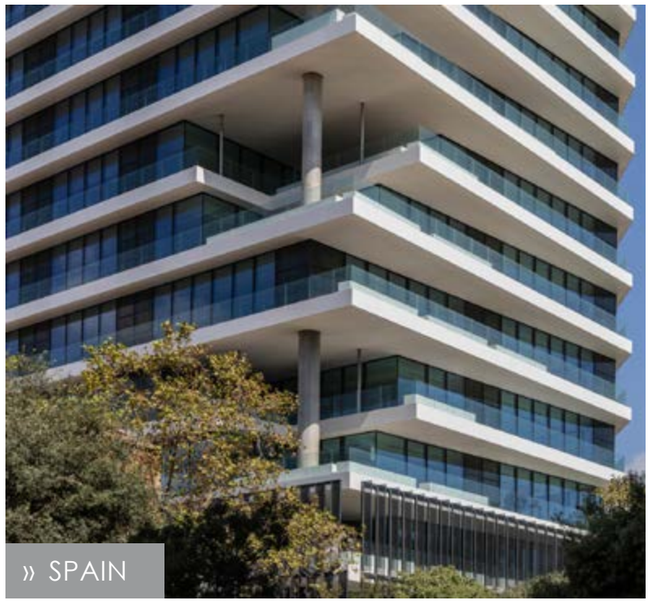
BUILDING INTEGRATED PHOTOVOLTAICS

DISCOVER OUR COLORED PV BUILDING MATERIALS AND MANY OTHER SOLUTIONS

onyx SOLAR

METZ®

» ISRAEL



» SPAIN

» USA

» DUBAI

BACK TO START

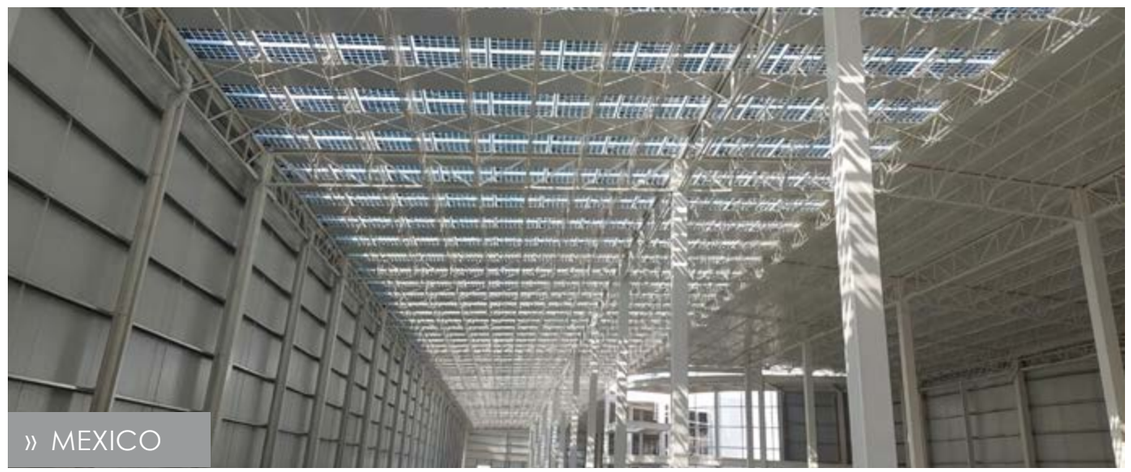
» FRANCE

» SLOVAKIA

» SPAIN

» SPAIN

» SAUDI ARABIA



» MEXICO

GREY PHOTOVOLTAIC GLASS

MONEY, ENERGY AND CARBON SAVINGS WITHOUT SACRIFYING COMFORT & AESTHETICS

Our glass can be **customized to block the heat** that enters the building and to provide the best insulation, thus **avoiding the use of air conditioning and heating**. It also allows the entry of natural light, which **prevents the use of artificial light.**

Just with these passive measures **any building can reduce its energy consumption.**

The most remarkable aspect is that the same building material that has this extraordinary passive properties can also **generate on-site renewable energy** that the building needs for its operations. This is what we call active properties.

The combination of these extraordinary passive and active properties in one single building material is what makes our PV glass unbeatable for all those who aim to build a net-zero building or simply save energy and money without sacrificing comfort and aesthetics.

ABOUT THE ENERGY PAYBACK

The average **energy payback time of our glass is under two years**, meaning that the glass needs approximately two years of power production to offset the amount of energy used in its fabrication. This leaves over 28 years of clean energy production, contributing to the achievement of **carbon-neutral and carbon-negative buildings.**

ABOUT THE ECONOMICS BEHIND OUR PV GLASS

Photovoltaic glass not only offsets conventional building material costs but also provides a tangible return on investment through energy generation. With an average **payback time of 4 years** and yearly **ROIs of up to 20%**, it stands as a sound economic choice.

PAYBACK

ENERGY

The time needed for an energy generation system to recover the full amount of energy invested in its production.

FINANCIAL

The time it takes for an investment to generate enough positive cash flow to recover itd initial cost.

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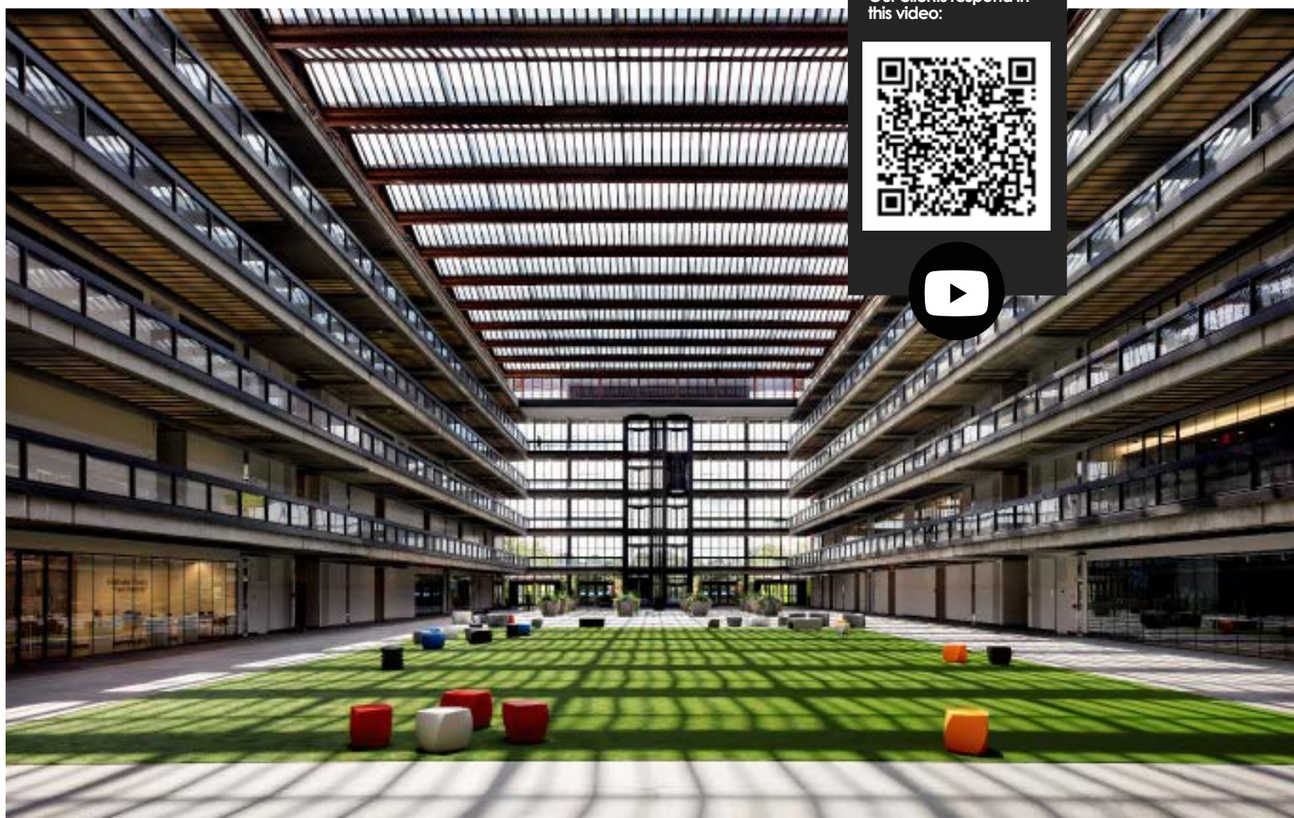


Why Onyx Solar ?

Our clients respond in this video:

HISTORY AND DEVELOPMENT OF METZ SPECIALTY MATERIALS

Metz was founded on **June 25, 1953**, by **Phillip Metz.** At the time, the Australian market lacked locally produced products for highly acid-resistant ceramics, such as bricks and tiles, which were essential for industries requiring materials to withstand extreme environments. To address this gap, Phil Metz made strategic arrangements to represent a select group of German and UK-based manufacturers of specialty industrial ceramics.

Metz also established a small manufacturing plant in Essendon, Melbourne, focused on producing complementary specialised fixing materials. Since that time, Metz has focused on supplying **high-performance ceramics** and complementary **materials** to help industries combat corrosion and abrasion. The company has continued to evolve and adapt to new challenges in this field, while expanding their product range.

In addition to Metz manufacturing and supplying materials, Metz Project Services Pty Ltd plays a crucial role in ensuring the successful installation of Metz Materials and Tile Division products.
With a team of skilled and experienced tradespeople and project managers, Metz can ensure our products are installed to the highest standards thus giving clients a unique single point of responsibility warranty even in demanding environments.

WHY METZ SPECIALTY MATERIALS AND ONYX SOLAR PARTNERSHIP IN AUSTRALIA

Aligning two well established and reliable companies to offer trusted and proven products to the Australian and New Zealand market wasn't something that we needed to persuade anyone in.

Onyx Solar saw Metz as a partner that had the capability and expertise to handle complex projects that required technical products such as our PV glass.

Sustainability and carbon neutrality at the core of both business models made this a perfect match for the continous development of to the Australian and New Zealand market.

Metz Specialty Materials Pty Ltd operates through three divisions;

1. **Materials** - This division a broad range of specialty building materials at our Quality accredited (ISO 9001:2015) Clayton North, Melbourne facility. The company partners with a small number of complementary product manufacturers globally, offering a complete range of solutions for their requirements.

With 70+ years of experience in the field has allowed the company to become a trusted supplier for projects across the Pacific, Asia, and the Middle East, with distributors in many of these regions.

2. The **Tiles** division has been at the forefront in supplying European specialty ceramic tiles for commercial kitchens, food production areas, and swimming pool tiling systems all of which require high-performance and slip-resistance. In addition to these well-established markets, this division has expanded over the past 15 years to include an extensive range of ceramic tiles, offering architects and designers a broad palette of options.

Metz' expertise in pairing the right fixing materials with the appropriate ceramic tiles, ensures a complete and reliable solution for each unique application.

Metz have galleries in Perth, Melbourne, Sydney, and Brisbane where clients can explore the vast range of available tiles.

3. The **Facades** division reflects Metz's commitment to providing cutting-edge solutions that combine performance with sustainability, offering clients innovative products that not only meet architectural demands but also contribute to the environmental efficiency of buildings.

This division includes the supply of long-lasting ceramic cladding systems, mechanically fixed large format extruded ceramics to provide the rainscreen element of a facade system. Building Integrated Photovoltaic (BiPV) panels, providing both bespoke aesthetics and energy-generating capacity and Glass Reinforced Concrete (GRC) panels for lightweight, durable, complex shapes.

BACK TO START

HOW TO ADD VALUE TO ANY BUILDING

BUILDING INTEGRATED PHOTOVOLTAICS

Photovoltaic glass offers **multiple installation possibilities** within the building envelope, including curtain walls (vision and spandrel), façades, sunshades, railings, skylights, canopies, and walkable floors.

While maintaining **standard structural and thermal properties** like conventional glass, it uniquely **provides** an **active function:** free, clean power generation, like traditional solar panels.

Suitable for both new constructions and renovation projects, our products **integrate solar power generation** with the high-performance and durability associated with architectural glass.

Fully customizable in form and function, PV glass provides architects and clients with **design freedom.**

A diverse **range of glass configurations and dimensions** are available, from laminated safety glass to laminated insulating glass.

Additionally, options for solar technology type, transparency level, shapes, textures, colors, and finishes offer **extensive customization possibilities.** This combination of variables ensures products meet various design criteria concerning U-value, SHGC, VLT, reflectivity, and glare.

Internationally recognized, our product has garnered **numerous awards**, including the prestigious title of **Most Innovative Glass Product** by the U.S. National Glass Association.

glass magazine award winner

NGA NATIONAL GLASS ASSOCIATION

	onyx	HIGH PERFORMANCE ARCHITECTURAL GLASS	MATERIALS FOR CLADDING	CONVENTIONAL SOLAR PANELS
Capability to be customized to achieve the desired **Electricity Generation**	✓ Up to 180 W/m²	✗	✗	✓
Capability to be customized to achieve the desired **Visible Light Transmittance (VLT)**	✓ From 0% to 75%	✓	✗	✗
Capability to be customized to achieve the desired **Solar Factor (g value)**	✓ From 6% to 41%	✓	✗	✗
Capability to be customized to achieve the desired **Insulation Performance (U value)**	✓ Up to 0.7 W/m²K	✓	✗	✗
Structural Properties as Construction Material	✓	✓	✓	✗
Aesthetic Integration in Buildings	✓	✓	✓	✗
Capability to be customized in a wide range of **Colors, Sizes or Shapes**	✓	✓	✓	✗

onyx METZ

CLEAN ELECTRICITY GENERATION

Photovoltaic glass harnesses **free, clean energy from sunlight** through embedded active layers or cells of photovoltaic material within the glass. The energy output of PV glass varies based on several design factors and installation type. Key design factors include solar cell density – the number of solar cells within the glass – and glass dimensions. For instance, a **high-density crystalline Silicon product (with low transparency) offers 180 per Watt/m², whereas a low-density one (with high light transmission) provides around 100 Watt/m²**. Balancing nominal power (kW rating) with light transmittance is crucial to ensure the product aligns with design intent and performance requirements.

VISIBLE LIGHT TRANSMITTANCE (VLT)

Visible light transmittance (VLT) stands as a critical design consideration when choosing architectural glass for buildings. Whether it's for a spandrel condition or a vision panel, Onyx Solar's PV glass can **be tailored to offer a diverse range of VLT levels, ranging from 0% or fully opaque to up to 75% VLT**. However, it's essential to grasp the inverse relationship at play here. The greater the transparency of PV glass, the lesser energy it will harvest. While spandrel and solid cladding applications may benefit from maximum performance with high solar cell density, vision areas require less density to meet optical requirements and ensure comfort.

SOLAR FACTOR (g-value)

The solar factor, known as the 'g-value' or SHGC (Solar Heat Gain Coefficient), tells us the amount of energy that glazing will allow into our building in relation to the energy it receives as solar radiation. This is a key factor in 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, particularly in a hot climate. **Onyx Solar's photovoltaic glass typically displays a solar factor between 6% and 41%,** turning it into a great material to provide control over the interior temperature.

INSULATION PERFORMANCE (U-value)

Expressed by the thermal transmittance of the glass, the 'U-value' represents the amount of heat that passes through the glass when there is a temperature difference between its two sides. The lower the U-value, the better the thermal performance of the glass. This helps buildings become more energy-efficient and saves costs. Onyx Solar's glass offers U-values **up to 0.7 W/m²K**, matching the highest insulation performance offered by top-tier architectural glass products.

Onyx Solar stands as the top manufacturer of photovoltaic glass for buildings, providing a range of solar technologies including **amorphous silicon cells, monocrystalline, polycrystalline, and bifacial crystalline silicon cells**.

Tailoring to design preferences, solar **cells can either be fully exposed, allowing them to be visible, or partially and nearly entirely concealed, resulting in a panel with a uniform color that resembles conventional building materials.**

BACK TO START

BACK TO START ▲

BUILDING INTEGRATED PV (BIPV) OR CONVENTIONAL SOLAR PANELS ?

