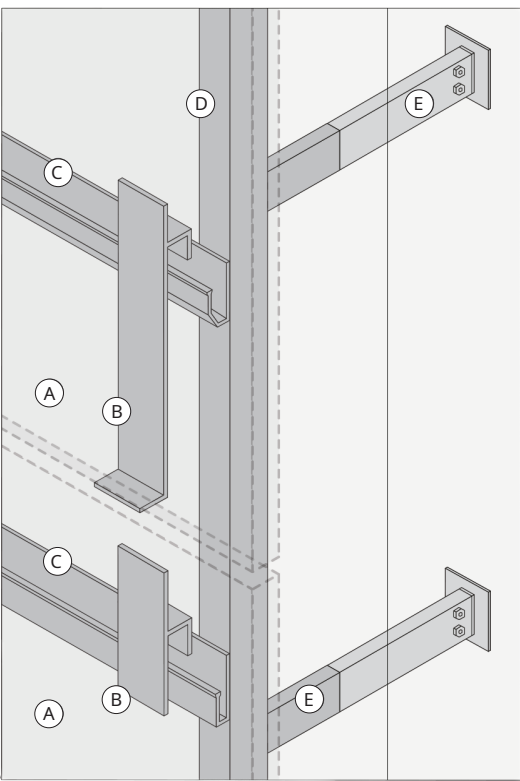
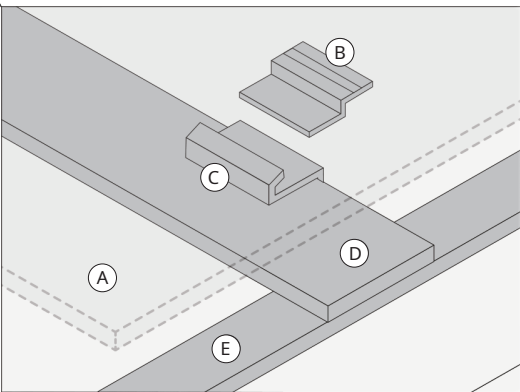
The concept enables modular surfaces to be readily built utilizing a clever hook mechanism, with some hooks embedded directly into the back of the panel (B) and others fixed on the supporting structure (C). Horizontal profiles are connected to vertical profiles, which are all held together by the Primary Structure (E), assuring elevation and overall stability.

Ventilation space (F), insulation type (G), and thickness are all totally configurable depending on customer requirements, resulting in bespoke performance for every project.

There are three variations of the Easy-Fit system available. Facade Easy-Fit, Puzzle Easy-Fit, and Tile Easy-Fit all operate on the same concept, but with distinct characteristics to meet different aesthetic and technical requirements.



The example illustrates the use of the Facade Easy-Fit system for the building's exterior and the Tile Easy-Fit system for the roof installation.

