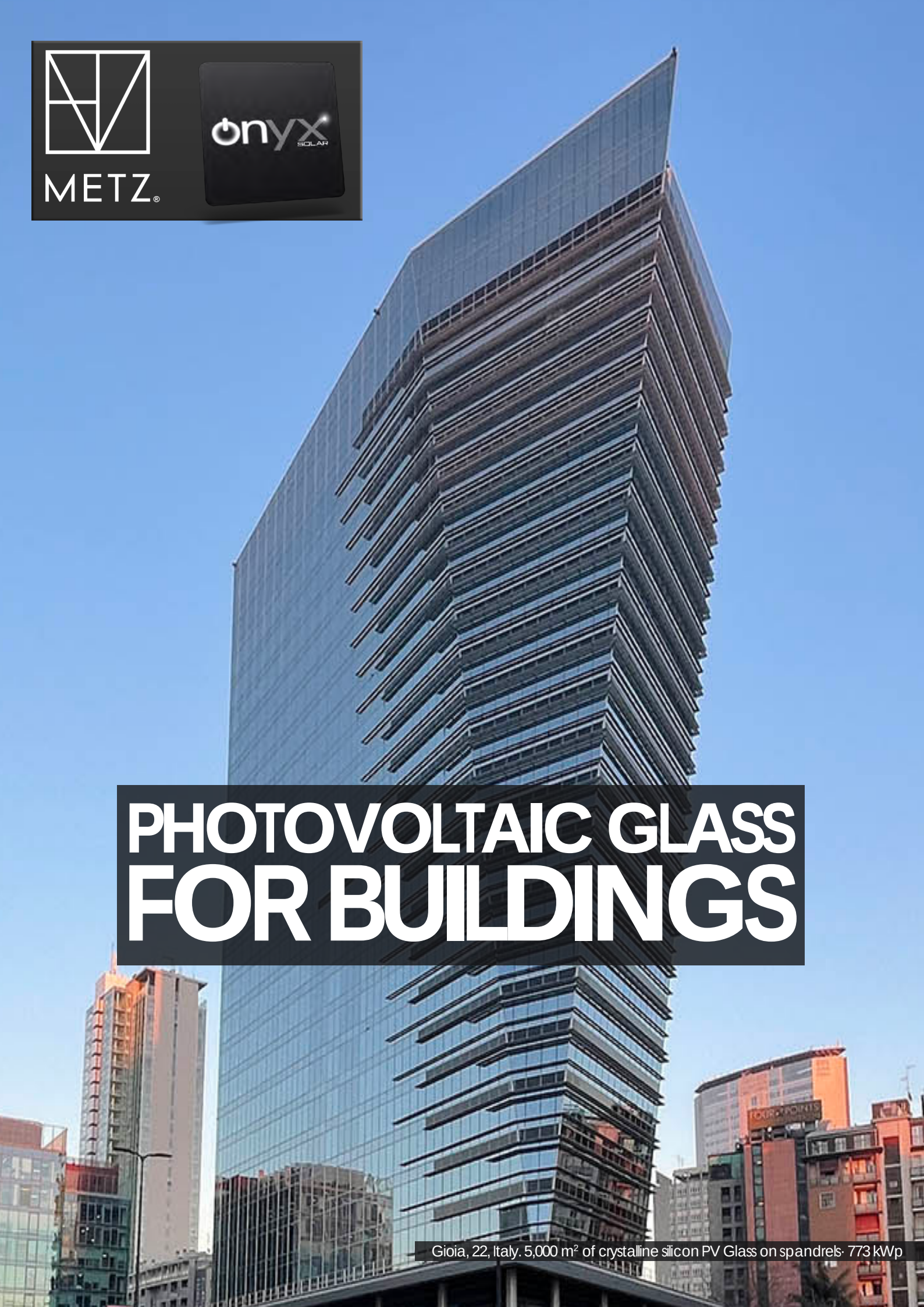
METZ®

onyx SOLAR

PHOTOVOLTAIC GLASS FOR BUILDINGS



Gioia, 22, Italy. 5,000 m^2 of crystalline silicon PV Glass on spandrels· 773 kWp

THE GLOBAL LEADER IN
PV GLASS
FOR BUILDINGS

Onyx Solar® is the world leader in the manufacture of photovoltaic (PV) glass for buildings. PV Glass is an architectural glass that generates clean, free electricity from the sun. It is installed on façades, curtain walls, skylights, and floors systems, allowing buildings of our cities to generate their own electricity for a minimal outlay.

Our aim is to help buildings becoming self-sufficient from an energy viewpoint, which is key to fight climate change. In fact, buildings are responsible for the consumption of most of the electricity produced worldwide.

We have completed over 500 projects across the world, several or which are large-scale developments for renowned companies such as Samsung, Microsoft, Hewlett Packard, Pepsi, Coca-Cola, McDonald´s, Heineken, ING, Balenciaga, Marriot, Pfizer and Novartis. All of them have installed our photovoltaic glass in their buildings.

We also provide advice to architects, engineers, consultants and contractors worldwide, including Foster+Partners, Perkins+Will, Gehry Partners, Gensler, HOK, AECOM, GMP, Ricardo Bofill, Pelli Clarke & Partners, L35, Dialog Design, Grimshaw Architects, SOM, and Rafael Vinoly Architects. We have also worked alongside the most important construction companies in the world, such as Skanska, Turner Construction, Acciona, HB Reavis, Jacobs, ACS and Ferrovial.

This catalog features several of the most iconic projects that we have completed to date. We hope that you will enjoy reading it as much as we have enjoyed partaking each project.

Welcome to the RevolutiONyx!

Alvaro Beltran
Founder of Onyx Solar®

2022 FINALIST

U.S. GREEN BUILDING COUNCIL
LEED PLATINUM
USGBC

mipim

Pelli Clarke & Partners

COIMA
Real Estate Investment

PERMASTEELISA GROUP

OUR PRODUCT

PHOTOVOLTAIC GLASS FOR BUILDINGS

SUSTAINABLE, AESTHETIC & FUNCTIONAL

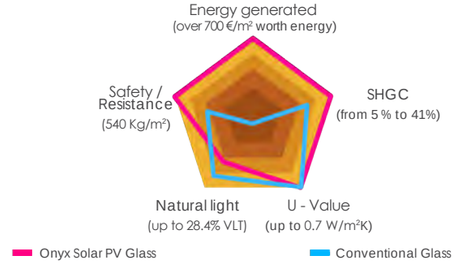
Onyx Solar is the Global Leader in the development and manufacture of photovoltaic glass for buildings. PV glass shows the same mechanical properties as a conventional, architectural glass used in construction. However, in addition, it also **generates free and clean energy thanks to the sun** (active properties). Given these properties, **PV Glass maximizes the performance of the building's envelope**. It is able to completely offset the energy demand for indoor air conditioning, and drastically reduce the cost of electricity.