Solar panels function separately from primary building elements, typically overlapping with existing materials, resulting in distinct entities and cost centers. Conversely, our photovoltaic glass is viewed as a primary building envelope component, seamlessly integrating into the structure while generating clean power. **A truly building-integrated PV application offsets the expense of alternative conventional construction materials.**

USABLE AREA/TOTAL SYSTEM SIZE

Numerous buildings face constraints on available roof space for traditional solar panels. However, **PV glass offers a solution by tapping into the energy-generation potential of the entire building envelope**. In rooftop applications, PV glass can be designed to withstand foot traffic, **maximizing the area available for PV installation**. Façades, on the other hand, present even greater opportunities, potentially providing a tenfold increase in energy generation. This is achievable because PV glass can be seamlessly integrated across entire curtain walls and cladding areas, among other applications.

AESTHETICS

In the building-integrated photovoltaic market, design flexibility is paramount for success. Architects vary greatly in their preferences, requiring products tailored to their unique needs, functions, and aesthetic sensibilities. Onyx Solar has dedicated substantial efforts to product development over the years, subjecting each PV glass design to rigorous testing through exhaustive R&D programs. The result is a diverse range of unique products that offer **extensive aesthetic possibilities for clients of all kinds. From shape and size to thickness, configuration, color, and texture, Onyx Solar provides a plethora of customizable variables to choose from.**

CLASS A FOR FIRE RESISTANCE

Our PV glass is classified as **CLASS A for fire resistance**, meaning it is non-flammable and ideal for construction projects, ensuring both safety and efficiency. **Unlike any solar panel which at best are classified as C or D,** offering a significant advantage in terms of safety and performance.

COST IMPLICATIONS

It is important to understand that **our photovoltaic glass is a building material in itself**. **Conventional PV installations require an additional building structure**, such as a roof structure underneath. The combined cost of these building materials along with conventional PV panels is much higher than installing a building material with integrated photovoltaic properties. In this context, it is important to emphasize that our **building materials serve a dual function: they act both as building material and as solar panels.** Moreover, such applications often qualify for substantial tax credits and incentives across various markets, rendering them unbeatable in terms of ROI and payback.

IS OUR PV GLASS AFFORDABLE?

"The economics of replacing the existing glass with photovoltaic glass were **shockingly affordable**. Most likely more affordable than simply cleaning and replacing existing glass with simple glass ".

Ralph Zucker · CEO Bell Labs · USA

Find the complete interview in the QR ↗

OUR CUSTOMERS RESPOND

onyx METZ

ENERGY GENERATING BUILDING MATERIALS

WHITE

SAND

CORTEN STEEL

POLAR WHITE

GREY

BLUE

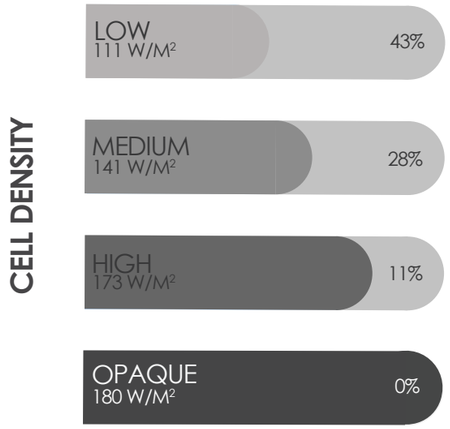
Check all available colors on the following pages. If you need a different color, please consult with us

CRYSTALLINE SILICON TECHNOLOGY

Crystalline Silicon glass is the best choice for projects where **maximum power output per square meter** is required,The power capacity of this type of glass is determined by the number of solar cells per unit, usually offering a **nominal power between 100 to 180 Wp/m².** This varies according to the solar cell density required for the project. Finding the right balance between natural light transmission and nominal power is key to achieving energy efficiency goals.

Crystalline Silicon glass is made up of 158.75" x 158.75 mm c-Si (Crystalline Sillicon Glass) solar cells. Although these cells are inherently opaque, they can be spaced apart to varying degrees, allowing for **adjustable light transmittance tailored to specific design needs.** The PV glass can thus offer a **transparency range from almost 0% VLT as much as 75% if requested.**

TYPICAL BALANCE BETWEEN CELL DENSITY AND VLT:



Depending on the design intent, **solar cells** can be fully exposed so that they can be seen; otherwise, they **can be hidden partially, or almost totally**, creating a panel that displays a uniform color and looks like a conventional facade material.

These design variables play a role in the performance of the product, since adding a frontal color will diminish the light transmittance of the frontal glass.

SIZE(mm)	**THICKNESS CONFIGURATION*** (mm)		**WEIGHT** (Kg/m²)
From 750mm x 750mm to 2000 mm x 4000 mm	LAMINATED GLASS	4T + 4T	20
		4T + 6T	27
		6T + 6T	30
		8T + 8T	40
		10T + 10T	50
		12T + 12T	60
RAISED ACCESS PHOTOVOLTAIC FLOOR TILE			
From 750 x 750 to 3000 x 2000	LAMINATED GLASS	8T + 8T	40
		10T + 10T	50
		12T + 12T	60

*Dimensions in mm, T = tempered glass according to UNE-EN12150.

Our technical department can advise you on the selection of the configuration according to the glass size. Please inquire about the availability of thickness and size configurations, as well as the incorporation of custom double glazing according to the project's requirements.

CELL DENSITY
The number of photovoltaic cells contained in a glass panel.
- High cell density indicates more photovoltaic cells per square meter.
- Low cell density indicates fewer photovoltaic cells per unir area.

TECHNICAL GUIDE

This soaring canopy built in California was made with crystalline silicon PV glass. It was manufactured following customer's requirements to achieve the desired shadow and visible light transittance while optimizing its nominal power.

BACK TO START ▲

BACK TO START

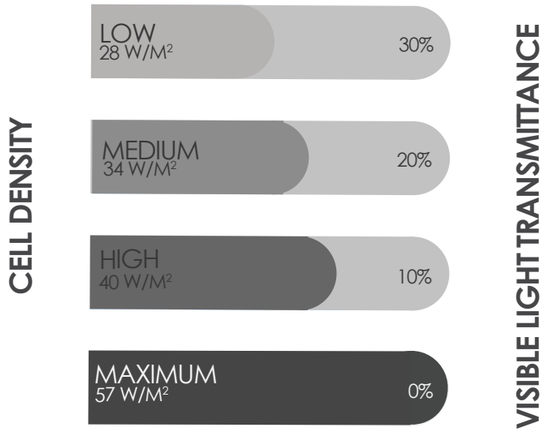
AMORPHOUS SILICON TECHNOLOGY

Amorphous Silicon (a-Si) PV glass can range from fully opaque, which provides higher nominal power, to various levels of light transmittance, allowing daylight penetration while maintaining **unobstructed views**.

Onyx Solar's semi-transparent photovoltaic glass also effectively **filters out harmful radiation**, including ultraviolet and infrared rays.

However, it's important to note that while amorphous silicon glass offers clear views, its power capacity is three times lower compared to crystalline silicon glass. Crystalline silicon, therefore, offers a greater return on investment and more clean power, making it a more efficient choice.

TYPICAL BALANCE BETWEEN CELL DENSITY AND VLT:



SIZE (mm)	THICKNESS CONFIGURATION* (mm)		WEIGHT (Kg/m²)
From 600mm x 300mm to 1245mm x 635mm	LAMINATED GLASS	3 + 4 3 + 5T	17 22
From 600mm x 300mm to 4000mm x 2000mm	THREE-PLY LAMINATED GLASS	4T + 3 + 4T 5T + 3 + 5T 6T + 3 + 6T 8T + 3 + 8T	30 35 42 52
RAISED ACCESS PHOTOVOLTAIC FLOOR TILE			
From 600 x 600 to 3000mm x 1500mm	THREE-PLY LAMINATED GLASS	6T + 3 + 6T	42

*Dimensions in mm, T = tempered glass according to UNE-EN12150.

Our technical department can advise you on the selection of the configuration according to the glass size. Please inquire about the availability of thickness and size configurations, as well as the incorporation of custom double glazing according to the project's requirements.

ENERGY
The total amount of electricity generated by the photovoltaic glass over a period of time, measured in kWh. This energy is the accymulated result of the power generated by the glass during that time.

POWER
The capacity of photovoltaic glass to generate electrical enegy at a specific moment, measured in W or KW. It is an instantaneous measure of how much electricity the glass can produce under particular sunlight conditions.

TECHNICAL GUIDE

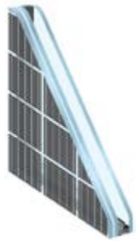
The University of Washington's Life Science Building features amorphous silicon vertical fins. These fins serve a dual purpose, providing shade while generating energy. They are made of all-glass, semi-transparent material, allowing 20% of visible light to pass through.

OPTICAL, THERMAL AND PV PROPERTIES FOR EXAMPLES SELECTED

CRYSTALLINE SILICON GLASS

HIGH DENSITY

DOUBLE LAMINATED INSULATED GLASS WITH A 12 mm AIR CHAMBER & LOW-E



173	Nominal Power(Wp/m²)	111
11%	Visible Light Transmittance (VLT)	43%
6%	Solar Factor (g-value)	22%
1,60	U value (W/m²K)	1,60
0.28	U value (Btu/h ft² °F)	0.28
8.3%	Light Reflection (external)	8.3%

DOUBLE LAMINATED INSULATED GLASS WITH A 12MM ARGON CHAMBER & LOW-E

173	Nominal Power(Wp/m²)	111
11%	Visible Light Transmittance (VLT)	43%
6%	Solar Factor (g-value)	22%
1,20	U value (W/m²K)	1,20
0.21	U value (Btu/h ft² °F)	0.21
8.3%	Light Reflection (external)	8.3%

DOUBLE LAMINATED INSULATED GLASS WITH TWO 12MM ARGON CHAMBER & LOW-E

173	Nominal Power(Wp/m²)	111
11%	Visible Light Transmittance (VLT)	43%
6%	Solar Factor (g-value)	22%
1,00	U value (W/m²K)	1,00
0.18	U value (Btu/h ft² °F)	0.18
8.3%	Light Reflection (external)	8.3%

DOUBLE LAMINATED INSULATED GLASS WITH TWO 12MM ARGON CHAMBER & TWO LOW-E

173	Nominal Power(Wp/m²)	111
11%	Visible Light Transmittance (VLT)	43%
6%	Solar Factor (g-value)	22%
0,70	U value (W/m²K)	0,70
0.12	U value (Btu/h ft² °F)	0.12
8.3%	Light Reflection (external)	8.3%

LOW DENSITY

PV ESTIMATION TOOL

Scan the QR code to calculate the amount of energy produced by our glass in any location.

BACK TO START ▲

OPTICAL, THERMAL AND PV PROPERTIES FOR EXAMPLES SELECTED

AMORPHOUS SILICON GLASS

LOW TRANSPARENCY

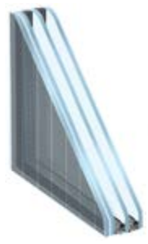
DOUBLE LAMINATED INSULATED GLASS WITH A 12 mm AIR CHAMBER & LOW-E

40	Nominal Power(Wp/m²)	28
10%	Visible Light Transmittance (VLT)	27%
10%	Solar Factor (g-value)	17%
1,60	U value (W/m²K)	1,60
0.28	U value (Btu/h ft² °F)	0.28
7.3%	Light Reflection (external)	7.1%

DOUBLE LAMINATED INSULATED GLASS WITH A 12MM ARGON CHAMBER & LOW-E

40	Nominal Power(Wp/m²)	28
10%	Visible Light Transmittance (VLT)	27%
10%	Solar Factor (g-value)	17%
1,20	U value (W/m²K)	1,20
0.21	U value (Btu/h ft² °F)	0.21
7.3%	Light Reflection (external)	7.1%

DOUBLE LAMINATED INSULATED GLASS WITH TWO 12MM ARGON CHAMBER & LOW-E



40	Nominal Power(Wp/m²)	28
10%	Visible Light Transmittance (VLT)	27%
10%	Solar Factor (g-value)	17%
1,00	U value (W/m²K)	1,00
0.18	U value (Btu/h ft² °F)	0.18
7.3%	Light Reflection (external)	7.1%

DOUBLE LAMINATED INSULATED GLASS WITH TWO 12MM ARGON CHAMBER & TWO LOW-E

40	Nominal Power(Wp/m²)	28
10%	Visible Light Transmittance (VLT)	27%
10%	Solar Factor (g-value)	17%
0,70	U value (W/m²K)	0,70
0.12	U value (Btu/h ft² °F)	0.12
7.3%	Light Reflection (external)	7.1%

HIGH TRANSPARENCY

U-VALUE CALCULATION TOOL

Scan the QR code to calculate the U-value of any glass configuration.

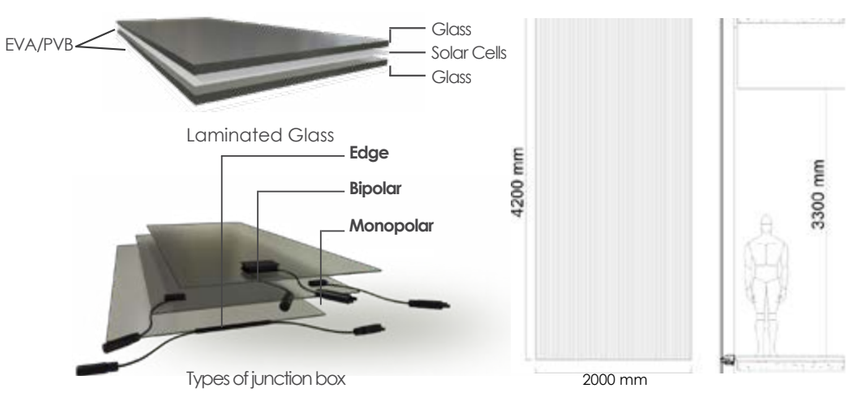
CUSTOMIZE YOUR PHOTOVOLTAIC GLASS

DESIGN WITH FREEDOM

Onyx Solar presents a fresh opportunity to incorporate solar energy in locations such as façades or skylights, thanks to the attractive appearance of photovoltaic glass. Contrasting with conventional solar panels, often confined to rooftops, this technology offers a new aesthetic and efficient way to embrace solar energy. A defining characteristic of Onyx Solar is our flexibility in design. **Our PV glass is 100% customizable in terms of size, shape, thickness, color, degree of transparency and finishes.**

SIZE, SHAPE & THICKNESS

Our PV glass can be fully personalized, being adapted to the specific requirements of each project. Onyx Solar's panes can be **as large as 4000 mm x 2000 mm** (157" x 79") and they are available in both double or triple-ply laminated glass. Furthermore, most of our PV glass is designed to be compatible with **all types of Insulated Glass Units** (IGUs), ensuring versatility and integration in various architectural



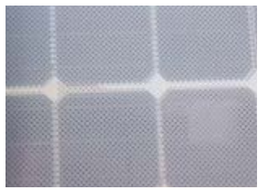
Types of junction box

COLOR, FINISHES & CELLS VISIBILITY

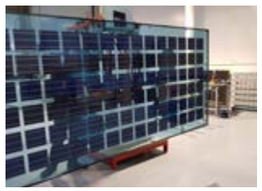
Depending on the design intent, **solar cells can be fully exposed so that they can be seen; otherwise, they can be hidden partially, or almost totally**, creating a panel that displays a uniform color and looks like a conventional building material.

ACID-ETCHED

CERAMIC FRIT PATTERNS



TINTED-INBOARD



ANTI-SLIP

BACK TO START

PHOTOVOLTAIC CELL
A semiconductor device that converts solar energy directly into electricity through the photovoltaic effect. They are made from semiconductor materials , such as silicon. When sunlight strikes the cell, photons in the light energize the semiconductor material, creating a flow of electric current.

COLOR FREEDOM

Our photovoltaic color product portfolio, developed over two years by our R&D team, offers a **unique blend of aesthetics, chromatic variety, and optimized performance (kWp)**. After rigorously testing over 200 different colors and shades, we have selected 16 final colors for our product portfolio. These were chosen for their excellent balance between color quality and energy output. Additionally, all of these colors are designed to be fade and scratch-resistant, ensuring long-lasting finishes. Consult with us all colors available.