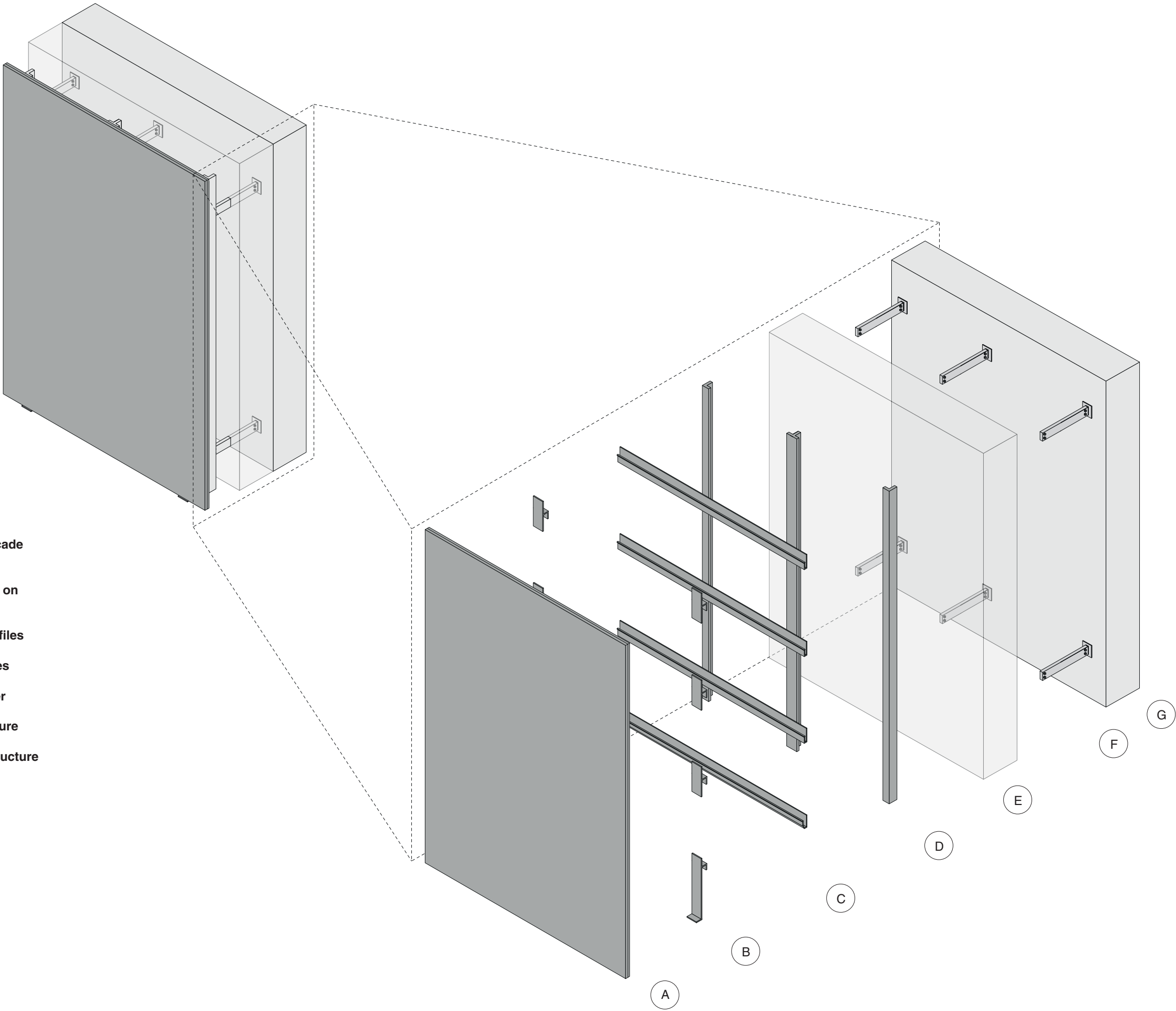


- A. Modules
- B. Brackets (on module)
- C. Horizontal profiles
- D. Vertical profiles
- E. Primary structure
- F. Aeration
- G. Insulating
- H. Supporting structure