PV Glass can also be **customized in shape, color, size** (up to 8 m²), **thickness, and semi-transparency degrees,** easing its integration within any project and design.

Onyx Solar has also developed the **first photovoltaic raised access floor tile in the world**, as well as the first photovoltaic ventilated façade that can be customized onsite.

OUR PV GLASS MAXIMIZES YOUR BUILDING'S ENVELOPE PERFORMANCE AND TURNS IT INTO A VERTICAL POWER GENERATOR

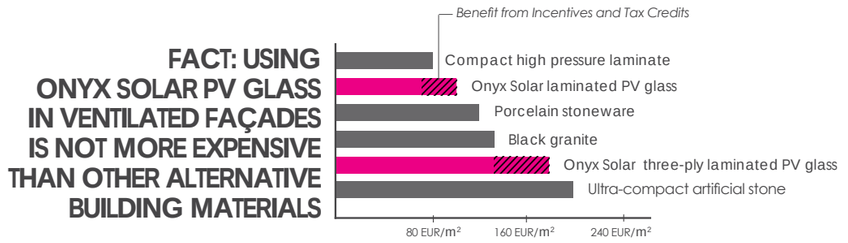
COMPARISON BETWEEN A CONVENTIONAL GLASS AND ONYX SOLAR PHOTOVOLTAIC GLASS



PV GLASS: THE ONLY BUILDING MATERIAL THAT PAYS FOR ITSELF

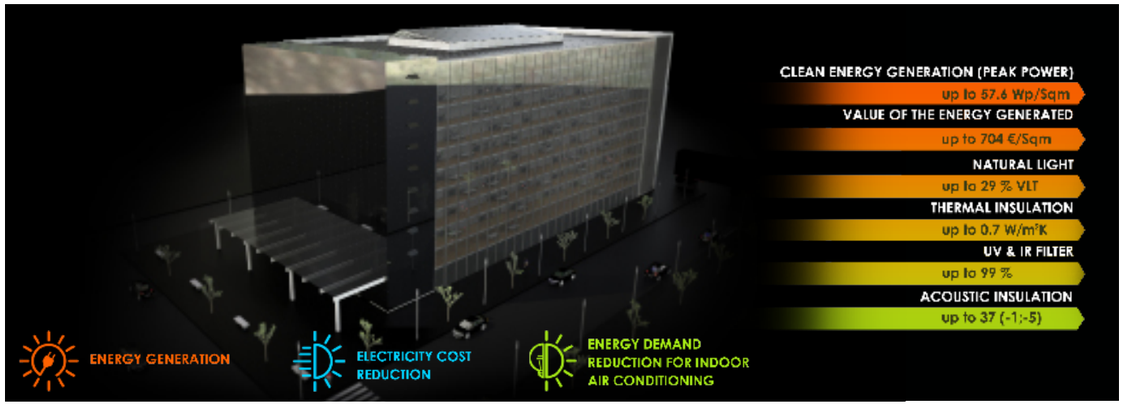
Our PV Glass can achieve an IRR of up 70% and a payback period of up to less than a year. PV Glass works as a revenue accelerator:

- It decreases HVAC load and usage thanks to the optimized performance of the PV Glass.
- It unlocks tax credits and incentives at federal, state adn local level.
- It generates free and clean electricity from the sun, which locks the cost of the electricity generated for over 30 years.
- It contribute to the perservation of the natural environment.
- It reduces the building's carbon footprint.



LOW-E
PHOTOVOLTAIC GLASS

LOW-EMISSIVITY PV GLASS



Why do Onyx Solar®'s products add value to any building?

Photovoltaic glass panels produce clean, free electricity from the sun, enabling daylight inside buildings, filtering out the harmful components of solar radiation, and providing buildings with thermal and sound insulation as needed. They also offer innovative, modern designs to meet the aesthetic requirements of any architect and client.

Onyx Solar® has developed the first photovoltaic low-emissivity (low-e glass). In addition to generating clean energy from the sun, low-e photovoltaic glass outperforms convetional glass:

INSULATION PROPERTIES

These are expressed by the thermal transmittance of the glas which, as we have seen before, is also known as "U-value". This parameter represents the amount of heat that passes throught the glas when there is a difference in temperature between its two sides. The lower the U-value, the better the thermal performance of the glass. This helps building becoming more energy efficient and saving costs. In this sense, Onyx Solar®'s Low-e glass offers U-values up to 0.7 W/m²K, equaling the performance of conventional low-e glass.

ELECTRICITY GENERATION

Photovoltaic glass generates free, clean energy from the sunlight. This happens thanks to the micrometric active layers of photovoltaic material deposited on one of the sides of the glass. As an example, 100 square meters of photovoltaic glass could power over 250 lights points working hours for 35 years in the city of Los Angeles. Nowadays, buildings can save a lot of money by generating clean, free power onsite, especially considering the electricity rate spikes that we have witnesess for the past months.

glass magazine award winner 2015 MOST INNOVATIVE GLASS

WDDA Window & Door Dealers Alliance

NGA NATIONAL GLASS ASSOCIATION

Onyx Solar®'s Low-E photovoltaic glass was awarded **"The Most Innovative Glass"** back in 2015 by the US National Glass Association.

For further information about this innovative construction material, please download our **Low-E Photovoltaic Glass Technical Guide.**

	ONYX SOLAR®	LOW-E GLASS	CONVENTIONAL GLASS	CONVENTIONAL PV MODULE
Selective IR Filter	✓	✓	✗	✗
Selective UV Filter	✓	✓	✗*	✗
Solar factor / SHGC	✓	✓	✗	✗
Natural lighting	✓	✓	✓	✗
Thermal performance U < 2 W/m²K U< 0,35 BTU/hft²F°	✓	✓	✗	✗
Acoustic performance	✓	✓	✓	✗
Electricity generation	✓	✗	✗	✓
Aesthetic integration in buildings	✓	✓	✓	✗

* The UV filter can only be achieved by laminated glass.