HIDDEN PV · COLOR PALETTE I

CRYSTALLINE SILICON TECHNOLOGY

WHITE

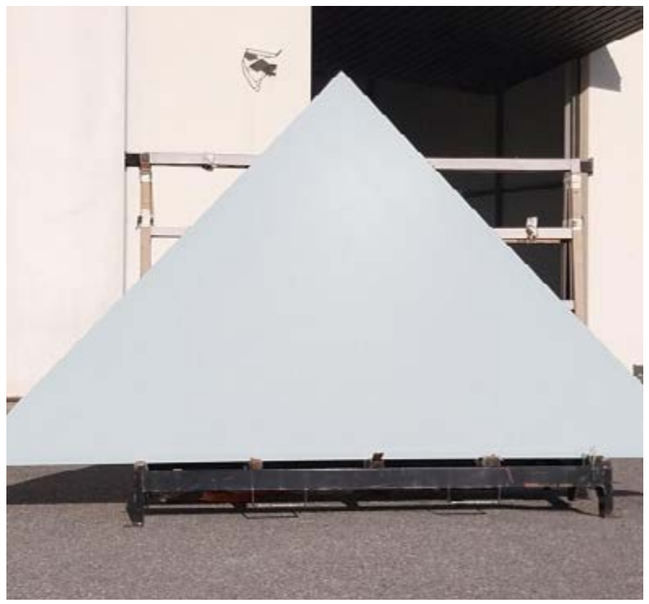
POLAR WHITE

POLAR GREY

LIME WHITE

GREY

ANTHRACITE



HIDDEN PV · COLOR PALETTE II

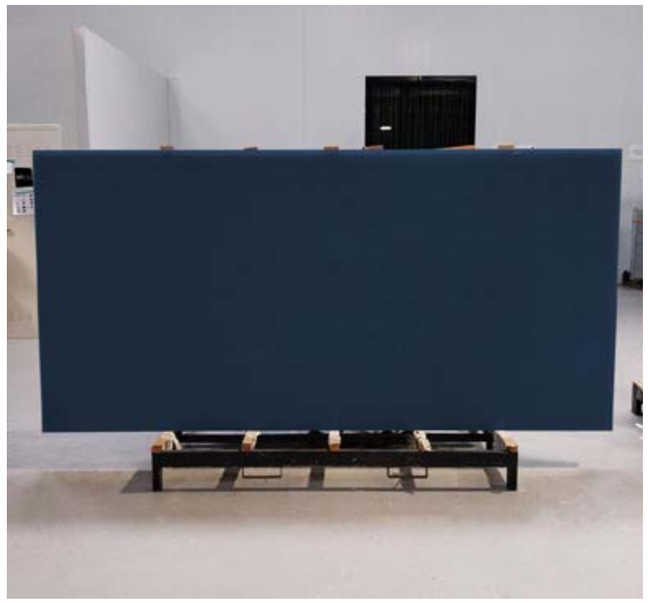
CRYSTALLINE SILICON TECHNOLOGY

DEEP BLUE

BLUE

GREEN

INTENSE GREEN



HIDDEN PV · COLOR PALETTE III

CRYSTALLINE SILICON TECHNOLOGY

CORAL BROWN

TERRACOTA

SAND

CLAY

OCHER

MARBLE BROWN

CORTEN STEEL

FEASIBILITY STUDIES
ECONOMIC & ENVIRONMENTAL BENEFITS

CUSTOMIZED FEASIBILITY STUDIES FOR YOUR SPECIFIC PROJECT.

PV glass optimizes insulation, reducing HVAC energy usage. Its transparent version harnesses natural light, minimizing reliance on artificial illumination. These passive properties alone significantly cut energy consumption, while its active capability for clean power generation makes it **ideal for net-zero construction and achieving high financial return.**

Onyx Solar offers customized feasibility studies for each customer, demonstrating how photovoltaic glass can contribute to their buildings.

The feasibility studies include comprehensive information about the product's economic and environmental impact on the project.

Onyx Solar's ROI and payback time calculation involves comparing the cost of PV glass with alternatives such as conventional glass. This calculation also takes into account the overall system costs, including electrical installation.

Furthermore, the long-term value of the energy generated by the PV glass, along with potential tax credits and incentives, is thoroughly assessed to provide a comprehensive financial overview for the project.

In addition, we provide a comprehensive set of calculations to contextualize the value of the kWh produced, including the number of light points that can be illuminated by the generated energy.

Considering the average Internal Rate of Return (IRR) that Onyx Solar's PV glass offers to building owners, our technology indeed presents a remarkable investment opportunity in the long run. **The consistent and favorable returns from photovoltaic glass installations position it as an attractive and lucrative choice for investors seeking sustainable solutions that also provide financial gains.**

- **AVERAGE PAYBACK TIME: LESS THAN 4 YEARS**
- **AVERAGE RETURN ON INVESTMENT: > 20% PER YEAR**
- **ENERGY PAYBACK: 2 YEARS**

NET-ZERO BUILDINGS
A type of construction that balances the amount of carbon it emits with the amount it offsets or absorbs over a specified period, archieving net zero carbon emissions.

STANDARDIZED FEASIBILITY STUDIES IN 200 LOCATIONS.

Scan the QR code below to access standardized feasibility studies and ROI analyses for more than 200 cities around the world.

These studies include various available construction solutions, accounting for losses due to inclination and orientation. This provides a comprehensive overview of how our photovoltaic solutions can be integrated into projects specific to your city.

30% TAX CREDIT. FASTER ROI. MORE PROFITABILITY.

The investment tax credit incentivizes building-integrated photovoltaic installations by covering 30 to 50% of the cost.

Solar windows, shingles, or façades, which provide a dual function, are eligible for this ITC. It covers not only the cost of the PV glass, but also the supporting metal structures, all balance of system and labor.

This tax credit can be sold in the market to anticipate the cash and is independent of your tax filing.

FIGHT CLIMATE CHANGES IN TWO DECISIVE FRONTS.

The Real Estate Sector accounts for 39% of global greenhouse gas emissions, with 11% attributed to building materials and processes. The industry seeks Net Zero Energy facilities or reduced carbon footprints. As such, **Photovoltaic (PV) Glass** emerges as **a strategic building material** in achieving these goals.

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.

We promote carbon capture with the plantation of thousands of trees around the planet, since trees are the most efficient absorption machine created by nature.

This let us fight against the climate change in two fronts:

· Preventing the emissions of CO_2 into the atmosphere with the installation of energy-generating photovoltaic glass.
·Capture existing CO_2 from the atmosphere by planting trees.

MORE INFO

Figure: Crystalline PV Glass Photovoltaic Skylight Installed at McDonald's Restaurant located in Disney's Theme Park in Orlando. This is an installation of 192 units of 291 Watts per unit crystalline silicon glass with a gray finish.

WHAT DOES GREEN BUILDING MATERIALS CONTRIBUTE TO?

- Increase building's value by 5 to 7%.
- Raise occupancy rates by 3.5%.
- Increase rents by 3%.
- Enhance lease tenancy.

Source: World Green Building Council

PV WHITE FAÇADE

RENOVATION

Onyx Solar's groundbreaking **white crystalline silicon PV glass** was installed in this building located in Tel Aviv (Israel) as part of a sustainable **renovation of an existing office.**

In this innovative project, Onyx Solar introduced its HIDDEN PV building materials, which cleverly conceals solar cells within the surface of the glass, resulting in a **white appearance while keeping the solar cells entirely invisible.**

This innovation allows for a seamless integration of solar technology into building façades. The glass is available in **different colors, including white, corten steel and many others** catering to various architectural preferences.

In this case the white solar PV installed in the façade covers around 600 m^2 and generates **10% of the building energy needs**.

TECHNICAL DATA

Nominal Power (Wp/m^2)	124 Wp/m^2
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	0%
U value (W/m^2K)	N/A
U value ($Btu/h\ ft^2\ °F$)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

AMOT BEIT HAVERED

TEL AVIV, ISRAEL

WHITE PV FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

HIDDEN PV GLASS IN WHITE COLOR

"A clean energy revolution is taking place. Amot is a leading real estate company and we see how customers are rewarding businesses that address environmental concerns and penalizing those that don't."

Amot Investments

BACK TO START

PHOTOVOLTAIC FAÇADE

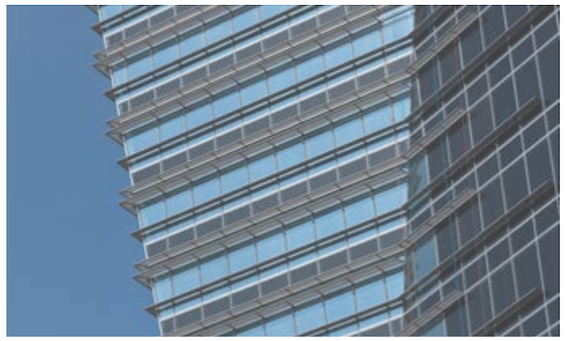
NEW CONSTRUCTION

Continuing one of the largest urban regeneration efforts in Europe, Gioia 22 is a landmark office tower in Milan's business district.

As Italy's **first nearly net-zero building**, Gioia 22 advances fresh perspectives and progress in a city known for its innovative spirit.

Developed by **COIMA** and designed by **Pelli Clark & Partners,** Gioia 22 exceeds Milan's energy regulations by 15 percent, using on site renewable energy sources including **6,000 m² of crystalline PV glass panels** installed on the façade, which **generate 65 percent of the energy required for heating and cooling.**

The façade system wich count with around **800 kWp** installed was developed together with **Permasteelisa**, a leading global contractor of architectural envelopes responsible of some the most iconic façades of the world.



LEED PLATINUM 2018

TECHNICAL DATA

Nominal Power (Wp/m²)	158 Wp/m²
Visible Light Transmittance (VLT)	5%
Solar Factor (g-value)	12%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

Façade 2022 Winner

onyx METZ

GIOIA 22

MILAN, ITALY

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

MORE INFO IN VIDEO

"Nearly 6,000 sq m of photovoltaic panels adorn Gioia 22's facade, which is Italy's first nZEB building. Compared to traditional office buildings, Gioia 22 uses 75% less energy due to its highly advanced photovoltaic system. "

Pelli Clarke & Partners

"This project shows once again how architectural quality can now no longer be separated from environmental sustainability."

Pierfrancesco Maran - Milan City Councilor for Urban Planning

Pelli Clarke & Partners

PERMASTEELISA GROUP

COIMA

BACK TO START

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

As the architect stated, the Science Pyramid is like **a form emerging from the earth.** The building portrays a dynamic, spiraling movement that **symbolizes how tectonic plates push upward to create something brand new.** To further the concept, its building envelope or skin, imitates nature by shielding itself with hexagonal-shaped honeycomb cladding designed to protect the interior as is the nature of a beehive.

The Pyramid's technologically advanced, high performance skin (façade), designed by Studio NYL, **is clad incorporating hexagonal-shaped PV solar glass panes** manufactured by Onyx Solar that mimic the geometric efficiency of nature's wax honeycombs and gathering energy for interior exhibits.

TECHNICAL DATA

Nominal Power (Wp/m²)	100 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	0%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

ENR REGIONAL BEST 2015 PROJECTS

BACK TO START

PHOTOVOLTAIC FAÇADE

RENOVATION

Originally constructed in the 1980s, this bank's headquarters underwent an **innovative refurbishment** by integrating a second skin with photovoltaic technology which offers a contemporary design while **ensures a sustainable and robust supply of clean energy for its employees.**

The façade now also **filters harmful radiation and heat to achieve huge savings in cooling.** The installation features 3,250 photovoltaic glass panels which cover an area of 6,500 square meters and achieve 1 MW of installed power.

This groundbreaking project achieved a great milestone when it was made as the **largest photovoltaic integration on the african continent.**

Each PV glass unit measures 2,000 x 1,000 mm and features a **blue ceramic frit to align with Sterling Bank's aesthetic requirements.**

TECHNICAL DATA

Nominal Power (Wp/m²)	159 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	29%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

STERLING BANK

LAGOS, NIGERIA

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

Sterling Bank

BACK TO START

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

The façade of the building is made up of a substructure that contains photovoltaic laminated safety glass panels which create a **lattice that generates more than 110 kWp** of energy production. This **energy production represents 20% of all the energy needed** by the building, making it an example of energy efficiency.

Furthermore, thanks to its design, the structure was optimized to create an **optimal balance between the entry of natural light and shading**, which contributes to reducing energy consumption and increasing the comfort of the researchers who use the building.

The building enjoys high visibility on the university campus and had to convey an image of innovation and modernity, marking the technological character of the University of Jaén.

The glasses manufactured were totally **customized in terms os size and cell density following customer's requirements** to reach a peak power of 108 Wp per m^2.

TECHNICAL DATA

Nominal Power (Wp/m^2)	108 Wp/m^2
Visible Light Transmittance (VLT)	46%
Solar Factor (g-value)	50%
U value (W/m^2K)	N/A
U value ($Btu/h\ ft^2\ °F$)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START ▲

onyx METZ.

RESEARCH LABS D4

JAEN UNIVERSITY CAMPUS, SPAIN

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

MORE INFO IN VIDEO

"The design of this building responds to the University of Jaen's philosophy of pursuing energy sustainability. It generates 20% of the energy it consumes thanks to the installation of photovoltaic glass on the façade."

Juan Ortega - Rector of the University of Jaen.

CAarq arquitectos

acciona

UJA Universidad de Jaén

PHOTOVOLTAIC FAÇADE

RENOVATION

This project is situated in a historical military **site from the 18th century** where it was essential to conserve the Napoleonic façades. It is located at the campus of a leading french **business school: ESCCA.**

For this project, we adapted our product to create a solution that was not only energy-efficient but also aesthetically harmonious with the historical environment as customer required from us.

Onyx Solar provided photovoltaic glass in opaque white color. It was made with crystalline technology but cells are totally hidden so they become invisible. The project required a light solution so the PV glass was laminated with tedlar and complemented with an aluminum frame for increased rigidity.

TECHNICAL DATA

Nominal Power (Wp/m²)	92 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	34%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

BACK TO START ▲

onyx METZ

ESCCA BUSINESS SCHOOL

BORDEAUX, FRANCE

WHITE FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

MORE INFO IN VIDEO

HIDDEN PV GLASS IN WHITE COLOR

OUC The Reliable One

EIFFAGE ÉNERGIE SYSTÈMES

ESSCA

PHOTOVOLTAIC FAÇADE

RENOVATION

This project, led by Pepper Saving Bank, involved the **replacement of existing inactive glass** with Onyx Solar's PV glass, transforming the building into a source of free and clean energy, thereby significantly reducing electricity expenses.

Each glass module is equipped with 60 **mono-crystalline solar cells**.

The **layout was customized to achieve the desired nominal power, visible light transmittance and solar heat gain coefficient** desired by the customer to enhance the building's energy efficiency.

TECHNICAL DATA

Nominal Power (Wp/m²)	100 Wp/m²
Visible Light Transmittance (VLT)	30%
Solar Factor (g-value)	23%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

BACK TO START ▲

PEPPER SAVINGS BANK

SEONGNAM, KOREA

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

"Our commitment to sustainability is instilled through everything we do; from our interactions with customers and employees, through to our environmental impact on the local communities around us."

Matthew Chang - CEO Pepper Bank

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

The MOLecoLAB, housed within the Medical University in Lodz, Poland, marks a significant achievement in construction standards. It stands as Poland's **pioneering laboratory building to have reduced energy demand to just 15 kWh per m² annually by integrating bioclimatic architectural solutions that remarkably combine active properties, such as on-site solar energy generation, and passive ones.**

The project features two distinct constructive solutions:

· A **photovoltaic ventilated façade crafted from crystalline silicon photovoltaic glass with varied dimensions and a blue-colored rear glass.**

· A **bicycle shelter,** designed with a similar glass configuration.