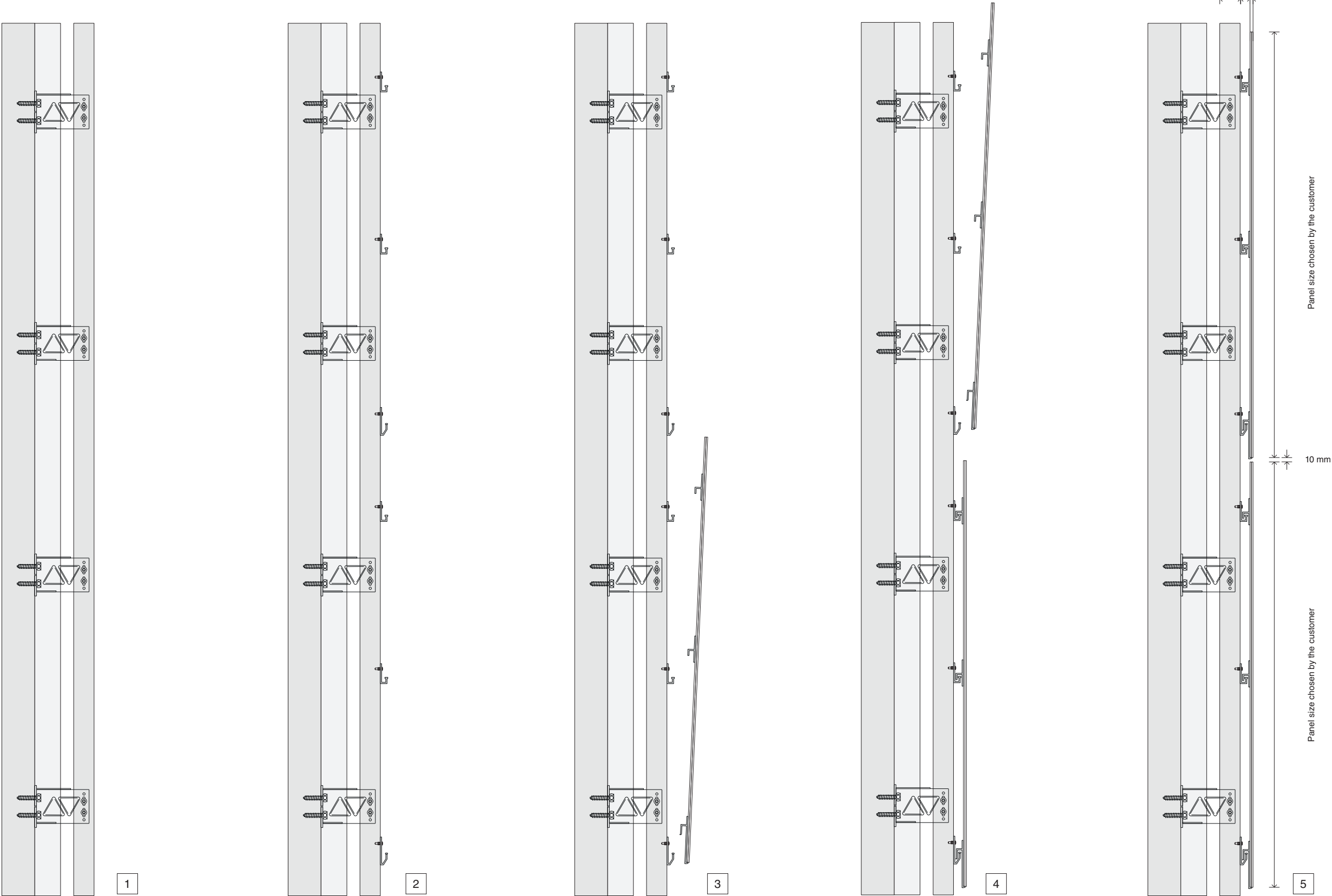
Facade Easy-Fit system

We developed the Facade Easy-Fit system to ensure easy and simple installation. The Facade system allows you to freely compose the facade through a system of hooks applied partly directly on the back of the panel (B. Bracket) and partly on the structure (C. Horizontal profile). Panel with Brackets is embedded in the Horizontal Profiles, which are fixed to the Vertical Profiles (D.), all supported by the Primary Structure (E.). This give lift and stability making the whole structure solid. Type of insulating layer (F.) and its thickness are chosen by the customer. The Primary Structure is available in different lengths and types and is fixed to the Supporting Structure of the building (G).

- A. MIR Suncol Facade module
- B. Brackets fixed on module
- C. Horizontal profiles
- D. Vertical profiles
- E. Insulating layer
- F. Primary structure
- G. Supporting structure



Assembly of the panels



Suncol panel is only 9 mm thick

The first phase consists in fixing the primary structure to the building supporting structure (1). Depending on the thickness and type of insulation chosen, the length of the primary structure, capable of fixing and supporting the vertical profiles, also varies. The length of the primary structure and the type of insulation is chosen during the design phase. The horizontal profiles (2), the lower and the upper ones, are fixed on the vertical profiles, at a variable distance according to the module size. After fixing the horizontal profiles, mount the MIR Suncol Facade modules (3). MIR Suncol Facade glued the brackets on the back of the panel to hook it to the horizontal profiles. The modules are fixed by matching the brackets with the horizontal profiles, starting from the lower profile up to the top. After fixing the first module at the bottom, proceed towards the top composing the entire facade (4). Depending on the surface to be covered, the MIR Suncol Facade module can assume different dimensions, thus covering the entire facade. (5) MIR Suncol modules are mounted at a distance of 10 mm to create a continuous and uniform surface. MIR Suncol modules are very light and thin, they are only 9 mm thick.

Fixing panel

The MIR Suncol Facade Easy-Fit system structure is composed of various elements capable of making the entire structure solid and functional.

Starting from the outside, the Brackets (upper and lower) are fixed and glued directly to the back of the MIR Suncol Facade panel. Depending on the desired size, the number of brackets installed may vary. The Brackets are matched with the Horizontal profiles ensuring stability and ease of replacement.

Both the Brackets and Horizontal profiles are distinguished between Upper and Lower, both in form and function. The lower ones have the task of supporting the panel by fixing itself in the lower part while the upper ones are distributed over the entire perimeter of the panel.

Horizontal Profiles are fixed to Vertical Profiles which guarantee their stability and resistance over time.