SELECTIVE ULTRAVIOLET FILTER

Onyx Solar®;s photovoltaic glass panels filter out 99% of the ultraviolet radiation (UV) which harms harmsful indoor spaces, furniture and people potentially.

SELECTIVE INFRARED FILTER

PV Glass reduces the transmission of infrared radiation by up to 95% compared to a conventional laminated glass.

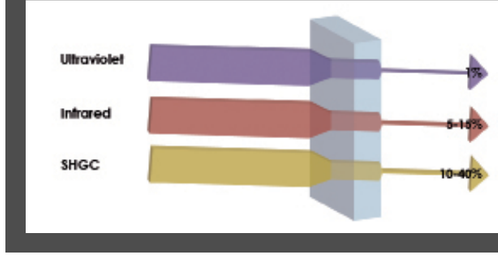
OPTIMIZED SOLAR FACTOR

The solar factor, known as "g-value" or SHGC (Solar Heat Gain Coefficient) tells us the amount of energy that a glazing will allow into our building with regard to the energy reaching it in the form of solar radiation. This is a key factorto achieving indoor thermal comfort in buildings. For instance, a high g-factor might cause the temperature to rise too high due to the greenhouse effect, while low values will prevent this from happening, particularly in a hot climate. Onyx Solar®'s ThinFilm transparent photovoltaic glass displays a solar factor between 10% and 40%, which makes it an ideal candidates to achieve control over the interior temperature.

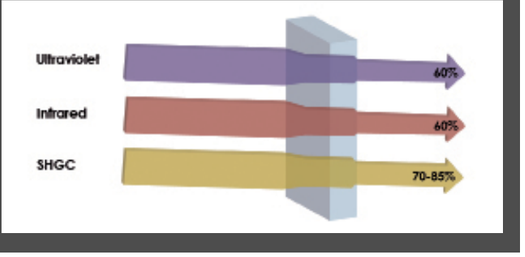
NATURAL LIGHT

As these are transparent glass, they enable the natural lighting of the building. The visible light entering through Onyx Solar®'s ThinFilm photovoltaic glass comes in different light transmittance levels, from fully opaque glass, up to 10, 20 and 30% LT levels. The more transparent the glass, the more daylight inside the building, but the lower the energy generation, since solar cells are removed from the surface of the glass in order to offer a semi-transparent product.

OPTICAL PROPERTIES OF DE ONYX SOLAR® GLASS



OPTICAL PROPERTIES OF CONVENTIONAL GLASS



ONYX SOLAR®

SOLAR TECHNOLOGIES

Onyx Solar® is a company devoted to the design, manufacture and marketing of architectural photovoltaic glass, using two technologies mainly: **amorphous Silicon** and **crystalline Silicon (mono- and polycrystalline).**

CRYSTALLINE SILICON PV GLASS

For projects seeking maximum power output per m^2, choosing **crystalline Silicon glass** may be the right answer. Its power capacity is given by the number of solar cells used per glass unit. **Crystalline Silicon glass shows a nominal power that usually ranges from 100 up to 180 Wp/m^2,** depending on the solar cell density required by design. Selecting the right balance between natural light and nominal power will help you better achieving your energy efficiency goals.

ADVANTAGES:
- Greater power density per square metre (Wp/m^2).
- Less surface area of the installation for the same power capacity.
- Greater efficiency (up to 16%).

For further technical details visit:
www.onyxsolar.com/product-services/technical-specifications

SIZE (mm)		THICKNESS CONFIGURATION* (mm)		WEIGHT (Kg/m^2)	IGU COMPATIBLE**	JUNCTION BOX
STANDARD 1475 x 480 1245 x 635 1641 x 989 1650 x 850	CUSTOMIZED from 600 x 300 to 1706 x 1006	GLASS + BACKSHEET	4T + Backsheet with aluminium frame	15	NO	Bipolar
		LAMINATED GLASS	4T + 4T	20	YES NO	Bipolar
			5T + 5T	27	YES	Bipolar Edge
			6T + 6T	30	YES	
			8T + 8T	40	YES	
STANDARD 1700 x 1000 1700 x 1460 2000 x 2000 2400 x 2000	CUSTOMIZED from 1706 x 1006 to 4000 x 2000 (The biggest of the market!)	LAMINATED GLASS	4T + 4T	20	YES	Bipolar Edge
			5T + 5T	27		
			6T + 6T	30		
			8T + 8T	40		
			10T + 10T	50		
RAISED ACCESS PHOTOVOLTAIC FLOOR TILE						
STANDARD 750 x 750	CUSTOMIZED from 750 x 750 to 3000 x 1500	LAMINATED GLASS	8T + 8T	40	NO	Bipolar Edge
			10T + 10T	50		

*Dimensions in mm, T = tempered glass according to UNE-EN12150. For glass 5T+5T, please ask availability.
**The IGU glazing is customized in all cases according to the requirements of the project.

ABOUT OUR PRODUCT

AMORPHOUS SILICON PV GLASS

Amorphous Silicon glass offers a **superior performance under diffuse light conditions** (overcast conditions).

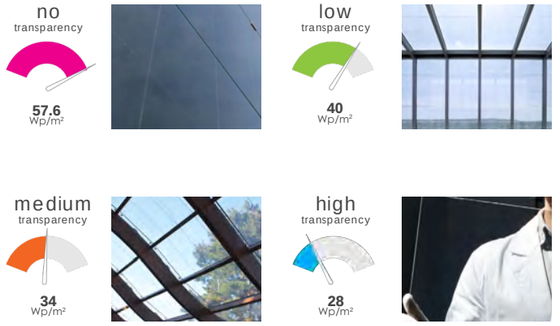
This PV Glass can be fully opaque/dark (higher nominal power), or present different light transmittance levels, which enables daylight, while maintaining unobstructed views. Onyx Solar®'s transparent photovoltaic glass also **filters out harmful radiation** (ultraviolet and infrared).

ADVANTAGES:
- Given the same system size (kWp), it yields more power than crystalline Silicon glass under diffuse light conditions, and high temperature.
- It provides natural light while maintaining unobstructed views.
- It provides a very uniform, aesthetic integration.