TECHNICAL DATA

Nominal Power (Wp/m²)	164 Wp/m²
Visible Light Transmittance (VLT)	18%
Solar Factor (g-value)	29%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

MOLecoLAB

onyx METZ

MEDICAL UNIVERSITY OF LODZ

BACK TO START

MOLECOLAB

MEDICAL UNIVERSITY, LODZ, POLAND

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

PHOTOVOLTAIC FAÇADE

RENOVATION

This bank, leader in Canary Islands (Spain), underwent a sustainable transformation installing photovoltaic glass in its façade using the existing fixing system.

The PV glass supplied was **perforated to be installed using the existing spider system** and became an evident feature recognizable by the public that serves as a **visible testament to the bank's commitment to sustainability.**

Comprising two layers of 8 mm laminated safety glass housing 6" solid solar cells, the **layout was totally customized to allow a great amount of natural light to permeate inside the building and minimize the nominal power loss.** At the same time the PV glass installed blocks the heat and harmful radiation to improve the comfort of the bank's employees.

This installation involved irregular trapezoidal units creating a unique and visually appealing façade that enhances the bank's environmental profile while revitalizing its external aesthetics.

TECHNICAL DATA

Nominal Power (Wp/m²)	94 Wp/m²
Visible Light Transmittance (VLT)	53%
Solar Factor (g-value)	50%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

SPIDER SYSTEM
A system that uses metal adjusters with a specialized design known as a "spider". The photovoltaic glass is perforated, a feature not offered by other similar materials.

onyx METZ

BACK TO START

CAJASIETE BANK

TENERIFE, SPAIN

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

TECHNICAL DATA SHEET

"The entity consumes 100% energy from renewable sources in its work centers."

Manuel del Castillo - CEO Cajasiete

cajasiete

BACK TO START ▲

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

Onyx Solar has completed a new project few meters apart from Buckingham Palace in London.

The building incorporated a ventilated façade system made of crystalline silicon PV glass.

The project goals included the maintenance of an opaque look for the building's façade, making it stand out from the rest of building materials.

The PV glass was manufactured with a black color ceramic frit treatment on the surface and it produces a **free and clean power to its owners reaching the nominal power and the solar heat coefficient desired by them for this surface.**

For this project **DROO** employed a recurring element of English architecture through a fresh interpretation of the arched window on the façade. With a contemporary design in a highly protected conservation area, the curved glass extends tangentially from the building to enlarge the living space, intruding into the street as a semi-external floating spatial experience.

TECHNICAL DATA

Nominal Power (Wp/m²)	130 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	23%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

onyx METZ

CASTLE LANE

LONDON, UNITED KINGDOM

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

DROO

brickarchitecture

PHOTOVOLTAIC FAÇADE

RENOVATION

Balenciaga incorporated a photovoltaic **curtain wall** into its flagship store in the vibrant Miami Design District. This innovative installation features **hurricane-resistant photovoltaic insulating glass units** crafted from crystalline silicon PV solar cells.

The installation is aligned with Kering Group's commitment to innovation and carbon footprint reduction across its stores. The polycrystalline PV glass at Balenciaga's Miami flagship store was made in a **chic pale blue hue**, adding a fashionable touch to the storefront.

Each PV glass panel has a **nominal peak power of 338 Wp** contributing to a total system that generates over 7,700 kWh/ year.

Balenciaga's fusion of sustainability and style not only elevates its aesthetic appeal but also sets a noteworthy example of integrating renewable energy solutions in the realm of high-end retail.

TECHNICAL DATA

Nominal Power (Wp/m²)	101 Wp/m²
Visible Light Transmittance (VLT)	24%
Solar Factor (g-value)	18%
U value (W/m²K)	2.74
U value (Btu/h ft² °F)	0,48
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START ▲

onyx METZ

BALENCIAGA STORE

MIAMI, UNITED STATES

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

"Luxury and sustainability are one and the same". Reflecting this deeply held conviction of François-Henri Pinault, sustainability is at the heart of Kering's strategy as much as its creative and modern vision of Luxury."

Cédric Charbit - CEO Balenciaga

KERING

PHOTOVOLTAIC FAÇADE

RENOVATION

Regent's Crescent, installed a new photovoltaic façade crafted from crystalline silicon PV glass.

Onyx Solar incorporated **grey-colored front glass**, aligning with both the design criteria and the client's aesthetic preferences. Each glass panel is comprised of two lites of ¼" tempered glass and has a height of 2.6 meters.

The installation utilized a rainscreen cladding system, employing 'L' brackets and an aluminum subframe system.

TECHNICAL DATA

Nominal Power (Wp/m²)	107 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	23%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

BACK TO START ▲

onyx METZ

REGENT´S CRESCENT

LONDON, UNITED KINGDOM

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

Located in the Netherlands, this project features photovoltaic glass manufactured using monocrystalline **5BB technology.**

The glass has large dimensions of up to 3829 x 1994 mm, **a double 12 mm argon chamber**, and a total thickness of 60 mm, with an individual weight of 630 kg, making it the heaviest glass manufactured by Onyx Solar to date.

The Geelen Counterflow office building in Haelen, Netherlands, received a **five-star rating on the BREEAM NL certification** system after expanding its headquarters. This building expansion, designed by Architecten en Bouwmeesters and built in 2014, holds the title of **the most sustainable office worldwide with a BREEAM score of 99.94%.**

TECHNICAL DATA

Nominal Power (Wp/m²)	95 Wp/m²
Visible Light Transmittance (VLT)	51%
Solar Factor (g-value)	23%
U value (W/m²K)	0.70
U value (Btu/h ft² °F)	0,12
Light Reflection (external)	8%

BACK TO START ▲

GEELEN COUNTERFLOW

HAELEN, NETHERLANDS

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

Onyx Solar has supplied its solar photovoltaic glass to be installed as **rainscreen cladding at the Acciona Campus**, the new headquarters of this titan in Madrid.

Acciona is a multinational conglomerate dedicated to the development and management of infrastructures and renewable energy with operations in 63 countries.

The Acciona Campus is a complex of more than **70,000 m²** that includes several buildings, green areas and services. The project was designed by Fenwick Iribarren Architects, with the aim of creating a sustainable, innovative and transparent campus.

Our solar photovoltaic glass contributes to improve the energy efficiency, **the thermal and acoustic insulation, the indoor comfort and the aesthetics of the building where it was installed, generating clean and free energy from the sun.**

TECHNICAL DATA

Nominal Power (Wp/m²)	162 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	37%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

BACK TO START ▲

CAMPUS ACCIONA

MADRID, SPAIN

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

FENWICK IRIBARREN ARCHITECTS

acciona

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

PepsiCo is a global food and beverage corporation that operates across more than 200 countries with a workforce exceeding 260,000 employees.

The facility in Puebla, Mexico, boasts **customized crystalline silicon PV glass panels.**

These units feature a **double laminated safety glass** configuration made with **tempered glass** and are customized with a **bluish colored** rear ceramic frit, aligning seamlessly with PepsiCo's aesthetic preferences.

This PV glass generates a substantial amount of energy and prevents heat entry, which is excellent for the area in which it is located.

U.S. GREEN BUILDING COUNCIL LEED SILVER USGBC

onyx METZ.

BACK TO START

PEPSICO MEXICO

PUEBLA, MEXICO

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

MORE INFO IN VIDEO

"As we strive to reach net-zero emissions and help drive a Positive Value Chain, we are aiming to achieve 100% renewable electricity in our own operations by 2030"

Ramón Laguarta - CEO PepsiCo

pepsi

BACK TO START ▲

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

The Environmental Safety and Control Department Building (ESCD) in Saudi Arabia installed a photovoltaic curtain wall using Onyx Solar's PV glass.

This installation comprises **crystalline silicon insulating PV glass panels** designed specifically for this project. They feature a 16 mm thick air spacer infill, ensuring effective thermal and sound insulation, a crucial aspect in an extreme climatic zone such as this.

Placed prominently at the main entrance of the building, the **PV Glass installation serves as a highly visible feature** for all stakeholders.

The mission of the RCY is to "plan, promote, develop and manage petrochemicals and energy intensive industrial cities".

onyx METZ

ROYAL COMMISSION YANBU

YANBU, SAUDI ARABIA

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

BACK TO START ▲

PHOTOVOLTAIC FAÇADE

RENOVATION

The solar PV glass panels installed vertically are e**xceptionally effective when used in locations like Punta Arenas,** Chile, known as one of the southernmost cities globally.

Onyx Solar manufactured **crystalline silicon PV glass units** totally customized for this project.

The PV glass layout was customized following customer's needs in terms of natural light entrance and see-through capability.

The glass manufactured allows an immense entrance of natural light maintaining a nominal power of 140 Wp per piece.

TECHNICAL DATA

Nominal Power (Wp/m²)	37 Wp/m²
Visible Light Transmittance (VLT)	80%
Solar Factor (g-value)	50%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

PUNTA ARENAS HOSPITAL

PUNTA ARENAS, CHILE

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

BACK TO START

KRINGSJA SKOLE

OSLO, NORWAY

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

The photovoltaic curtain wall, made of crystalline silicon PV glass, **combines four different colors** and serves as an educational tool to showcase the evolution of solar energy to students of all ages.

Designed with double glazing, the PV glass offers a **U-value of 0.7 W/m²K, making it perfectly suited for Norway's cold climate**. With an installed capacity of 2.8 kWp, this system is expected to prevent the emission of 35 tons of CO_2 into the atmosphere. Additionally, it allows ample natural light inside with its 44% light-transmittance level.

TECHNICAL DATA

Nominal Power (Wp/m²)	109 Wp/m²
Visible Light Transmittance (VLT)	44%
Solar Factor (g-value)	20%
U value (W/m²K)	0.70
U value (Btu/h ft² °F)	0,12
Light Reflection (external)	8%

TECHNICAL DATA SHEET

Kringsjå skole

onyx

METZ

BACK TO START

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

The Children's Hospital at Westmead, the largest pediatric center in New South Wales, provides clinical services and quality care to 90,000 sick and injured children annually. It offers specialized care in a positive and healing environment for children from New South Wales, Australia, and across the Pacific.

The north façade of the new Multi Story Car Park features **90 units of terracotta-colored crystalline PV glass**, each measuring 2700 x 975 mm.

This custom-designed glass enhances both the aesthetics and functionality of the building, contributing to the **hospital's sustainability and energy efficiency**.

CCG Architects Pty Ltd and **Kane Constructions Pty Ltd** have been responsible for executing this project that challenges the traditional trajectory of carpark design.

This new parking facility offers over 1,000 parking spaces for staff and 75 charging stations for electric vehicles.

TECHNICAL DATA

Nominal Power (Wp/m²)	123 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	0%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A

TECHNICAL DATA SHEET

NSW GOVERNMENT

The Sydney children's Hospitals Network

onyx

METZ

WESTMEAD CAR PARK

SYDNEY, AUSTRALIA

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

KANE

CCG ARCHITECTS

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

The Querétaro Block represents a milestone in technological advancement in Mexico, establishing itself as the new **BLOQUE Center for Creative Innovation and Technology** in Querétaro. This exceptional complex will position the city as the premier digital technology hub in Latin America.

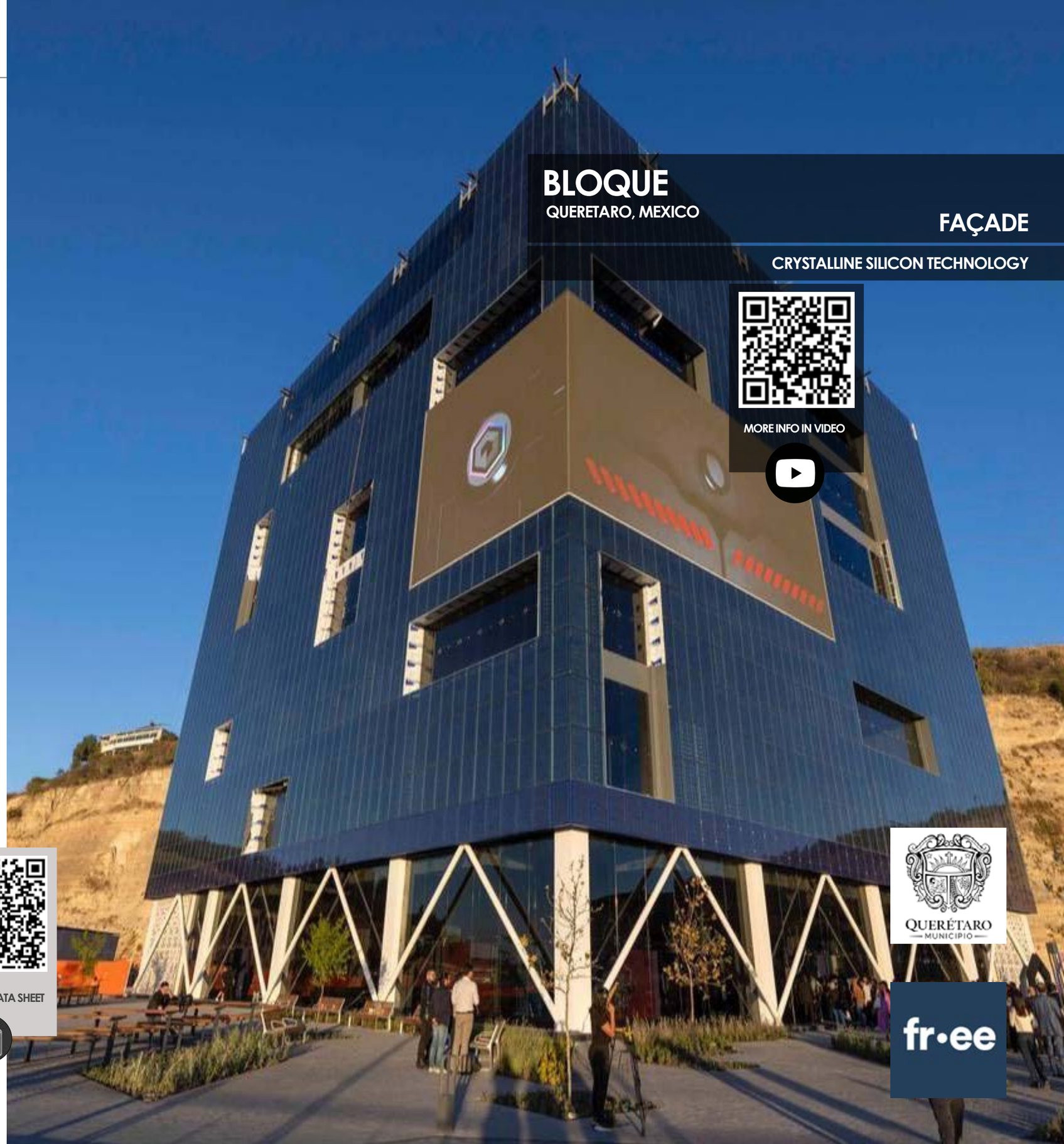
Reflecting its cutting-edge nature, the building integrates advanced solutions such as **over 3,700 photovoltaic glass units** from Onyx Solar across its four façades. These panels offer a total installed capacity of **505 kWp**, allowing the complex to achieve more than 40% energy independence. They generate over **458,000 kWh** annually, making it the largest photovoltaic wall in Latin America.

The photovoltaic glass integrates **crystalline silicon cells** with **blue-tinted glass**, creating a visually striking effect. This not only highlights the building's commitment to **renewable energy** but also provides a distinctive blue hue to its façades. Additionally, the installation of **Mexico's first 3D screen** ensures the building draws significant attention.

TECHNICAL DATA

Nominal Power (Wp/m²)	104 Wp/m²
Visible Light Transmittance (VLT)	39%
Solar Factor (g-value)	23%
U value (W/m²K)	5,4
Light Reflection (external)	<6%

TECHNICAL DATA SHEET



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PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

The building is covered by a **ventilated façade cladding with photovoltaic glass.**

The glass envelope is formed by **1834 active laminated PV glass** units of 1690 x 1000 mm and a nominal power of of 173 Wp per m^2 (16 Wp / sq ft).