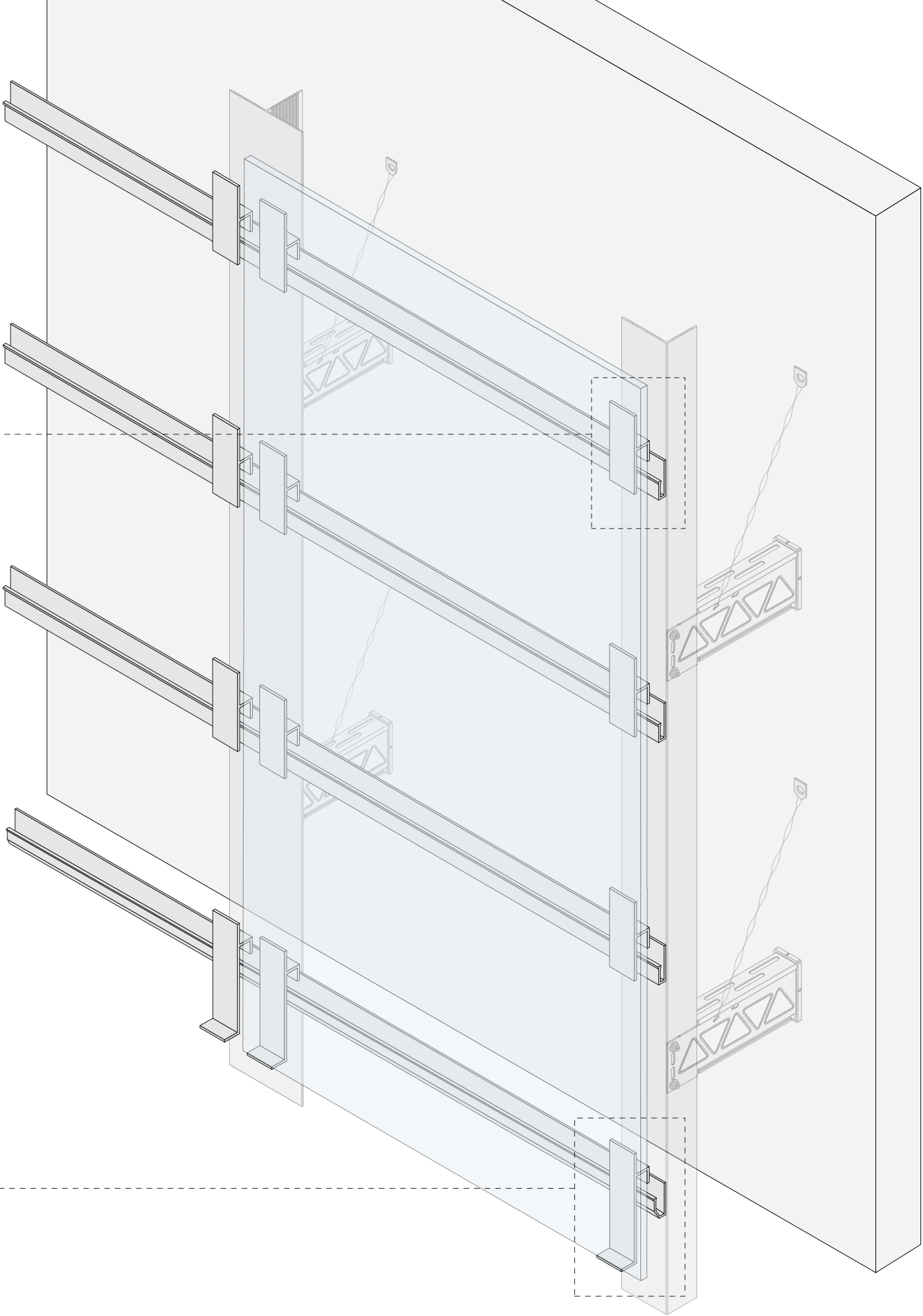
In turn, Vertical profiles are supported by the Primary structure, available in different models and lengths, directly fixed in the Supporting structure of the building.