For further technical details visit:
www.onyxsolar.com/product-services/technical-specifications

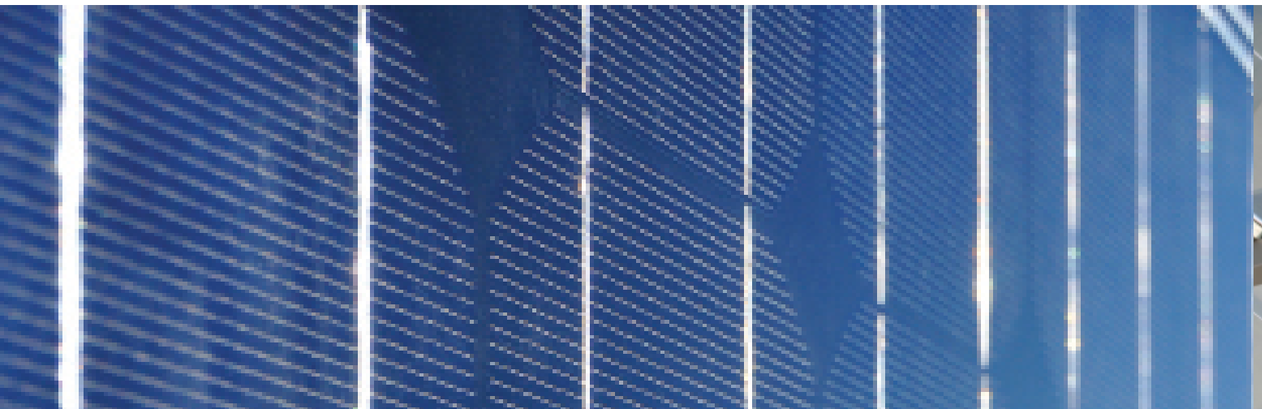
OFFSET YOUR BUILDING'S ENERGY DEMAND BY USING OUR PV GLASS

Choose from our several transparency degrees (LT) and start generating free and clean electricity thanks to the sun.



SIZE (mm)		THICKNESS CONFIGURATION* (mm)		WEIGHT (Kg/m^2)	IGU COMPATIBLE**	JUNCTION BOX
STANDARD 1245 x 300 1200 x 600 1245 x 635	CUSTOMIZED from 600 x 300 to 1245 x 635	LAMINATED GLASS	3 + 4	17	YES NO	Bipolar Monopolar
			3 + 5T	22	YES	
		THREE-PLY LAMINATED GLASS	4T + 3 + 4T	30	YES NO	Bipolar Monopolar Edge
			5T + 3 + 5T	35	YES	
			6T + 3 + 6T	41	YES	
STANDARD 1245 x1242 2462 x 635 1245 x 1849 1245 x 2456	CUSTOMIZED from 1245 x 635 to 4000 x 2000 (The biggest of the market!)	THREE-PLY LAMINATED GLASS	4T + 3 + 4T	30	YES	Bipolar Monopolar Edge
			5T + 3 + 5T	35		
			6T + 3 + 6T	42		
			8T + 3 + 8T	52		
RAISED ACCESS PHOTOVOLTAIC FLOOR TILE						
STANDARD 600 x 600	CUSTOMIZED from 600 x 600 to 4000 x 2000	THREE-PLY LAMINATED GLASS	6T + 3 + 6T	42	NO	Bipolar Monopolar

* Dimensions in mm, T = tempered glass according to UNE-EN12150.
**The IGU glazing is customized in all cases according to the requirements of the project.



OPTICAL & THERMAL PROPERTIES

AMORPHOUS SILICON GLASS

TRANSPARENCY (LT)	CONFIGURATION**	SHGC	U value**	U value	Ligth Reflection (external)
		%	W/m²K	Btu/h ft² F	%
no transparency (0.0 - 0.2%)	3.2+4	22%	5.70	1.00	7.6%
	6T+3.2+6T *	23%	5.20	0.92	7.3%
	6T+3.2+6T/12Air/6T (also valid for 4+4) **	6%	2.70	0.48	7.3%
	6T+3.2+6T/12Air/6T low-e	5%	1.60	0.28	7.3%
	6T+3.2+6T/12Argon/6T low-e	5%	1.20	0.21	7.3%
	6T+3.2+6T/12Argon/4/12Argon/6T low-e	5%	1.00	0.18	7.3%
low transparency (10.1 - 10.8%)	3.2+4	29%	5.70	1.00	7.6%
	6T+3.2+6T	29%	5.20	0.92	7.3%
	6T+3.2+6T/12Air/6T	11%	2.70	0.48	7.3%
	6T+3.2+6T/12Air/6T low-e	9%	1.60	0.28	7.3%
	6T+3.2+6T/12Argon/6T low-e	9%	1.20	0.21	7.3%
	6T+3.2+6T/12Argon/4/12Argon/6T low-e	9%	1.00	0.18	7.3%
medium transparency (16.3 - 17.3%)	3.2+4	34%	5.70	1.00	7.1%
	6T+3.2+6T	32%	5.20	0.92	7.0%
	6T+3.2+6T/12Air/6T	14%	2.70	0.48	7.0%
	6T+3.2+6T/12Air/6T low-e	12%	1.60	0.28	7.0%
	6T+3.2+6T/12Argon/6T low-e	12%	1.20	0.21	7.0%
	6T+3.2+6T/12Argon/4/12Argon/6T low-e	12%	1.00	0.18	7.0%
high transparency (26.7 - 28.4%)	3.2+4	41%	5.70	1.00	7.6%
	6T+3.2+6T	37%	5.20	0.92	7.1%
	6T+3.2+6T/12Air/6T	19%	2.70	0.48	7.1%
	6T+3.2+6T/12Air/6T low-e	17%	1.60	0.28	7.1%
	6T+3.2+6T/12Argon/6T low-e	17%	1.20	0.21	7.1%
	6T+3.2+6T/12Argon/4/12Argon/6T low-e	17%	1.00	0.18	7.1%

Notes: *These values are valid with minimum changes in thickness configuration, such as 4T+3.2+4T instead of 6T+3.2+6T, and 4T+4T, 8T+8T instead of 6T+6T.