This glass envelope provides the building **not only with aesthetic continuity, but also provides the great insulation that impact directly in saving for air cooling.**

BAR01 is an **industry-leading performance and sustainable design**, directly connected to the Barcelona Cable Landing Station, providing secure, low-latency links to North America, South America, Asia, Africa, Europe, and the Middle East. The state-of-the-art facility is **optimized for both energy and water efficiency**, powered by **100% renewable energy** with ultra-clean backup systems. It **saves 27,200,000 kg of CO_2 per year and 239,200,000 liters of water annually**. Backup generators powered by hydrotreated vegetable oil (HVO) **reduce CO_2 emissions by 90%.** The photovoltaic glass façade integrated into the data center stands out for its exceptional energy efficiency, achieving a **1.15 PUE**, which is **74% less overhead energy compared to the industry average**.

This **remarkable efficiency** translates into **reduced energy consumption**, **cost savings**, and a **smaller environmental footprint**—a benchmark for sustainability in the digital age.

TECHNICAL DATA

Nominal Power (Wp/m^2)	173 Wp/m^2
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	37%
U value (W/m^2K)	N/A
U value ($Btu/h\ ft^2\ °F$)	N/A
Light Reflection (external)	8%

onyx METZ.

DATA CENTER MERLIN & EDGED

BARCELONA , SPAIN

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

"We're thrilled to see the transformative impact of our collaboration with MERLIN Properties in Spain. The Madrid and Barcelona facilities truly set a new standard for efficiency and environmental stewardship, and Onyx Solar's photovoltaic glass is a shining example of what's possible when technology and design work hand in hand."

Edged

MERLIN

edged

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

This glass box emerges close to one of the main arteries of the city as one of the main data centers.

Its great energy consumption is partially mitigated by the installation of an innovative photovoltaic **ventilated façade** covering **3,600 m² that achieve 600 kWp** of installed peak power.

The integration of laminated photovoltaic glass into the building envelope enhances its aesthetic value and provides tangible benefits in terms of **improved thermal and acoustic insulation, on-site clean energy production,** and consequential reduction in net greenhouse gas emissions.

MAD01 is an **industry-leading performance and sustainable design**, delivering secure, high-speed global connections through a growing network of low-latency links to undersea cables in Bilbao, Barcelona, and Lisbon. The state-of-the-art facility is **optimized for both energy and water efficiency**, powered by **100% renewable energy** with ultra-clean backup systems. It **saves 34,000,000 kg of CO_2 per year and 299,000,000 liters of water annually**. Backup generators powered by hydrotreated vegetable oil (HVO) **reduce CO_2 emissions by 90%.** The photovoltaic glass façade integrated into the data center stands out for its exceptional energy efficiency, achieving a **1.15 PUE**, which is **74% less overhead energy compared to the industry average**.

TECHNICAL DATA

Nominal Power (Wp/m²)	173 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	37%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

onyx METZ

BACK TO START

DATA CENTER MERLIN & EDGED

MADRID, SPAIN

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

PEAK POWER
The maximun power that a photovoltaic glass can generate under standard test condictions, wich include an irradiance of 1000 W/m², a cell temperature of 25°C, and an air mass of 1.54, It is used to compare the feneration capacity of different photovoltaic glass panels under optimal conditions.

NOMINAL POWER
The power that the solar inverter can handle, meaning the device that converts the direct current generated by the photovoltaic glass into usable alternating current.

MERLIN

edged

BACK TO START ▲

PHOTOVOLTAIC FAÇADE

UNDER CONSTRUCTION

Crafted by **SLCE Architects** and orchestrated by Real Estate Developer **TF Cornerstone**, this project comprises a 34-story, 390-foot-tall edifice at 2-20 Malt Drive, presenting a total of 575 units. Simultaneously, 2-21 Malt Drive features a dual-tower configuration, encompassing a 38-story, 440-foot-tall high-rise and a 25-story, 310-foot-tall building.

The façades of these buildings boast a striking composition featuring a blend of dark red, light tan, and charcoal-hued bricks that elegantly encase expansive grids of floor-to-ceiling glass.

The crown of two of the three buildings will feature customized photovoltaic glass panels by Onyx Solar.

The PV glass panels are made of a **laminated safety glass composition**, with crystalline silicon embedded solar cells. **Low-iron extra clear glass on the exterior of the configuration plus clear glass with a ceramic frit on the backside of the panel**.

Once completed, it will become one of the most sustainable buildings in New York for TF Cornerstone.

onyx METZ

BUDSITE NORTH

LONG ISLAND, NEW YORK, UNITED STATES

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

TF

SLCE Architects

PHOTOVOLTAIC FAÇADE

UNDER CONSTRUCTION

FIVE Holdings is a Dubai-based vertically integrated **real estate development and hospitality group**. It owns among other brands **Pacha**.

FIVE Hotels and Resorts focus on developing high quality properties while providing top entertainment and luxurious lifestyle experiences to their guests in **world-class sustainable properties built with state-of-the art technology.**

Onyx Solar provided its energy-generating building materials for an innovative **4,400 m² ventilated façade** system installed on Sensoria Tower, in Dubai. This façade produce an huge amount of **clean power** thanks to the sun and provide **unbeatable thermal insulation** to ensure the comfort of Sensoria's customers.

This laminated safety glass was produced in **white and grey colors** and incorporated our technology and know-how to **hide crystalline silicon PV cells to create pieces with a totally homogeneous surface** that harvest a huge amount of clean energy from the sun.

The façade was built with **triangular-shaped PV glass panels to create a visually 3D façade** that resembled the aesthetic of a large soundproof foam pattern, a clear statement of FIVE's commitment to sustainability and fun!

This visually textured façade was made with **colored PV triangular material** that was 3,280 mm long and 1,643 mm high.

BACK TO START ▲

SENSORIA TOWER

DUBAI, UAE

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

WHITE

POLAR GREY

MORE INFO IN VIDEO

"Our developments are different. Come at FIVE to relax, dine and party in a high energy and immersive entertainment ecosystem managed by world-class sustainable properties built with state-of-the-art technologies."

Aloki BatraCEO of FIVE Hospitality & CEO of The Pacha Group

PHOTOVOLTAIC FAÇADE

UNDER CONSTRUCTION

The tower is the new regional headquarters in the Philippines of a confidential client. The 20-floor building sits in the heart of Cebu's historic Fuente Osmeña Circle and it stands as a prominent landmark near the city's cultural centre. The design of the tower includes innovative and sustainable design practices to achieve Green Mark certification. As part of these sustainable concepts, the building features 1.100 square meters of PV glass on the façade, manufactured by Onyx Solar.

This glass includes crystalline silicon cells and is made with **semi-transparent blue glass. It incorporates IGU and low-e coating to optimize the building's thermal insulation and filter harmful radiation while generating renewable energy on-site.**

The tower features five levels of underground parking, a six-level podium with mezzanines, a lobby, café and a retail branch. It also includes a training and business centre, gym and clinic. Other levels include office spaces and tenant floors for leasing. The twentieth floor serves as a public art gallery.

BCA GREEN MARK

onyx METZ

CEBU TOWER

CEBU, PHILIPPINES

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

"We conducted a feasibility study on solar and explored renewable energy options for powering the building."

Sung Lee, Architecture and Design Director, M Moser

CONFIDENTIAL CLIENT

BACK TO START ▲

PHOTOVOLTAIC FAÇADE

RENOVATION

Genentech in Oceanside, California, incorporates Onyx Solar's **innovative photovoltaic glass** into its ventilated façade and curtain walls. The **photovoltaic cladding** spans **15,000 square feet** and generates a nominal power of **202 kWp** of **clean energy**. In addition to its ability to produce renewable energy, this glass provides **thermal insulation** and an attractive **gray finish** that integrates seamlessly into the building's design.

This project is an excellent example of how **renewable energy** can be efficiently integrated into **biotech facilities**, supporting **Genentech's Net Zero Energy goals** and **reducing energy consumption**. With an estimated lifespan of 30 years and an energy payback time of less than three years, the photovoltaic glass ensures sustainable and cost-effective long-term operation.

Onyx Solar's **OneMeterOneTree** initiative further reinforces the project's **positive environmental impact** by planting one tree for every square meter of photovoltaic glass produced, promoting carbon capture and greater **environmental responsibility**

TECHNICAL DATA

Nominal Power (Wp/m²)	108 Wp/m²
Visible Light Transmittance (VLT)	21%
Solar Factor (g-value)	9%
U value (W/m²K)	1.2
U value (Btu/h ft² °F)	0,21
Light Reflection (external)	8%

BACK TO START ▲

onyx METZ

PHOTOVOLTAIC FAÇADE

RENOVATION

Castellana 66, located on one of the most important avenues in Madrid, **is a benchmark for sustainable design and energy efficiency**. This building features a **1,668 m² ventilated façade equipped with cutting-edge photovoltaic technology**. It utilizes **5BB monocrystalline cells with an anthracite-colored front frit finish** and horizontal slats made of extra-clear glass. Additionally, the façade boasts an Acid Etch finish, along with transparent elements in the canopy, optimizing both the aesthetics and the building's energy performance.

This project involved leading companies such as **Aluman**, **ENAR Envolventes Arquitectónicas** and **Baal Arquitectos**, who collaborated to deliver this innovative solution. The building is part of the campus of **ESCP**, the prestigious business school, located in Madrid.

Castellana 66 stands out not only for its innovative architectural design but also for its ability to integrate advanced technological solutions to improve the building's energy efficiency. The combination of photovoltaic technology and the ventilated façade enables more efficient thermal management, **significantly reducing the building's energy needs.**

TECHNICAL DATA

Nominal Power (Wp/m²)	120 Wp/m²
Visible Light Transmittance (VLT)	38%
Solar Factor (g-value)	45%
U value (W/m²K)	5.4
U value (Btu/h ft² °F)	0,94
Light Reflection (external)	8%

onyx

METZ.

BACK TO START ▲

CASTELLANA 66

MADRID, SPAIN

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

ESCP BUSINESS SCHOOL

ENAR

BAAL ARQUITECTOS

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

262 Fifth Avenue will become one of our **most iconic projects worldwide**. Standing almost **900 feet tall**, this **luxury condominium** in **Manhattan's NoMad neighborhood** is preparing for the **installation of a 50,000 sqf photovoltaic glass façade**, which will cover the **entire core walls of the tower from top to bottom**. In partnership with **Gualini**, this **energy-generating façade system** is **Class A fire-rated** and both **UL and NFPA 285 approved.**

Onyx Solar has already completed most of the **PV glass fabrication**, which will soon become an integral part of the **building's exterior.**

Installations like this in **NYC** contribute threefold by facilitating compliance with **Local Laws 92, 94, and 97,** unlocking **valuable tax credits**, and adding a **sustainable, innovative character to the building design.**

With over **15 years of experience** in the **U.S. market**, Onyx Solar is honored to lead this **emblematic project** in **NYC's complex construction landscape**. We're deeply grateful to **Five Points Development, Front, Meganom, and SLCE** for their **vision of sustainability**, and to **CM&A, Gualini, and PGNY** for their **collaboration.**

TECHNICAL DATA

Nominal Power (Wp/m²)	129.2 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	N/A
U value (W/m²K)	5.3
U value (Btu/h ft² °F)	0,92
Light Reflection (external)	8%

BACK TO START ▲

onyx METZ.

PHOTOVOLTAIC FAÇADE
UNDER CONSTRUCTION

At Onyx Solar, we are proud to contribute to the construction of the new **European Investment Bank (EIB)** headquarters in Luxembourg, an iconic project setting new standards in sustainability and architectural design in Europe.

We supplied over **1,500 m² of crystalline silicon photovoltaic glass** with an elegant **Anthracite finish**. Integrated into both the tower and podium, this glass meets the strict requirements of **Nearly Zero-energy Building (NZEB)** standards and achieves the prestigious **BREEAM "Excellent"** certification.

Our photovoltaic glass not only generates **clean energy** but also enhances the **building's functionality and architectural aesthetics**, blending seamlessly into its **innovative design**.

Designed by **Mecanoo Studio** and developed by **IDOM**, the project involves **Erbay Aluminyum** as the façade supplier, with construction led by the JV of **Rizzani de Eccher** and **Ballast Nedam International Project**. This project showcases the EIB's strong commitment to **sustainability**, standing out as a benchmark for **innovation and environmental responsibility** in Europe.

Mock-up image of the photovoltaic glass to be implemented in the tower, designed by the architecture firm Mecanoo.

EUROPEAN INVESTMENT BANK

LUXEMBOURG

FAÇADE

CRYSTALLINE SILICON TECHNOLOGY

BACK TO START ▲

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

New Terminal E at Boston Logan Airport currently features a 4,500 SqFt PV curtain wall made of **amorphous silicon PV insulating glass units** fabricated by Onyx Solar.

Designed by the duo **AECOM + Luis Vidal**, the new terminal expanded its 12 boarding gates to a total of 19, accommodating the large number of passengers passing through each year.

The PV glass was **highly customized** in order to fit the architectural design which features organic shapes and volumes. It provides **unobstructed views and insulates the building thanks to its argon spacer with a low-e** coated inboard.

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onyx METZ

BOSTON LOGAN AIRPORT

BOSTON, UNITED STATES

FAÇADE

AMORPHOUS SILICON TECHNOLOGY

SEEN IN CBS NEWS

AECOM

luis vidal +architects

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

The Dubai Frame is an impressive architectural wonder, standing 150 meters tall and 105 meters wide in Zabeel Park, Dubai. With over 2 million visitors enjoying its breathtaking views of the city's architectural gems, it quickly became a notable attraction after its completion in 2015.

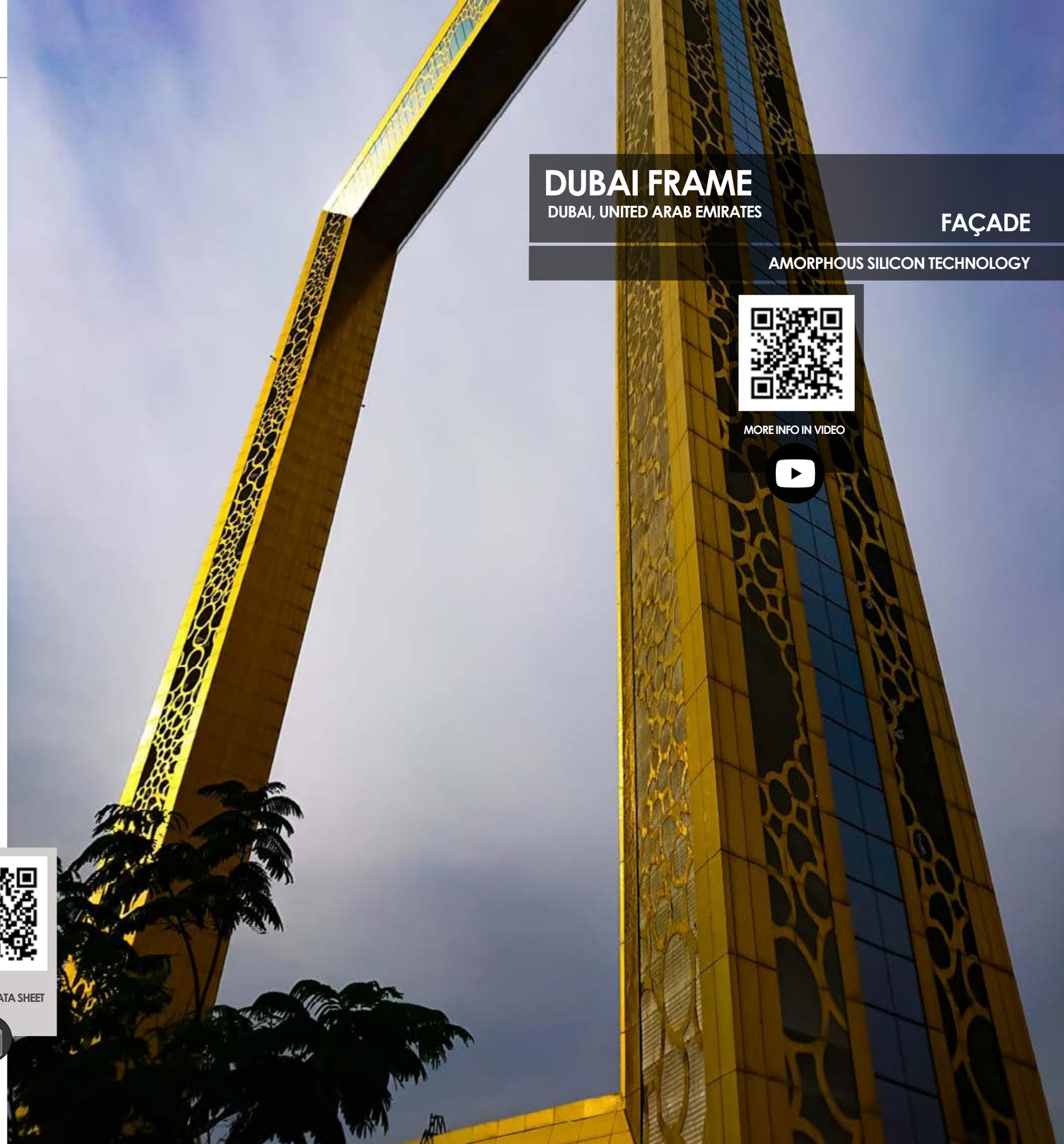
Onyx Solar played a pivotal role in this project by integrating 1,200 square meters (12,916 square feet) of amorphous silicon PV glass into the building's façade. Approximately 2,500 PV glass panels were used. These panels, with a **yellow/gold finish and a 20% see-through degree**, constitute a 38 kWp DC system. This system significantly offsets the building's energy demand by harnessing clean, free solar energy.