Upper Bracket

Upper Horizontal profile

Lower Horizontal profile

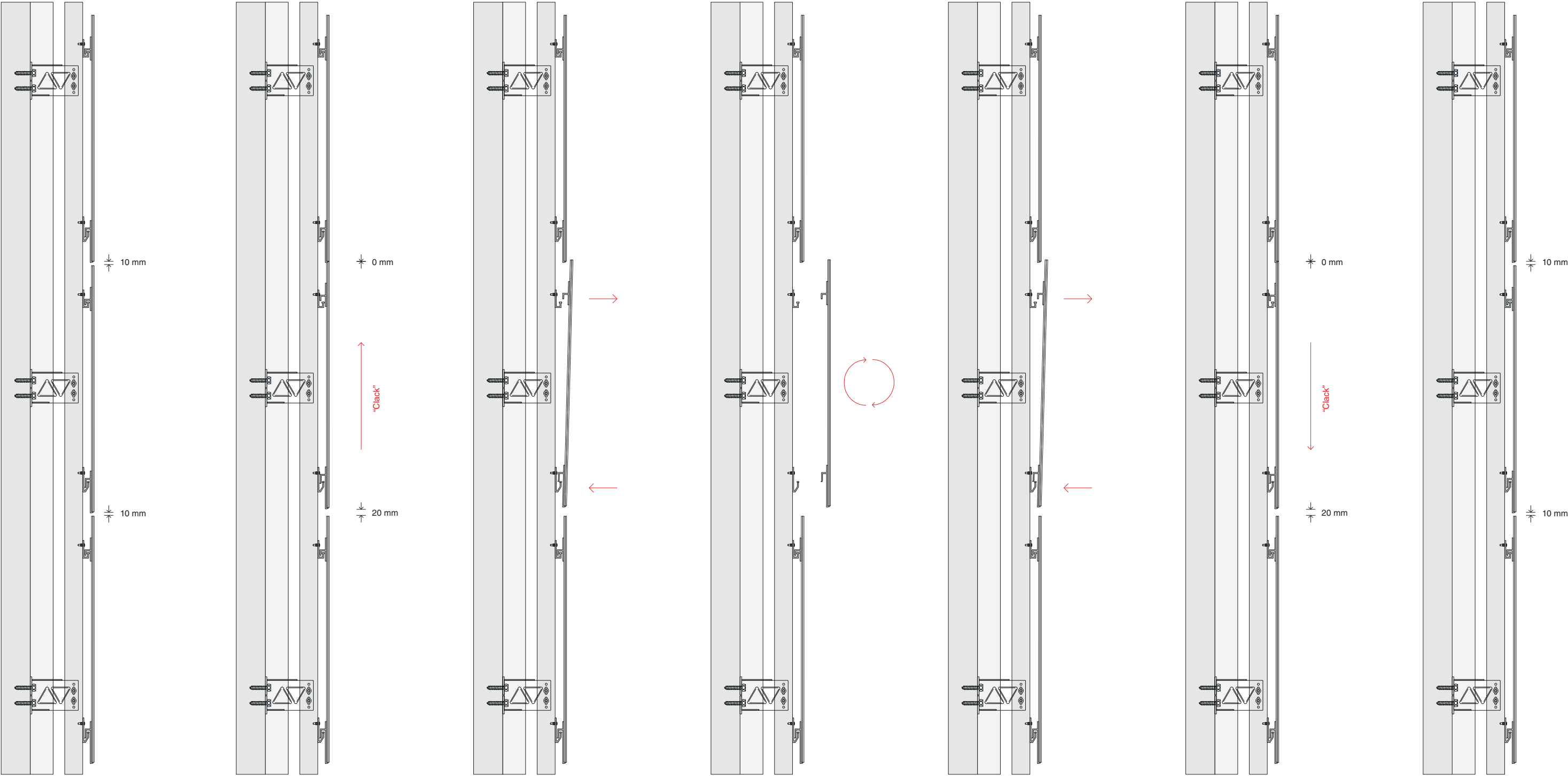
Lower Bracket



Panel replacement

The replacement of the MIR Suncol Facade panel takes place in a simple and intuitive way thanks to the MIR Suncol Easy-Fit system. After identifying the panel to be replaced, the space between the two panels (in standard conditions of 10 mm) allows you to push the surface of the panel to be replaced upwards until you hear a “click”: the Brackets are released from the

horizontal profiles. By applying pressure to the lower part, the panel tilts allowing the module to be extracted from the facade. Once removed, replace the panel and follow the steps in reverse order.



Quality and features

PRODUCT LIFE Over 30 years	FACTORY DEFECTS 12 years	PERFORMANCE Linear decay ≤ 80% in 25 years	COLOR GUARANTEED Δ E < 3
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CERTIFICATIONS

Our certification authorities: ISO: LL-C Certification IEC: Kiwa Certifications	 9001:2015	 14001:2015	 45001:2018	 61730	 61215	 UNI EN 12600	 UNI EN ISO 12543
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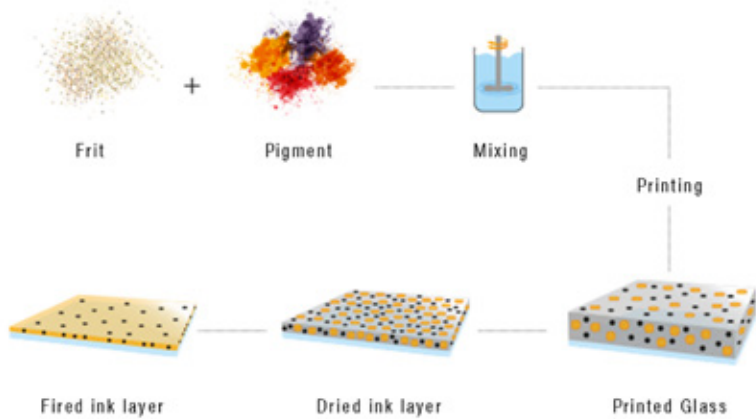
TECHNICAL FEATURES

 DURABILITY We lengthened the MIR Suncol surface life cycle. We guarantee it for 30 years.	 ENERGY SAVING MIR Suncol allows you to collect and store free green energy.	 PAYBACK TIME MIR Suncol allows a quick return on investment. Payback is approximately after 10 years.
 DIMENSIONAL STABILITY MIR Suncol is not subject to dimensional variations as it has a low coefficient of thermal expansion.	 EFFICIENCY MIR Suncol surface combines the best photovoltaic technology for maximum performance.	 RELIABILITY MIR Suncol technology ensures uncompromising performance and certain results.