**The thickness of the internal glass layer does not change the U value, so there are valid both 6T and 4+4.

CRYSTALLINE SILICON GLASS

TRANSPARENCY (LT)	CONFIGURATION**	SHGC	U value**	U value	Ligth Reflection (external)
		%	W/m²K	Btu/h ft² F	%
High density of PV cells (15%)	6T+6T* (see notes)	27%	5.50	0.97	8.3%
	6T+6T/12Air/6T	9%	2.70	0.48	8.3%
	6T+6T/12Air/6T low-e	7%	1.60	0.28	8.3%
	6T+6T/12Argon/6T low-e	7%	1.20	0.21	8.3%
	6T+6T/12Argon/4/12Argon/6T low-e	7%	1.00	0.18	8.3%
Low density of PV cells (38%)	6T+6T	40%	5.50	0.97	8.3%
	6T+6T/12Air/6T	22%	2.70	0.48	8.3%
	6T+6T/12Air/6T low-e	20%	1.60	0.28	8.3%
	6T+6T/12Argon/6T low-e	20%	1.20	0.21	8.3%
	6T+6T/12Argon/4/12Argon/6T low-e	20%	1.00	0.18	8.3%

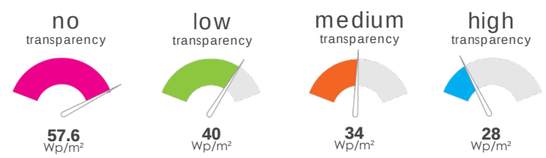
Notes: *These values are valid with minimum changes in thickness configuration, such as 4T+3.2+4T instead of 6T+3.2+6T, and 4T+4T, 8T+8T instead of 6T+6T.

**The thickness of the internal glass layer does not change the U value, so there are valid both 6T and 4+4.

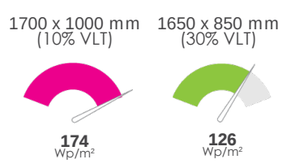
NOMINAL POWER

Nominal Power depends on the transparency-degree of the PV Glass and the solar cell density required by design. For instance, **crystalline Silicon glass shows a nominal power that usually ranges from 100 up to 180 Wp/m².** Selecting the right balance between natural light and nominal power will help you better achieving your energy efficiency goals. For further information, please visit our **Technical Guide** in our website (http://onyxsolardownloads.com/docs/ALL-YOU-NEED/Technical_Guide.pdf) or contact us at info@onyxsolar.com.

Amorphous Silicon Glass



Crystalline Silicon Glass



CUSTOMIZE YOUR PV GLASS

If there is something that characterizes Onyx Solar®, that is flexibility in design. **Our PV glass is 100% customized in shape, thickness, color, transparency-degree, size and finishes.**

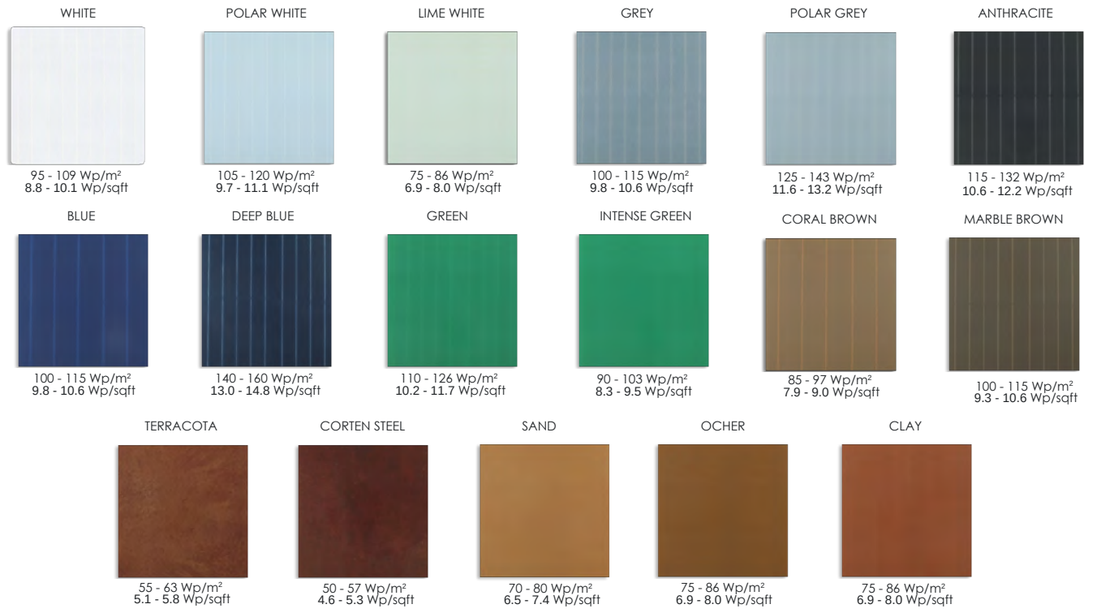
COLOR

Onyx Solar®'s glass, is not only aesthetic and efficient, but it also stands out thanks to its **unlimited range of configurations and design options** including transparency and colors.

Our Amorphous Silicon photovoltaic glass is laser-etched to remove thin lines of active solid cells; this is a process aimed to let the light pass thru the glass and gain transparency. The PV active material is black by nature (faces the sun) while the interior of the glass displays an aluminum-like color. Then, when we follow this process and laminate afterwards the glass using a colored interlayer (PVB), we get the color from both sides of the glass.