This PV glass not only showcases design **flexibility by offering customizable color** options but also aligns with the original architectural vision. Beyond energy generation, its properties include filtering UV and IR radiation, enhancing thermal comfort within the building.

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	12%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET



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PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

The Sea Towers complex in the 22@ district of Barcelona stands as the third building in Spain to achieve the esteemed **LEED Platinum certification.**

This recognition stems from its sustainable and innovative design, leveraging green technologies like photovoltaic glass. These towers boast remarkable energy efficiency, **achieving a 52% energy saving.**

Onyx Solar's solar PV glass adorns the curtain wall of the Sea Towers, comprising 1,520 m^2 of **amorphous silicon photovoltaic glass customized in various dimensions.**

Each insulating glass unit incorporates a **12 mm air chamber, enhancing the building's thermal and acoustic insulation.**

In addition the PV glass manufactured allows the entrance of a good amount of **natural light and filter harmful radiation** to maximize the comfort inside the building.

Situated in the heart of Barcelona's 22@ district, a prominent technological and digital hub, the Sea Towers underscore the city's position as a significant global tech destination.

TECHNICAL DATA

Nominal Power (Wp/m^2)	34 Wp/m^2
Visible Light Transmittance (VLT)	20%
Solar Factor (g-value)	32%
U value (W/m^2K)	1.30
U value ($Btu/h\ ft^2\ °F$)	0,23
Light Reflection (external)	8%

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MORE INFO IN VIDEO

SEA TOWERS

BARCELONA, SPAIN

FAÇADE

AMORPHOUS SILICON TECHNOLOGY

GCA

Meridia

BACK TO START

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

The Park mixed-use development in Melbourne, boasts a photovoltaic façade built with amorphous silicon photovoltaic safety laminated glass modules.

These modules, designed for **high transparency** to maximize natural light penetration, allow for significant energy savings due to their capability to **generate energy on-site and filter heat & harmful radiation.**

This development comprises 12 luxury apartments, offering intelligent and sustainable living solutions tailored to Melbourne's market.

"The architecture takes full advantage of its corner address. Onyx Solar photovoltaic glass on the façade, is both a feature & practical. Optimizing the building orientation, the glazing absorbs light to power the building."

Chaid Kairouz - Architect

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AINTREE PARK MIXED USE

MELBOURNE, AUSTRALIA

FAÇADE

AMORPHOUS SILICON TECHNOLOGY

MORE INFO IN VIDEO

C.KAIROUZ ARCHITECTS & ASSOCIATES INCORPORATING

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

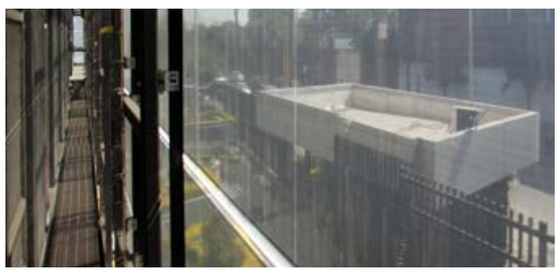
Onyx Solar supplied photovoltaic glass to the **Femsa** Headquarters in Monterrey, which stands as the largest **Coca-Cola** bottler globally. The project involved installing a second skin façade composed of amorphous silicon photovoltaic glass.

The installation comprised laminated PV glass panels, blending both **fully opaque and semi-transparent panels** in line with the façade's design.

» BEFORE

TECHNICAL DATA

Nominal Power (Wp/m²)	38 Wp/m²
Visible Light Transmittance (VLT)	20%
Solar Factor (g-value)	34%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%



TECHNICAL DATA SHEET

VENTILATED FAÇADE
An exterior cladding system for a building featuring a double layer separated from the main structure by an air gap.

COCA-COLA/FEMSA HQ

MEXICO

FAÇADE

AMORPHOUS SILICON TECHNOLOGY

MORE INFO IN VIDEO

BEA BIOCONSTRUCCIÓN Y ENERGÍA ALTERNATIVA

Coca-Cola FEMSA

BACK TO START

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

The Twin City Tower, developed by **HB Reavis,** stands as an iconic addition to Bratislava's business landscape, offering premium office and retail spaces within a newly established business center. Its striking façade integrates Onyx Solar's amorphous silicon photovoltaic glass.

Notably, this PV glass not only contributes to the building's energy generation but also **optimizes thermal insulation with its argon spacer and low-e coating**. Architecturally seamless and fully opaque, it blends seamlessly with the overall design of the façade, a testament to its integration within the building.

Skanska, the construction company behind the building, boasts a rich legacy since its establishment in 1887. It operates extensively across the Nordic markets, Europe, and North America.

TECHNICAL DATA

Nominal Power (Wp/m²)	57 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	6%
U value (W/m²K)	2.70
U value (Btu/h ft² °F)	0,47
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BREEAM ★ ★ ★ ★

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SKANSKA

hbreavis

TWIN CITY CENTER

BRATISLAVA, SLOVAKIA

FAÇADE

AMORPHOUS SILICON TECHNOLOGY

BACK TO START

PHOTOVOLTAIC FAÇADE

RENOVATION

The Black Box is the hub where our diverse team converge daily to innovate in the realm of Building Integrated PhotoVoltaics (BIPV).

It's the epicenter of our endeavors to develop the building materials of the 21st century. Initially, The Black Box was an office building featuring solid concrete exterior walls and windows.

We transformed it by installing a **PV rainscreen cladding system** crafted from amorphous silicon photovoltaic glass panels.

This system incorporates both **fully opaque PV glass for the solid façade areas and 20% VLT PV glass to cover the original windows.**

A rainscreen cladding made with solar safety laminated glass panels is **one of the best constructive solutions** to integrate photovoltaics into a building.

It has several advantages:

· It **generates clean and renewable energy from the sun,** reducing the building's carbon footprint and dependence on fossil fuels.

· It **improves the thermal and acoustic insulation** of the building, lowering the heating and cooling costs and enhancing the indoor comfort.

· It **protects the building** from weather damage and reduces the maintenance costs.

· It offers **design flexibility** and aesthetic appeal, as the solar panels can be **customized in size, shape, color and transparency.**

BACK TO START ▲

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METZ.

THE BLACK BOX

ÁVILA, SPAIN

FAÇADE

AMORPHOUS SILICON TECHNOLOGY

MORE INFO IN VIDEO

BACK TO START ▲

PHOTOVOLTAIC FAÇADE

RENOVATION

Onyx Solar supplied its amorphous silicon photovoltaic glass, integrated as a **photovoltaic ventilated façade** in the **Novadeci** Convention Center situated in Quezon City, Philippines.

Each **laminated safety tempered glass** harvest renewable energy and features a black rear frit that renders an opaque appearance to optimize harmful radiation blocking.

The Novadeci Convention Center stands as a significant office, commercial building, and convention center in Quezon City. The property is owned by Novadeci, a leading real estate company established in the Philippines.

TECHNICAL DATA

Nominal Power (Wp/m²)	57 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	22%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

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NOVADECI CENTER

QUEZON, PHILIPPINES

FAÇADE

AMORPHOUS SILICON TECHNOLOGY

BACK TO START

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

Cyprus International University's Science and Technology Center stands as a groundbreaking, state-of-the-art architectural marvel, defining itself through an unparalleled commitment to sustainable innovation. This cutting-edge facility leads the nation with its on-site clean power generation system, made possible by the installation of the largest photovoltaic façade in the country.

The façade is composed of over 1,000 square meters (10,760 sq ft) of amorphous silicon glass, each piece measuring 1,245 mm x 1,849 mm with a 30% visible light transmittance (VLT).

This remarkable undertaking not only solidifies the university's prowess in innovation but also serves as an exemplary educational model, empowering students to delve into the realms of sustainable technology and groundbreaking research, while fostering a legacy of forward-thinking solutions for generations to come.

TECHNICAL DATA

Nominal Power (Wp/m²)	62 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	23%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

onyx METZ

TECHNOLOGY CENTER

CYPRUS INTERNATIONAL UNIVERSITY

FAÇADE

AMORPHOUS SILICON TECHNOLOGY

ARUP

CYPRUS INTERNATIONAL UNIVERSITY

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

Culver City Creative, also known as C3, is an award-winning creative office building that hosts Onyx Solar's **first-of-its-kind photovoltaic curtain wall** project developed in the United States.

The development emphasizes volume and flexibility with a highly customizable modern design by **Gensler**, the largest architectural firm in the world.

C3 offers unique creative office space to be inspired, be inventive, and most importantly, be original.

With **unobstructed views** C3 has been designed to ideally fit tenants looking for a collaborative, high-energy campus environment.

C3 integrates a PV curtain wall by comprised of 24 different sizes of amorphous silicon PV glass panels that generates energy and filter harmful radiation and heat to maximize the comfort inside.

TECHNICAL DATA

Nominal Power (Wp/m²)	40 Wp/m²
Visible Light Transmittance (VLT)	10%
Solar Factor (g-value)	10%
U value (W/m²K)	1.60
U value (Btu/h ft² °F)	0,28
Light Reflection (external)	8%

TECHNICAL DATA SHEET

U.S. GREEN BUILDING COUNCIL LEED GOLD USGBC

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BACK TO START

CULVER CITY CREATIVE

CALIFORNIA, UNITED STATES

FAÇADE

AMORPHOUS SILICON TECHNOLOGY

MORE INFO IN VIDEO

Gensler

IDS REAL ESTATE GROUP

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

Heineken has positioned itself as a benchmark in terms of green building and sustainability. This distinction has been made possible through the use of **state-of-the-art photovoltaic technology** like the one supplied by Onyx Solar.

The use of photovoltaic glass on this brewery's facade has opened up a range of aesthetic and functional possibilities.

This material allows for greater flexibility in design, offering the **opportunity to play with the colors of the facade.** Additionally, it contributes to better insulation, resulting in greater comfort for users.

Finally, the energy generated through this innovative system is sufficient to supply all the offices and various process areas within the plant. This achievement represents a significant step towards energy **self-sufficiency in several areas of the facility.**

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	32%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	7%

BACK TO START ▲

onyx METZ

HEINEKEN FACTORY

MEOQUI, MEXICO

FAÇADE

AMORPHOUS SILICON TECHNOLOGY

MORE INFO IN VIDEO

"The number of things you can do in terms of design, color or shades with Onyx Solar gives you a very wide range of possibilities which does not limit you as other materials do."

Eusebio Reynoso - Director of Heineken Meoqui

HEINEKEN

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

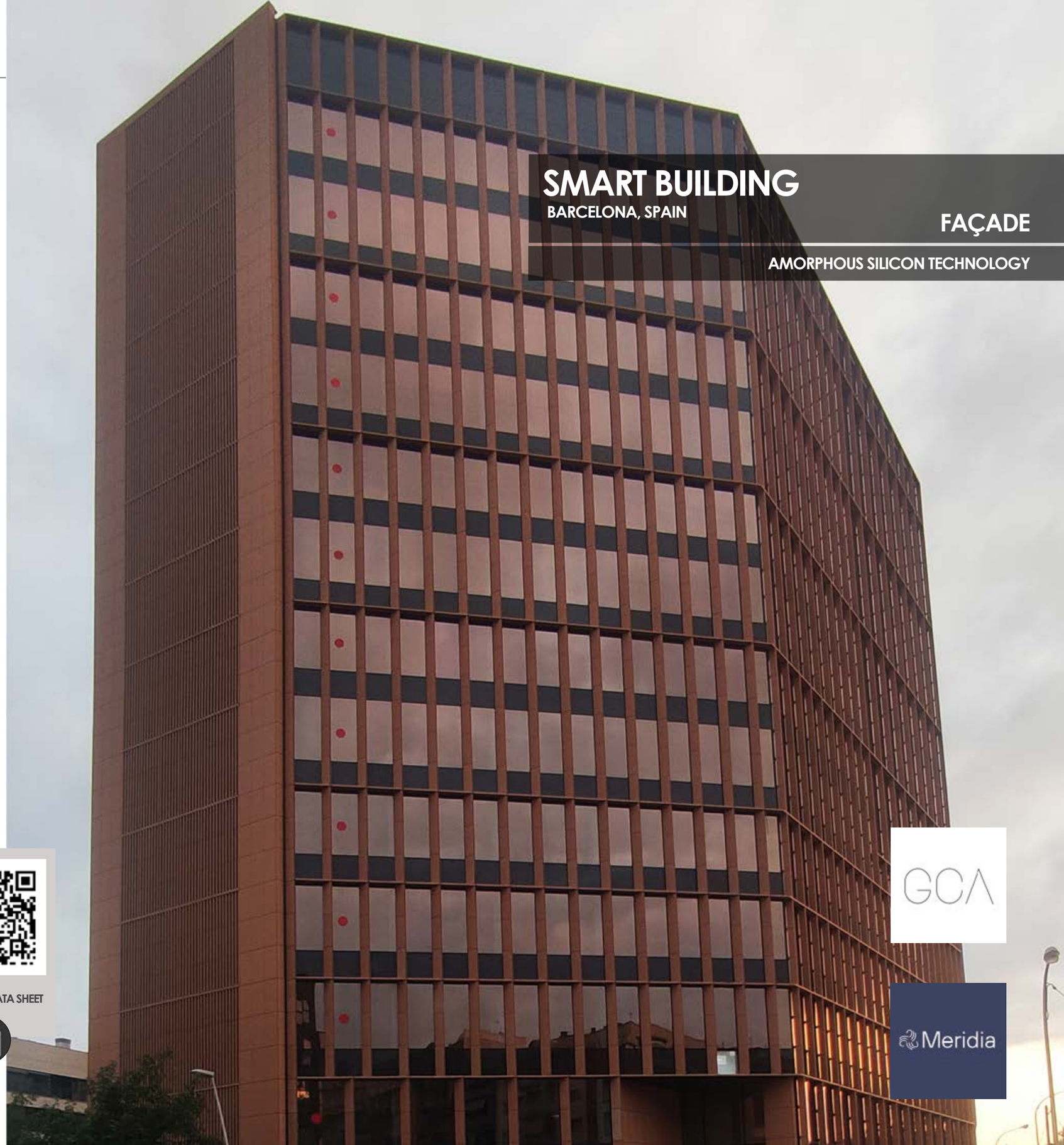
Onyx Solar's amorphous silicon photovoltaic glass was integrated into the spandrel areas of Barcelona's SMART building, covering a total area of 1.000 m^2 with 641 units of varied dimensions. Each glass panel features a **color frontal frit** that not only adds a vibrant appearance but also meets the required optical and structural standards for the project.

The smart building represents a novel office concept boasting prestigious LEED Platinum, WiredScore, and WELL Gold certifications, endorsing its sustainable and forward-thinking design. Nestled in Barcelona's technology district, 22@, it stands as a pivotal hub for technology and digital innovation in the city.