SAFETY FEATURES

 IMPACT RESISTANT MIR Suncol Surface porosity is average 0,1% and it does not absorb water.	 DUST & SAND RESISTANCE The surface porosity of MIR Suncol is on average 0.1% and does not absorb water.	 FIRE CLASS A The surface porosity of MIR Suncol is on average 0.1% and does not absorb water.
 HEAT RESISTANT The MIR Suncol technology remains efficient even in extreme heat conditions, up to 80°C.	 THERMAL RESISTANT MIR Suncol surface is resistant to rapid climate changes and thermal shocks.	 FREEZE RESISTANT The suncol technology remains efficient even in extreme heat conditions, up to -20°C.

GENERAL DESCRIPTION	The specified glass is a low-iron glass for use in photovoltaic and solar thermal sector. The product is available as patterned glass with the surface structures mat/mat. Available in 3,2 mm thickness.		
CHEMICAL COMPOSITION	Silicon dioxide (SiO2) 68-73%	PHYSICAL COMPOSITION	Maximum snow load 5400 Pa
	Sodium oxide(Na2O) 9-16%		Maximum load tested 8000 Pa
	Calcium oxide (CaO) 5-13%		Maximum wind speed 130 Km/h
	Magnesium oxide (MgO) 0- 6%		Hail G3 Class; Ø 25 mm; 82 Km/h
	Aluminum oxide (Al2O3) 0- 3%		Reaction to fire Class 1
	Iron oxide (Fe2O3) <0,014%		Thickness 8 mm (0.5mm / +1.5mm)
MECHANICAL CHARACTERISTICS			Front Glass Thickness 3.2 mm
			Back Glass Thickness 3.2 mm
	Density (at 18°C) (ρ) - 2500 kg/m³	Cells Mono-crystalline cells 166 x 166 mm high efficiency	Encapsulant EVA Solar
	Young's modulus (E) - 7x1010 Pa		
	Poisson's ratio (μ) - 0,2	Junction Box JB IP 67	Connector Features MC4 original
	Specific heat capacity (c) - 0,72 x 103 J/(kg·K)		
	Nominal value of average coefficient of linear expansion between 20°C and 300°C (α) 9 x 10-6 K-1	Cable Characteristics Ø 4 mm2 length 800 mm	
	Thermal conductivity (λ) - 1 W/(m·K)		

COATING OVER THE TIME				
				
MIR Suncol Coating process consists in a special mineral coating on one glass side vitrified in a high temperature curing. The color is integrated into the glass mass as a unique product for great durability. The color remains unchanged over the time.				
UV TEST				
In over 5000 hours of tests (estimated as equivalent to 20 years of real exposure in central Europe) on Solar, light, UV, PV transmittance and color L*a*b*, the change in efficiency is almost nothing.				
<i>Material collection data</i> <i>Essence collection data</i>				
	250 hours	1250 hours	2500 hours	5000 hours
Solar transmittance AM1.5, ISO9845	Δ E ≤ 0,001 Δ E ≤ 0,001	Δ E ≤ 0,001 Δ E ≤ 0,001	Δ E ≤ 0,001 Δ E ≤ 0,001	Δ E ≤ 0,001 Δ E ≤ 0,002
Light transmittance D65, EN410	Δ E ≤ 0,003 Δ E ≤ 0,001	Δ E ≤ 0,004 Δ E ≤ 0,001	Δ E ≤ 0,005 Δ E ≤ 0,001	Δ E ≤ 0,005 Δ E ≤ 0,003
UV transmittance ISO9050	Δ E ≤ 0,001 Δ E ≤ 0,025	Δ E ≤ 0,001 Δ E ≤ 0,024	Δ E ≤ 0,001 Δ E ≤ 0,024	Δ E ≤ 0,001 Δ E ≤ 0,028
PV transmittance AM1.5 * poly-Si	Δ E ≤ 0,001 Δ E ≤ 0,0001	Δ E ≤ 0,001 Δ E ≤ 0,0001	Δ E ≤ 0,002 Δ E ≤ 0,0001	Δ E ≤ 0,001 Δ E ≤ 0,001
Photosynthetically active radiation	Δ E ≤ 0,002 Δ E ≤ 0,001	Δ E ≤ 0,003 Δ E ≤ 0,002	Δ E ≤ 0,004 Δ E ≤ 0,001	Δ E ≤ 0,004 Δ E ≤ 0,003
Color L*a*b*				
L *	Δ L ≤ 0,3 Δ L ≤ 0,10	Δ L ≤ 0,4 Δ L ≤ 0,10	Δ L ≤ 0,4 Δ L ≤ 0,10	Δ L ≤ 0,4 Δ L ≤ 0,2
a *	Δ a ≤ 0,12 Δ a ≤ 0,04	Δ a ≤ 0,13 Δ a ≤ 0,04	Δ a ≤ 0,14 Δ a ≤ 0,01	Δ a ≤ 0,12 Δ a ≤ 0,001
b *	Δ b ≤ 0,01 Δ b ≤ 0,21	Δ b ≤ 0,17 Δ b ≤ 0,20	Δ b ≤ 0,24 Δ b ≤ 0,23	Δ b ≤ 0,25 Δ b ≤ 0,25
The electrical data comes from laboratory tests and will be confirmed by post-production tests.				