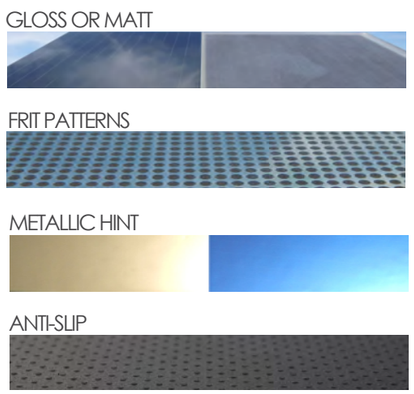
This is not however, the only process we follow to offer you a wide range of colors. Besides using colored PVB interlayers, we also follow other techniques to get to the desired color. We offer the following solid colors:

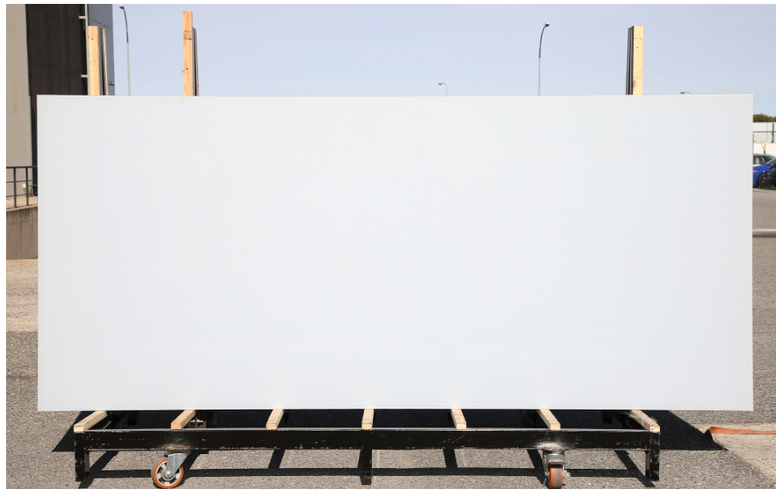
COLOR PALETTE HIDDEN PV



* POWER DENSITY - CRYSTALLINE SILICON PV GLASS

FINISHES



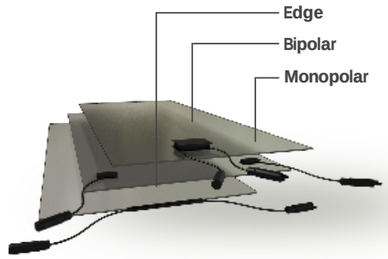


TYPES OF JUNCTION BOX

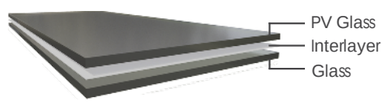
Electrical junction boxes are attached to the PV glass unit, either at the edge of the laminated glass, or in the rear lite of the composition.

Each PV glass is supplied with its own junction box. The junction box can be bipolar or monopolar. The bipolar is the most commonly used for PV glass. The monopolar junction box requires two units per module.

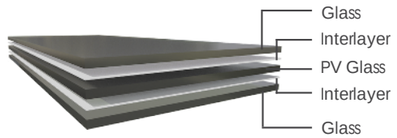
The photovoltaic glass units do not require framing system any different from that of the conventional glass. This allows the adaptability and multi-functionality as to where and how the PV glass is utilized.



THICKNESS



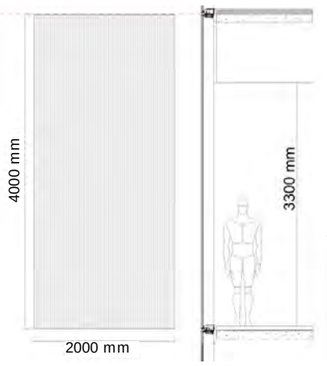
LAMINATED GLASS

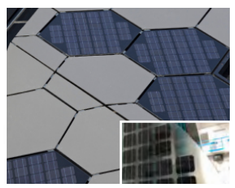


THREE-PLY LAMINATED GLASS

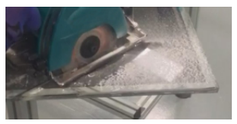
SIZE & SHAPE

At Onyx Solar® we are flexible with regard to sizes, shapes and configurations. We personalize the modules, adapting them entirely to the specific requirements of each project. Onyx Solar®'s panes may be as large as 4000 mm x 2000 mm (157" x 79").





CUT-TO-SIZE INACTIVE GLASS ON-SITE TO ADAPT IT TO ANY SURFACE AVAILABLE



The largest photovoltaic glass in the market

ENVIRONMENTAL BENEFITS

Our feasibility studies are key to understanding the environmental benefits offered by our photovoltaic glass.

We calculate the amount of energy in **kWh/year** that the system will generate over its lifespan, as well as the CO2 emissions offset.

Along with this information, we will provide you a set of calculations that brings perspective to the value of the kWh produced: miles driven by an electric car with that energy, number of cars off the road, barrels of oil not consumed, and number of light-points fed by the energy generated.

For instance, an installation of **2,500 sqm of PV Glass** in the Netherlands can produce enough energy to feed up to **25,000 light-points** working four hours a day, for thirty-five years, which is remarkable considering the limited solar irradiation in the country.

That same energy would be sufficient to drive seven million kilometers with an electric vehicle, and avoid the consumption of 120,000 liters of fossil fuels.

Amazing, isn't it?

ONE METER ONE TREE

At Onyx Solar, we are proud to fight climate change with our initiative #OneMeterOneTree through which we will plant one tree for every m^2 of photovoltaic glass that we manufacture.

Our goal is to fight climate change on two decisive fronts:

- ✓ **Preventing the emissions of CO_2 into the atmosphere with the installation of energy-generating photovoltaic glass.**
- ✓ **Capturing existing CO2 from the atmosphere by planting trees.**

We promote carbon capture with the **plantation of thousands and thousands of trees around the planet**, since trees are the most efficient absorption machine created by nature.
Every sqm of photovoltaic glass fabricated by Onyx Solar plants a tree. We focus on especially devastated areas

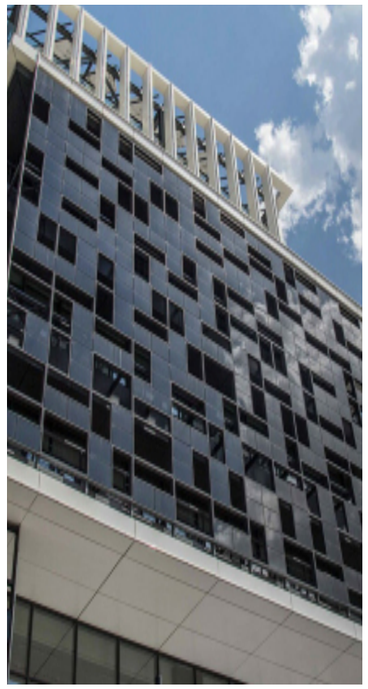
Where the eco-system needs support to recover. **Places such as the Amazon, Indonesia and India are strategic zones for this initiative**, since these trees will not only absorb CO2 from the atmosphere, but also provide fruits for those ones in need.