TECHNICAL DATA

Nominal Power (Wp/m^2)	45 Wp/m^2
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	23%
U value (W/m^2K)	N/A
U value ($Btu/h\ ft^2\ °F$)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET



SMART BUILDING

BARCELONA, SPAIN

FAÇADE

AMORPHOUS SILICON TECHNOLOGY

BACK TO START ▲

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

Onyx Solar's glass has been integrated into the facade of the Elipse Tower in Santo Domingo, Dominican Republic.

The façade was constructed using black **amorphous silicon see-through photovoltaic glass.**

The PV glass incorporated air spacer to enhance **thermal insulation** following customer's demands and was **customized to allow the entrance of natural light and block the harmful radiation to maximize owner's comfort.**

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	32%
U value (W/m²K)	2.70
U value (Btu/h ft² °F)	0,48
Light Reflection (external)	8%

BACK TO START

MIRAX TOWER

MANILA, PHILIPPINES

FAÇADE

AMORPHOUS SILICON TECHNOLOGY

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

Onyx Solar provided its amorphous silicon PV safety laminated glass panels for this curtain wall located in Philippines.

The façade design incorporates **two types of see-through degree.** The spandrel areas feature no transparency meanwhile the vision areas feature a see-through glass with 16% Visible Light Transmittance that allow **the entrance of natural light meanwhile block harmful radiation and heat to maximize user's comfort.**

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	32%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

Larsen & Toubro is an Indian multinational engaged in EPC Projects that operates in more than 50 countries.

They partnered with Onyx Solar to incorporate a **cutting-edge photovoltaic curtain wall** made of amorphous silicon PV glass **into their own offices in India.**

The PV installation utilizes Onyx Solar's **10% light transmittance PV glass** in a complex configuration, combining both **rectangular units and trapezoidal ones.**

Each insulated PV glass unit incorporates **argon spacer to achieve the thermal insulation** required by customer.

The **solar heat gain coeficient was also optimized following customer's requirements** to improve comfort and productivity of its workforce.

TECHNICAL DATA

Nominal Power (Wp/m²)	40 Wp/m²
Visible Light Transmittance (VLT)	10%
Solar Factor (g-value)	37%
U value (W/m²K)	1.20
U value (Btu/h ft² °F)	0,21
Light Reflection (external)	8%

CURTAIN WALL
An exterior cladding system for a building that consist of a metal framing supporting the photovoltaic glass.

TECHNICAL DATA SHEET

LARSEN & TOUBRO HQ

TAMIL NADU, INDIA

FAÇADE

AMORPHOUS SILICON TECHNOLOGY

BACK TO START

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

This municipal building, located in Cyprus, enjoys Onyx Solar photovoltaic glass panels integrated into the **façade**. They offer multiple benefits including free, clean energy generation and thermal insulation to increase the functionality and sustainability of the building.

The **thermal insulation** advantages, help to regulate the internal temperature of the municipal building. This is especially advantageous in Cyprus, where the climate is characterized by hot summers. The glass panes act as a barrier, minimizing heat transfer and thus reducing the need for excessive air conditioning.

The energy-generating glasses installed in this building **generate enough power to feed 9.000 light points** every day and prevent the emission of more than 300 tons of CO_2 into the atmosphere.

TECHNICAL DATA

Nominal Power (Wp/m²)	40 Wp/m²
Visible Light Transmittance (VLT)	10%
Solar Factor (g-value)	11%
U value (W/m²K)	2.70
U value (Btu/h ft² °F)	0,48
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

Malta experiences abundant sunlight throughout the year due to its Mediterranean climate. The high solar exposure makes photovoltaic technology particularly effective, allowing the PV glass to harness and convert sunlight into energy consistently.

This PV curtain wall is made up of low-e amorphous silicon photovoltaic glass modules with medium transparency, allowing **natural light while harnessing the sun's energy to contribute to the building's sustainable energy needs.**

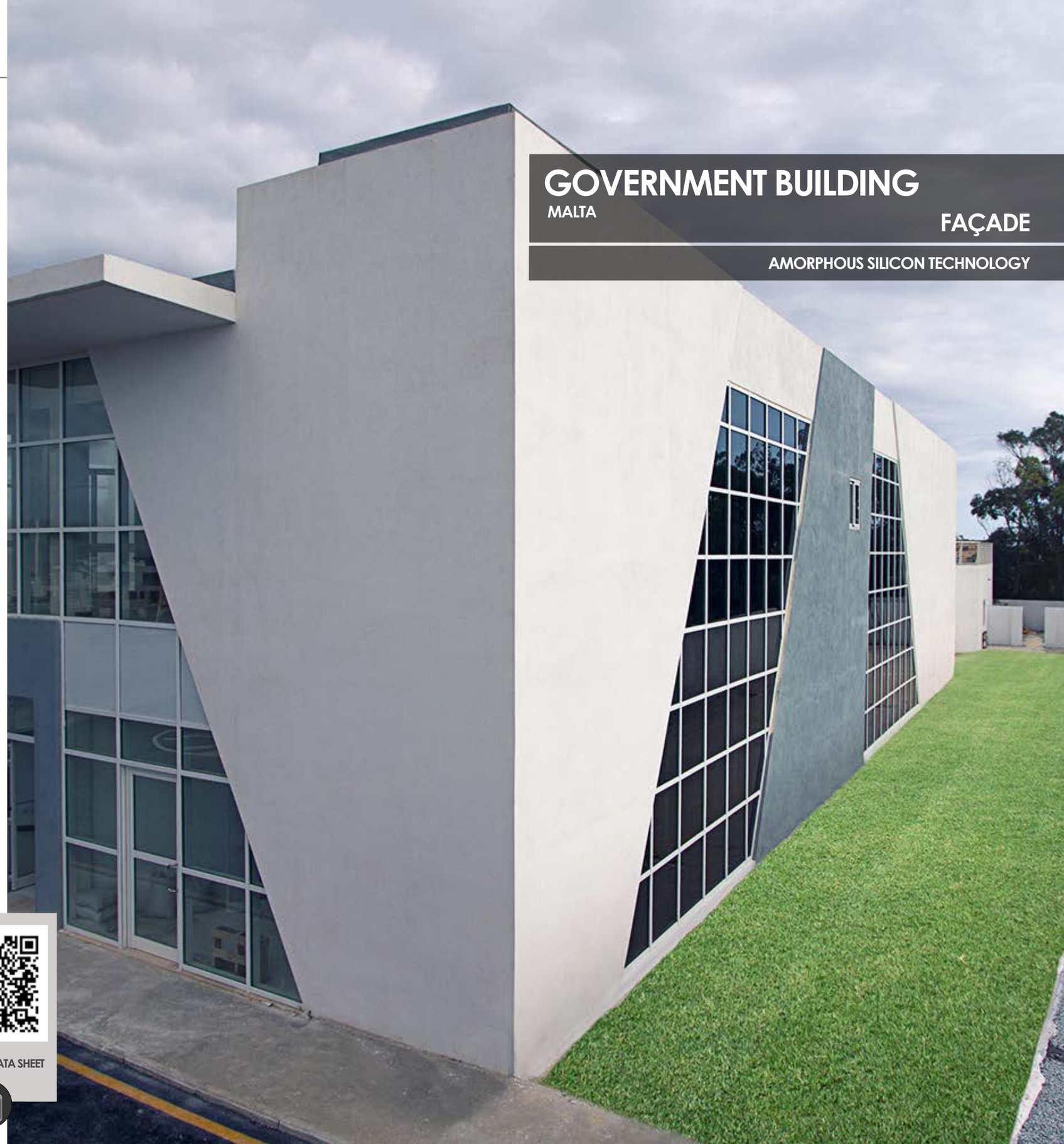
Onyx solar PV glass can be perfectly integrated into the building, since it looks like normal glass, but produces energy. This building has fully customized the PV glass with regards to size and shape as the desire of the customer.

In this case, the glass also includes a **12 mm air chamber to provide thermal insulation to the building**. This feature is crucial in Malta, where hot summers and cooler winters may necessitate the use of heating or air conditioning systems.

TECHNICAL DATA

Nominal Power (Wp/m²)	39 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	32%
U value (W/m²K)	2.70
U value (Btu/h ft² °F)	0,48
Light Reflection (external)	8%

TECHNICAL DATA SHEET



GOVERNMENT BUILDING

MALTA

FAÇADE

AMORPHOUS SILICON TECHNOLOGY

BACK TO START

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

Onyx Solar's amorphous photovoltaic glass renovated the façade of the Frölunda Culture House in Gothenburg, Sweden, with its installation as a curtain wall solution.

The customization of the project was intricate: **over 60 different sizes of PV glass units** were designed and manufactured to conform to the exacting size and shape specifications of the existing building.

The project excels in insulation, representing a challenge that has been successfully overcome.

TECHNICAL DATA

Nominal Power (Wp/m²)	28 Wp/m²
Visible Light Transmittance (VLT)	30%
Solar Factor (g-value)	37%
U value (W/m²K)	0.70
U value (Btu/h ft² °F)	0,12
Light Reflection (external)	8%

TECHNICAL DATA SHEET

FRÖLUNDA KULTURHUS

GOTHENBURG, SWEDEN

FAÇADE

AMORPHOUS SILICON TECHNOLOGY

BACK TO START

BACK TO START ▲

PHOTOVOLTAIC FAÇADE

NEW CONSTRUCTION

Onyx Solar manufactured solar PV architectural laminated glass panels for this Exceldor's new plant that became the benchmark in the poultry further processing sector in Canada.

The use of the **see-through PV glass in the construction of this building allowed the professionals to favour an abundance of natural light** offering superior quality amenities and common areas for the front part of the plant where the offices and laboratories are located.

In addition the **glass incorporates a 16 mm air chamber to provide the thermal insulation required by the customer keeping in mind the weather conditions of Canada.**

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	20%
Solar Factor (g-value)	12%
U value (W/m²K)	1.6
U value (Btu/h ft² °F)	0,28
Light Reflection (external)	8%

PHOTOVOLTAIC FAÇADE

RENOVATION

This project combines cutting-edge photovoltaic technologies, integrating **crystalline silicon cells in DEEP BLUE shades and amorphous silicon glass in various transparencies.** The design features photovoltaic glass from Onyx Solar, carefully selected for their varying degrees of transparency and color to enhance both the visual and functional appeal of the building's spaces.

The project has installed an extensive photovoltaic **curtain wall, covering 853 m².** This wall is strategically oriented towards the south and partially to the east to maximize the penetration of natural light. It is not only aesthetically pleasing but also optimizes energy efficiency, creating a bright and welcoming atmosphere in the university's lobby while promoting environmental sustainability.

The inclusion of specialized glass that combines different levels of transparency with air-insulated chambers ensures exceptional thermal comfort and **effective insulation against the cold climate typical of Ávila.**

BACK TO START ▲

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UCAV LABS

UNIVERSITY AVILA, SPAIN

FAÇADE

CRYSTALLINE & AMORPHOUS SILICON TECHNOLOGY

UNIVERSIDAD CATÓLICA DE ÁVILA

JMI Obras

uXAMA FACHADAS SINGULARES

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

Novartis' 2,500 m² (26,900 SqFt) photovoltaic skylight was installed as a second skin at the new headquarters of the Novartis Pharmaceutical Company in New Jersey, USA. The project comprises **820 photovoltaic glass units**, each measuring on average 1,511 x 1,931 mm (4.95 x 6.33 ft).

The PV glass was manufactured using **perforated crystalline silicon solar cells**, which allow natural light to enter the building. This skylight is designed to open and close for maintenance purposes.

The total system size is 295 kWp, and it produces about 273,000 kWh per year. This output is **sufficient to power over 600 homes annually** and helps prevent the emission of nearly 185 tons of CO_2 into the atmosphere.

TECHNICAL DATA

Nominal Power (Wp/m²)	95 Wp/m²
Visible Light Transmittance (VLT)	20%
Solar Factor (g-value)	34%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

NOVARTIS

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BACK TO START ▲

NOVARTIS CAMPUS

NEW JERSEY, UNITED STATES

SKYLIGHT

CRYSTALLINE SILICON TECHNOLOGY

VIÑOLY

BACK TO START

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

The new eastern entrance of the FTX Arena features an impressive **30,000 SqFt** canopy that incorporates **14 circular skylights** made with crystalline silicon PV Glass from Onyx Solar. It is called the Xfinity plaza and creates a unique amusement space for all fans to enjoy.

A total of **300 photovoltaic glass panels** were manufactured for this project, which produce **35.000 kWh/year** and prevent the emission of 20 tons of CO_2 into the atmosphere.

The arena became the first sports and entertainment center in achieving LEED Gold certification.

TECHNICAL DATA

Nominal Power (Wp/m²)	100 Wp/m²
Visible Light Transmittance (VLT)	30%
Solar Factor (g-value)	34%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

MIAMI HEAT STADIUM

MIAMI, UNITED STATES

SKYLIGHT

CRYSTALLINE SILICON TECHNOLOGY

SEEN IN FOX SPORTS

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

Onyx Solar manufactured crystalline silicon insulating photovoltaic glass units to replace the **35 year old glazing atrium** of the Edmonton Conference Center in Canada.

The project involved **custom-engineering PV glass to fit the current metal structure, integrating 125 different glass types of different dimensions, shapes, and cell layouts.**

This upgrade allows the building to **generate an on-site 230,000** kWh per year which substantially reduces operational and maintenance costs while enhancing thermal insulation and letting in a large amount of sunlight.

The PV glass incorporates a **16 mm air chamber** to insulate the building and the **density of cells was totally customized to allow the entrance of a substantial amount of natural light.**

The atrium's lower section showcases a large circular area displaying a **poem in Morse code**. The layout of the solar cells was meticulously designed to form verses of the poem.

TECHNICAL DATA

Nominal Power (Wp/m²)	120 Wp/m²
Visible Light Transmittance (VLT)	42%
Solar Factor (g-value)	50%
U value (W/m²K)	1.30
U value (Btu/h ft² °F)	0,23
Light Reflection (external)	8%

TECHNICAL DATA SHEET

CANADIAN CONSULTING ENGINEERING AWARDS 2021 AWARD OF EXCELLENCE

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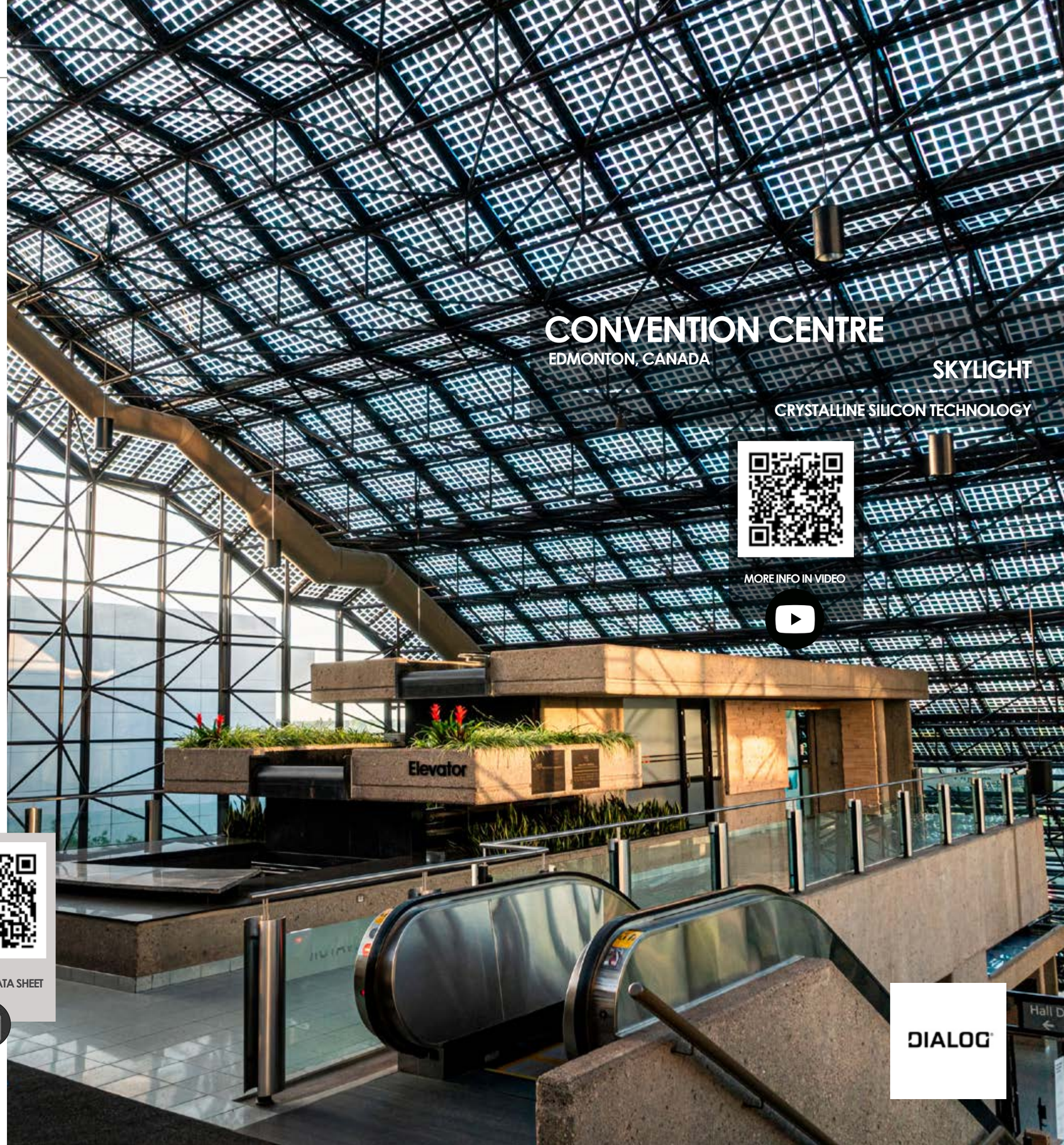


BACK TO START

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

The PV integration made in the NESR's Oilfield Research and Innovation Center in Dhahran Techno Valley in Saudi Arabia marks a significant step towards sustainable energy integration in buildings.