Electrical data examples	 MIR Suncol Facade
	Values per sqm
Essence Collection Graphite gray color	
Vmp (V)	21,10
Imp (A)	6,98
Power (Wp)	145,00
Voc (V)	24,79
Isc (A)	7,38
Temp. Coeff. Isc (%/°C)	0,05
Temp. Coeff. Voc (%/°C)	-0,29
Temp. Coeff. Pmax (%/°C)	-0,40
Material Collection Worked charcoal texture	
Vmp (V)	21,10
Imp (A)	6,87
Power (Wp)	145,00
Voc (V)	24,79
Isc (A)	7,26
Temp. Coeff. Isc (%/°C)	0,05
Temp. Coeff. Voc (%/°C)	-0,29
Temp. Coeff. Pmax (%/°C)	-0,40

Here two sample colors are selected to show the electrical efficiency parameters of all colors and textures. Graphite gray color for the essence collection available on all MIR Suncol products and the Worked charcoal texture normally available only for MIR Suncol Facade.

Ask our experts for complete electrical data for every color or texture collections.

Notes:
The electrical data comes from laboratory tests and will be confirmed by post-production tests. The electrical specifications are measured under STC conditions (1000 W/sqm, 1.5 Air Mass Spectrum, cells temperature 25°C); the reference module used to set our Sun Simulator has been calibrated by SUPSI University (Switzerland). The accuracy of the given figures is a function of the calibration tolerance of the reference module and of the guaranteed performances of our Sun Simulator.

GEOMETRICAL TOLERANCES	If not requested in a different way by the client, we use following tolerances: Glass thickness: +/- 0.2 mm Length and width: +/- 1,5 mm Angularity (difference between length of both diagonals): 2 mm	THERMAL TOUGHENED GLASS	The mentioned glass of this specification can, if requested by the client, be thermal toughened. The glass then has following mechanical and physical properties. Flatness: Local bow: 0.7mm/300mm Bending strength: Solar glass ≥ 90 N/mm²												
GLASS QUALITY (BUBBLES, SCRATCHES, INCLUSIONS) sqm	The visual inspection of the glass is done in a frontal position with a distance of 1,5m for 20 seconds with a black background (distance between glass and background about 10 cm) with direct natural light. Eventual defects can be classified according to the table: <table><tr><td>Longitudinal bubbles max. width 1 mm</td><td>Round bubbles</td><td>Scratches max. width 1 mm</td></tr><tr><td>Length < 5 mm max. 4 pieces</td><td>Diameter < 0,3 mm unlimited</td><td>Length > 10 mm, 1 piece</td></tr><tr><td>5 < Length < 10 mm max. 1 pieces</td><td>0,3 mm < Diam. < 1,0 mm max. 3 pieces</td><td></td></tr><tr><td></td><td>Diameter > 1,0 mm max. 1 piece</td><td></td></tr></table>			Longitudinal bubbles max. width 1 mm	Round bubbles	Scratches max. width 1 mm	Length < 5 mm max. 4 pieces	Diameter < 0,3 mm unlimited	Length > 10 mm, 1 piece	5 < Length < 10 mm max. 1 pieces	0,3 mm < Diam. < 1,0 mm max. 3 pieces			Diameter > 1,0 mm max. 1 piece	
Longitudinal bubbles max. width 1 mm	Round bubbles	Scratches max. width 1 mm													
Length < 5 mm max. 4 pieces	Diameter < 0,3 mm unlimited	Length > 10 mm, 1 piece													
5 < Length < 10 mm max. 1 pieces	0,3 mm < Diam. < 1,0 mm max. 3 pieces														
	Diameter > 1,0 mm max. 1 piece														
EDGES AND CORNERS	Edge processing Corner treatment	Fully grinded C-shape Complete round grinded													

General warranty conditions

MATERIALS AND QUALITY OF EXECUTION

MIR guarantees that the modules are free from defects in material or workmanship under normal conditions of application, installation, use and service. If the product does not comply with this limited warranty, MIR undertakes, at its own discretion for a period ending 12 years (144 months) from the date of sale to the original purchaser/customer, to repair or replace the product or refund the purchase price. Repair, replacement or refund will be the only means of redress provided under this warranty.