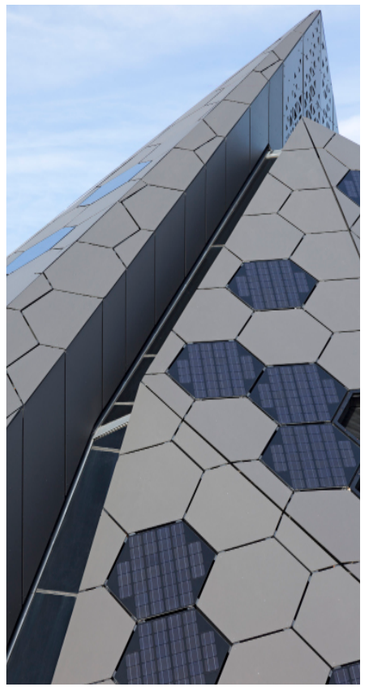
This initiative is free of charge for our clients, who will receive an **official tree plantation certificate**, showing the number of trees planted, the type of tree, plantation location, and pictures of the process.

Onyx Solar clients are twice as good for the planet!

APPLICATIONS

PERFECT INTEGRATION





SKYLIGHT

Skylights are an ideal application for photovoltaic glass. They usually count on a good sun exposure, which boost the kWh produced by the system.

Also, photovoltaic skylights **improve thermal indoor comfort**, since most of the UV and IR radiation are filtered out by the Silicon-based material (solar filter effect). In addition, Air and Argon spacers together with low-e coatings guarantee the best thermal performance for the application.

PV skylights combine both active and passive properties that improve the overall efficiency of the application. Semi-transparent PV glass reduces the need for artificial lighting, generates power, and provides thermal and sound insulation. In addition, it helps with delaying interior ageing.

CANOPY

A **photovoltaic canopy** constitutes a constructive solution which **combines energy generation, sun protection and shelter.** Depending on the type of canopy, the electricity yielded can be consumed in different ways: self-consumption for surrounding buildings, courtesy lighting, ad. box illumination, back-up systems, and also grid-connection options are available.

Design configurations are almost unlimited: one, two or multiple slopes, different tilts and orientations, multiple glass design options (silk-screening, ceramic frits, colors...)

PV glass on canopies can be supported using a variety of structural systems, including point-supported systems, U channels and skylight-like structures.

CURTAIN WALL

Curtain walls are a very popular application for photovoltaic glass in buildings. They allow owners to generate electricity from areas of the building they had never thought of. **Buildings become a real power plant, keeping their design appeal, aesthetics, efficiency and functionality.**

Both amorphous Silicon and crystalline Silicon glass can be used for curtain applications, and choosing one or another will depend on your design preferences, energy needs, and daylight requirements.

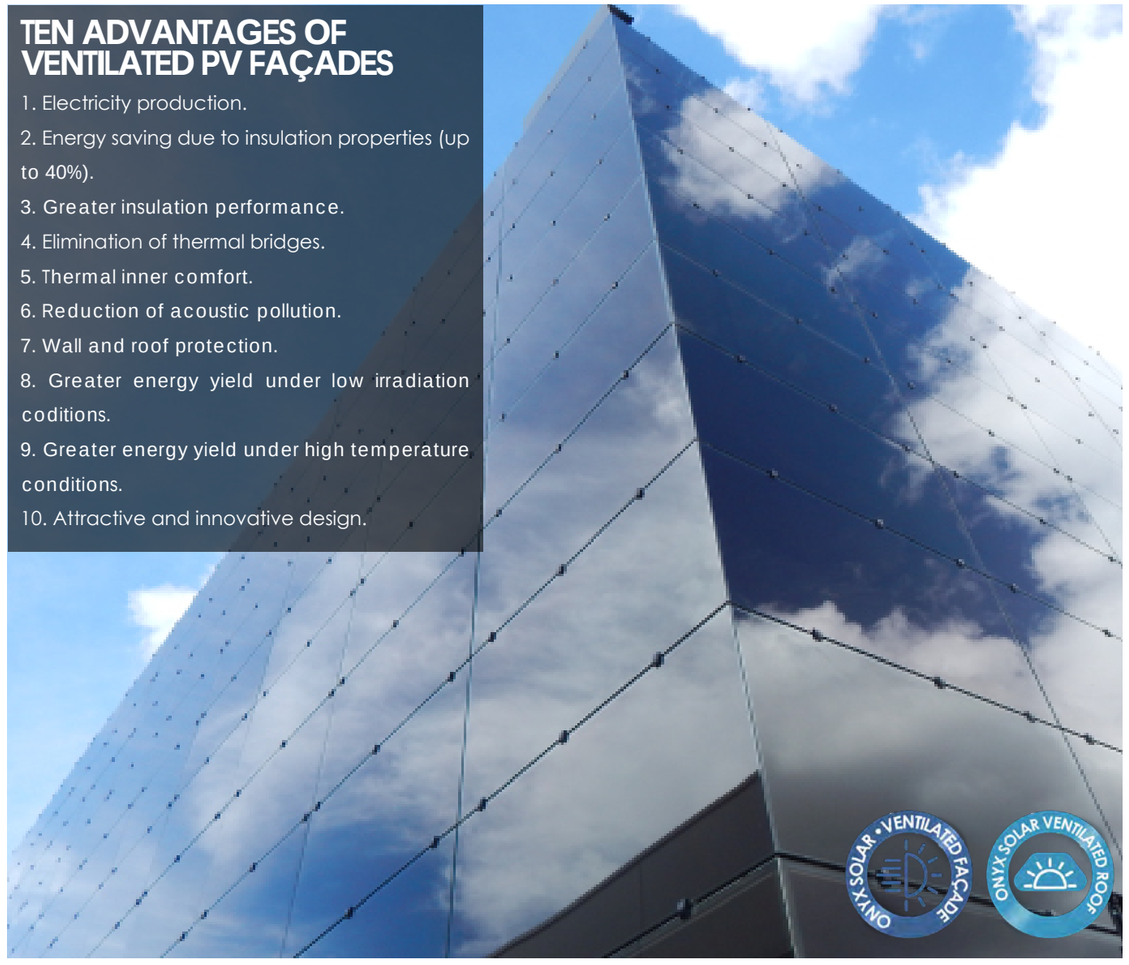
PV Glass for curtain walls comes frameless, and it can be assembled into any commercial system such as Kawneer, Schucco, OldCastle and others. From a mechanical perspective, the glazing contractor will take care of its installation, then the electrical contractor will interconnect the units (balance of system).