The color is guaranteed for a period of 10 (ten) years. The result compared to the value measured between and in the sheets or compared to the mock-up must be $\Delta E \leq 3$ outer glass side.

POWER OUTPUT

MIR guarantees for a period of 25 (twenty-five) years from the date of sale to the original purchaser/customer that the rated power under standard test conditions will remain at least 80% of the nameplate power of the module. Initial decay 3.0% the first year, followed by 0.68% per year, up to a minimum of 80% of the rated power of the module after 25 years.

At its own discretion, MIR undertakes to repair or replace the product, to refund the purchase price or to provide the purchaser with additional modules to make up for the power failure, provided that it is established that this degradation is due to defects in material or workmanship under normal conditions of installation, application and use. The relevant power rating specified by MIR is defined in the MIR product data sheet valid at the time of shipment. Standard Test Conditions (STC) means an irradiation level of 1000W/m², at 25°C solar cell temperature and an AM 1.5 spectrum.

LIMITS AND CONDITIONS

Expect when otherwise declared in writing by MIR, the terms provided in these General Conditions of Limited Warranty shall be the sole means of legal recourse. The limited warranty referred to in this document does not apply to modules which, according to the sole discretion of MIR, have been subject to improper use, negligence, accident (among which, damage caused by natural disasters or other exceptional events), or which have been damaged because of actions not authorized by MIR such as, for example, misuse, tampering, alterations, repairs, other installations or incorrect applications or due to negligence in use, in storage, during transport, in handling and during routine maintenance.

The General Conditions of Limited Warranty do not, under any circumstances, cover costs connected to installation, removal, testing, packaging, transport or re-installation of the module, other costs regarding the fruition of the service of Limited Warranty or those connected to lost profit or earnings connected to performance or lack of performance of defective modules.

Modules repaired or substituted by MIR by means of recourse in Limited Warranty will not be entitled to further periods of warranty, in respect of the original duration regarding the original product purchased. The modules, components and products substituted in warranty become property of MIR . The terms of Limited Warranty of these General Conditions are applicable only for the original client/purchaser of the modules, respectively for any following owner of the original installation or site where the modules have been installed and have remained without undergoing any kind of alteration (except for those agreed to in writing together with MIR).

The conditions of this Limited Warranty supersede and replace any other limited warranty, expressed or implied, previously stipulated, including for information purposes only, the limited warranties regarding commercialization and fitness for particular purpose, use or application, and all other obligations or responsibility of MIR, except in the case that said Limited Warranty, obligations or responsibility are expressly agreed to in writing, signed and approved by MIR shall not be held responsible in any way for damage or injury caused to people or goods, or for other losses or injuries that should, in any way, come about or be connected in any way to the product, including for information purposes only, eventual defects of the module or connected to its use or installation. MIR shall not be held responsible in any way for emerging or particular damage, caused to accessories, howsoever caused. Any overall responsibility of MIR in relation to damage or other shall not exceed the price received by the retailer, per unit of product or for services provided or to be provided, as the case may require, object of the recourse or dispute.

If any part, provision or clause of these General Conditions of Limited Warranty, the sales conditions and the application of the same to persons or circumstances, are subsequently declared not valid, invalid or unenforceable, said conditions shall not concern the other parts, provisions, clauses or applications of the remaining terms and conditions, and shall therefore be considered not invalid. Any recourse or dispute concerning this Limited Warranty shall be governed by and construed pursuant to Swiss laws.

Limited warranty services

Should the end user deem necessary to recourse to the conditions of Limited Warranty, he is required to notify in writing promptly and in advance to: MIR with regards to his request.

The client must submit a written request, including proof of purchase of the module, serial number and type of failure of the product. MIR shall determine, at its own discretion, the suitability of the request. MIR may request that the product, object of the recourse in Limited Warranty, be sent back to the factory, at the client's expense. If the product is deemed faulty and is replaced without being sent back to MIR, the client must send to MIR the documentation proving that the product has been destroyed or disposed of correctly.

MIR SUNCOL BIPV PRIVATE LIMITED

ITALY • SWITZERLAND • UAE • INDIA