Different light transmittance levels are also an option. A typical curtain wall system can combine semi-transparent PV Glass for the vision areas, together with fully dark glass for the spandrel. Different solar cell technologies can also be combined. This strategy contributes to optimizing the energy yield from the elevation, while maintaining unobstructed views. It is very common to find curtain walls where the vision glass uses amorphous Silicon panels, and the spandrels crystalline Silicon glass.

VENTILATED FAÇADE AND ROOF

TEN ADVANTAGES OF VENTILATED PV FAÇADES

1. Electricity production.
2. Energy saving due to insulation properties (up to 40%).
3. Greater insulation performance.
4. Elimination of thermal bridges.
5. Thermal inner comfort.
6. Reduction of acoustic pollution.
7. Wall and roof protection.
8. Greater energy yield under low irradiation coditions.
9. Greater energy yield under high temperature conditions.
10. Attractive and innovative design.



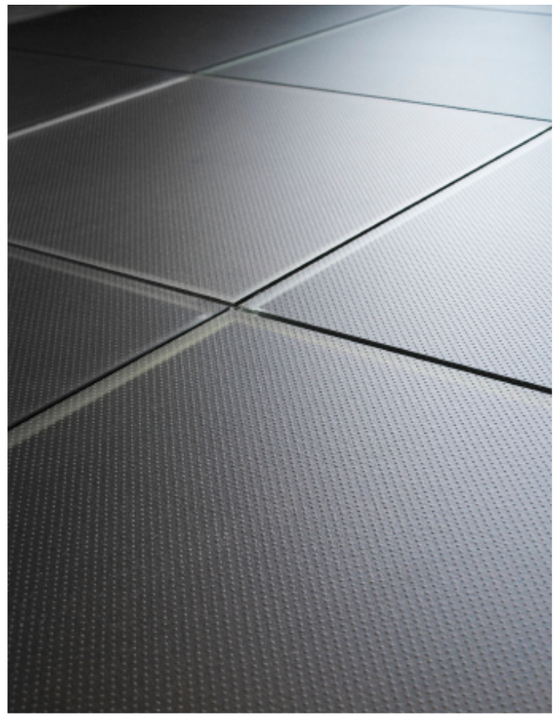
Contemporary architecture keeps looking into the inclusion of innovative and energy-efficient materials within façade and roof design. Inspired by architectural needs, **Onyx Solar has designed a photovoltaic ventilated façade and roof system which provide undeniable aesthetics, great thermal performance, and a new source of free, clean electricity.**

The electricity generated by the system can be either injected to the grid, or it can be consumed right in the instant that it is generated.

The thermal barrier that they create can result in **energy savings up to 40% of the building´s current demand**. Accordingly, both I.R.R. and payback time are unbeatable.

RAISED-ACCES FLOOR TILL FOR EXTERIOR APPLICATION

ANTI SLIP GLASS SURFACE



Onyx Solar has developed the first anti-slip, "walkable" PV roof tile. PV tiles allow building owners to install solar energy in rooftops, while preserving their habitability.

Traditional PV panels toccupy a large space of the roof, thus reducing the the area available for amenities in buildings. In order to avoid it, the raised-access **PV floor system will be your fully walkable, anti-slip floor ally to increase the building's value while generating free and clean energy from the sun.**

PV floor tiles can be made both of amorphous Silicon and crystalline Silicon solar cells. They are UL410 compliant and intended for pedestrian traffic only, since they can withstand up to 400 Kg punctual load.

In addition, they come in standard dimensions beginning at **600 mm x 600 mm**, and they can be customized all the way up to **4000 mm x 2000 mm.**

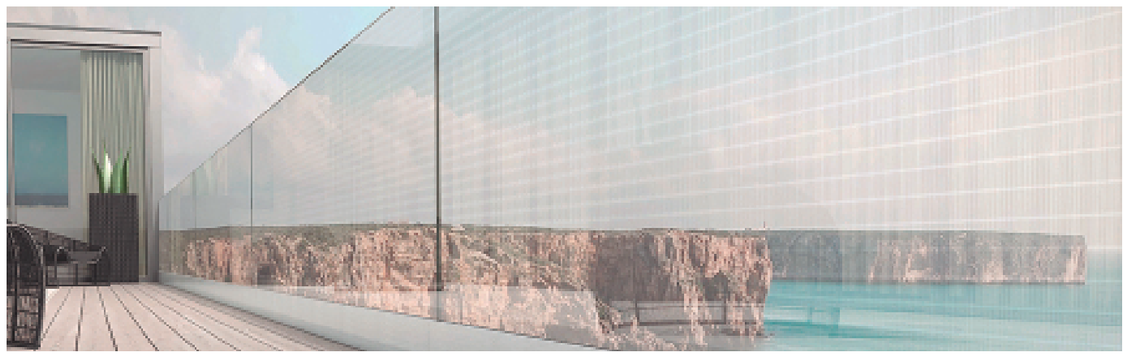
Our photovoltaic glass tiles for raised-access floor systems can be mounted on different systems. PVC and metallic pedestals are very frequently used; however, they can also be mounted on a beautiful IPE wood structure, and aluminium support systems, specially when working with long tile spans.

Finally, photovoltaic tiles can be paired with LED lights / backlit systems to provide courtesy lighting and a great design feature for any rooftop and deck

LOUVERS

SPANDREL

BALUSTRADE



Perfect integration into any solution

FURNITURE

Onyx Solar® is a pioneer in the development of a photovoltaic kit to enable outdoor furniture to generate clean, free energy from the sun. In this way, tables, canopies, benches, lamp-posts, floors and other items of outdoor furniture enable the recharging of electronic devices while saving the users' time and money, and preventing the release of CO_2 and other greenhouse gases into the atmosphere.

The photovoltaic kit developed by Onyx Solar® **consists of a photovoltaic glass module plus a micro-station where electricity can be stored.**

This micro-station comes with USB ports where mobile devices can be recharged, such as mobile phones, tablets and laptops. The PV Glass module offered with this kit comes in certain standard dimensions and different light transmittance levels and colors, and they are intented to be integrated into the furniture design, by the furniture manufacturer.

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