Featuring **an argon chamber**, the PV glass units offer **thermal insulation and energy efficiency**, ideal for Saudi Arabia's hot climate. This technology not only generates clean energy but also ensures **comfortable indoor temperatures**, enhancing the complex's sustainability.

The photovoltaic skylight produces about **135,000 kWh per year** and also contributes significantly to user's comfort as our glass **filters out ultraviolet and infrared radiation** while allowing natural light to pass through.

The skylight, with its unique **curved shape**, involved the fabrication of over **200 different glass shapes to meet the architect's requirements**. Additionally, the project includes a carport that provides shade to vehicles and generates 70,000 kWh per year, further contributing to the facility's sustainable energy goals.

TECHNICAL DATA

Nominal Power (Wp/m²)	138 Wp/m²
Visible Light Transmittance (VLT)	31%
Solar Factor (g-value)	25%
U value (W/m²K)	1.60
U value (Btu/h ft² °F)	0,21
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START

BACK TO START

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

Omeraki Restaurant owned by renowned chef and TV star **Alberto Chicote** installed Onyx Solar's **energy generating see-through architectural glass.**

The project integrates crystalline silicon photovoltaic glass with **47% VLT to allow a great amount of natural light** to pass through.

Each PV insulated glass unit is configured with 4T+4T mm glass and a **12 mm argon chamber** in order to achieve an outstanding thermal and sound insulation that is a must to ensure the comfort of the foodies that visit this restaurant located in the heart of Madrid to enjoy Chicote's food.

The **layout was custom-made to achieve also an optimized g-value (SHGC) and block the entrance of a good amount of heat.**

In other words we customized the PV glass to achieve the best possible balance between visible light transmittance, solar heat coefficient and nominal power for this iconic project.

TECHNICAL DATA

Nominal Power (Wp/m²)	104 Wp/m²
Visible Light Transmittance (VLT)	47%
Solar Factor (g-value)	50%
U value (W/m²K)	1.20
U value (Btu/h ft² °F)	0,20
Light Reflection (external)	8%

TECHNICAL DATA SHEET

onyx METZ

OMERAKI RESTAURANT

MADRID, SPAIN

SKYLIGHT

CRYSTALLINE SILICON TECHNOLOGY

OMERAKI

IN DESIGN WE TRUST - IDWT -

PHOTOVOLTAIC SKYLIGHT

RENOVATION

Onyx Solar's project for Malaga's Port Authority capitalizes on the city's high solar irradiance, a significant advantage given the region's abundant sunshine.

The installation of **crystalline silicon photovoltaic glass** in the Photovoltaic Skylight effectively harnesses this solar energy. The PV glass's dual functionality of **generating solar energy and allowing natural light to pass** through **is especially beneficial in Malaga's sunny climate.**

This skylight enhances the natural lighting within the building, thereby reducing the reliance on artificial lighting during daylight hours. The disposition of the solar cells was custom-made to achieve **the best balance between energy generation,** visible light transmittance and solar heat gain coefficient.

Onyx Solar provided **nine different types of glass for this project,** including shaped triangular units, demonstrating our capability to adapt our PV technology to any architectural design.

TECHNICAL DATA

Nominal Power (Wp/m²)	123 Wp/m²
Visible Light Transmittance (VLT)	39%
Solar Factor (g-value)	50%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

MALAGA´S PORT AUTHORITY

MALAGA, SPAIN

SKYLIGHT

CRYSTALLINE SILICON TECHNOLOGY

"The installation of the photovoltaic skylight allows us to **generate 19% of the energy needed by the building."**

Project Manager - Malaga Port's Authority

BACK TO START

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

Onyx Solar supplied its photovoltaic glass for this iconic skylight situated in Punggol Eco-Town, Singapore to **generate in-situ a significant amount of the energy** required by the building.

The installation comprises crystalline silicon PV glass with a **12 mm air chamber** for added **thermal insulation.** The PV glass panels have a **notable transparency degree**, allowing the entry of **abundant natural light**, which helps to reduce light consumption. At the same time they **block a significant amount of heat**, essential for reducing the use of air conditioning, without sacrificing the comfort of the visitors of this innovative shopping center located in Singapore where the weather is well know as extremely hot and humid.

The glass was, as usually, customized according to the customer's desires to achieve a perfect balance between **aesthetics**, **energy generation and energy efficiency**, culminating in a design that blends **high efficiency** with a visually appealing aesthetic.

TECHNICAL DATA

Nominal Power (Wp/m²)	126 Wp/m²
Visible Light Transmittance (VLT)	34%
Solar Factor (g-value)	40%
U value (W/m²K)	2.70
U value (Btu/h ft² °F)	0,48
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START ▲

onyx METZ

SHORE PLAZA II

PUNGGOL, SINGAPORE

SKYLIGHT

CRYSTALLINE SILICON TECHNOLOGY

WOHA

NORTHSHORE PLAZA

BACK TO START

PHOTOVOLTAIC SKYLIGHT

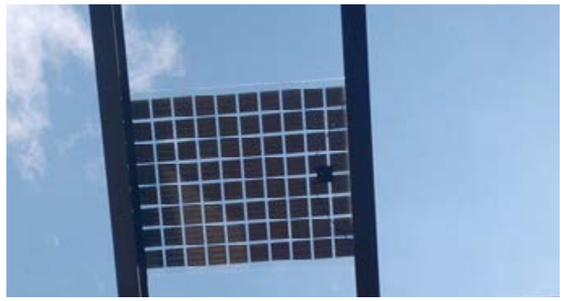
RENOVATION

The Lumen Shopping Center in Mexico City boasts a PV skylight, **covering 2,300 m² (24,700 SqFt).**

This **energy-generating sunshade structure manages direct solar radiation for a comfortable outdoor experience.**

Onyx Solar crafted **800 PV Glass units with crystalline silicon solar cells**. The system size amounts to 258 kWp, leveraging optimal sun exposure to generate over 347,000 kWh/year. This power supply keeps 19,800 light points active continuously while preventing the emission of 233 tons of CO_2 into the atmosphere annually.

The layout was tailor made for Lumen to create an energy generating lattice that **provide a comfortable shadow** to the customers meanwhile they do shopping, it also **allows the entrance of light** optimizing the mominal power of each square meter following the customer's desires.



TECHNICAL DATA

Nominal Power (Wp/m²)	128 Wp/m²
Visible Light Transmittance (VLT)	36%
Solar Factor (g-value)	29%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

onyx METZ

LUMEN SHOPPING CENTER

MEXICO CITY, MEXICO

SKYLIGHT

CRYSTALLINE SILICON TECHNOLOGY

MORE INFO IN VIDEO

lumen todo para crear

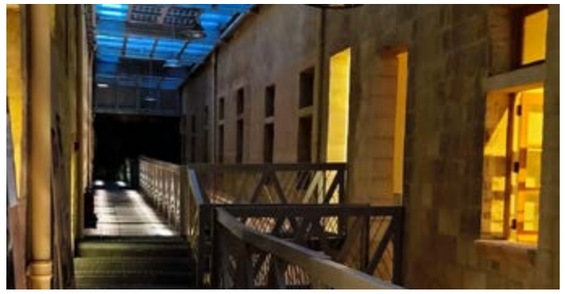
PHOTOVOLTAIC SKYLIGHT

RENOVATION

The Valletta Design Cluster within a historic XVII-century abattoir with the installation of Onyx Solar's **crystalline silicon photovoltaic glass** being particularly beneficial.

Given Malta's warm climate, the **12 mm air chamber and the low iron tempered glass frit in each glass** unit play a vital role in enhancing the building's thermal and acoustic insulation. This not only improves the comfort for visitors but also contributes to energy efficiency by reducing the need for artificial cooling.

The peak power of **126 Wp per glass** unit also indicates that the skylight is not just a passive element but actively contributes to the building's energy needs, aligning with the sustainable development goals of a **UNESCO World Heritage site**.



TECHNICAL DATA

Nominal Power (Wp/m²)	126 Wp/m²
Visible Light Transmittance (VLT)	34%
Solar Factor (g-value)	38%
U value (W/m²K)	2.70
U value (Btu/h ft² °F)	0,45
Light Reflection (external)	8%

TECHNICAL DATA SHEET

VALLETTA DESIGN CLUSTER

MALTA

SKYLIGHT

CRYSTALLINE SILICON TECHNOLOGY

BACK TO START

PHOTOVOLTAIC SKYLIGHT

RENOVATION

The Town Hall of Conil in Spain has undergone a transformative update, embracing modernity and sustainability through the incorporation of a **crystalline silicon photovoltaic skylight.**

This innovative PV glass features a double glazing unit configuration coupled with a **low-e coating**, enhancing the thermal insulation of the installation. Simultaneously, it introduces natural light into the building, offering an impressive average of **25% Light Transmission** (VLT).

With a total system size of **12.20 kWp**, this photovoltaic Skylight generates approximately **19,000 kWh/year.** This substantial output provides ample energy to power **1,100 LED** light-points for 8 hours each day, marking a significant stride towards sustainability for the Town Hall of Conil.

TECHNICAL DATA

Nominal Power (Wp/m²)	131 Wp/m²
Visible Light Transmittance (VLT)	25%
Solar Factor (g-value)	30%
U value (W/m²K)	2.70
U value (Btu/h ft² °F)	0,48
Light Reflection (external)	8%

TECHNICAL DATA SHEET

CONIL CITY HALL

CONIL, SPAIN

SKYLIGHT

CRYSTALLINE SILICON TECHNOLOGY

BACK TO START ▲

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

The **crystalline silicon PV glass** provided by Onyx Solar for the central atrium of Cuyahoga Community College's Western Campus STEM Center is key for its design, especially **considering the quiet environment needed** for a university in Ohio's varied climate.

This laminated, insulating glass offers **excellent thermal insulation and noise reduction**, essential for maintaining a conducive learning atmosphere. Its energy-generating capability, approximately 33,000 kWh/year, significantly meets the building's energy needs, contributing to the **STEM Center's LEED Gold Certification**.

TECHNICAL DATA

Nominal Power (Wp/m²)	128 Wp/m²
Visible Light Transmittance (VLT)	34%
Solar Factor (g-value)	40%
U value (W/m²K)	1.60
U value (Btu/h ft² °F)	0,21
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START

PHOTOVOLTAIC SKYLIGHT

RENOVATION

Onyx Solar **replaced the existing glass** envelope of the Kukullaga subway station in Bilbao **with solar photovoltaic glass**. This project involved installing double laminated safety glass panels in diamond shapes varying **across 35 different sizes.**

The original glass lacked adequate sun control properties and this deficiency resulted in discomfort for subway's users & workers due to high temperatures so the replacement was a must.

The installation of **crystalline silicon PV glass** solved this issue by eliminating the greenhouse effect without sacrificing the natural light entrance thanks to a **perfect balance between the g-value and visible light transmittance** that was achieved thanks to a cell density totally customized for this building that also allows the station to produce a great amount of solar energy on-site.

This upgrade not only enhances the energy efficiency of the station reducing drastically the consumption of air conditioning but also prioritizes the comfort and well-being of station travellers by mitigating the previous discomfort caused by excessive heat.

TECHNICAL DATA

Nominal Power (Wp/m²)	125 Wp/m²
Visible Light Transmittance (VLT)	43%
Solar Factor (g-value)	40%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

"To address the temperature problem we were experiencing at the station, we decided to make a change in the station's glazing. Instead of using conventional glass, we installed photovoltaic glass that not only allows light to pass through, but also generates electricity by taking advantage of solar radiation.
This change not only contributes to improving comfort on hot days, but also helps reduce the station's energy consumption, providing a more sustainable and efficient solution."

Project Manager - Metro Bilbao

METRO STATION

KUKULLAGA, BILBAO, SPAIN

SKYLIGHT

CRYSTALLINE SILICON TECHNOLOGY

BACK TO START

BACK TO START

PHOTOVOLTAIC SKYLIGHT

RENOVATION

The National Orchid Garden in Singapore selected Onyx Solar's technology to provide clean energy to this unique UNESCO World Heritage Site.

This photovoltaic skylight is composed by trapezoidal Insulated PV glass Units with **12 mm air chamber** to achieve the needed thermal insulation to keep an indoor optimal temperature to grow orchids. The glass selected was customized to reach **51% of Visible Light Transmittance and 40% SHGC (g-Value).**

Onyx Solar's involvement required fabricating **15 different glass dimensions and trapezoidal units** to accommodate the complex geometry of the existing metal frame.

TECHNICAL DATA

Nominal Power (Wp/m²)	81 Wp/m²
Visible Light Transmittance (VLT)	51%
Solar Factor (g-value)	40%
U value (W/m²K)	1.60
U value (Btu/h ft² °F)	0,28
Light Reflection (external)	8%

TECHNICAL DATA SHEET

PDF

NATIONAL ORCHID GARDEN

SINGAPORE

SKYLIGHT

CRYSTALLINE SILICON TECHNOLOGY

MORE INFO IN VIDEO

"The Cool House is designed to emulate a high elevation forest, which exists at altitudes of 1.000m to 2.000m, and with a surrounding temperature of 16°C to 23°C. Having in mind the extreme weather conditions of Singapore the selection of high performance glass with optimal passive properties was decisive."

Project Manager - Singapore Botanic Gardens

SINGAPORE BOTANIC GARDENS

UNESCO World Heritage

onyx

METZ

PHOTOVOLTAIC SKYLIGHT

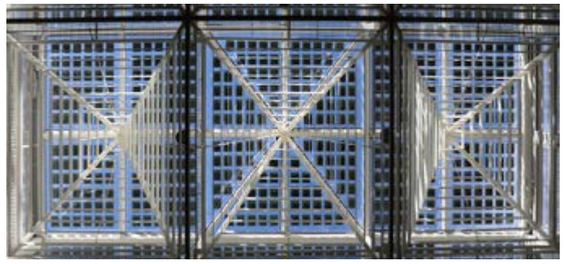
RENOVATION

This photovoltaic installation in Jaen involved **replacing the conventional glass** in the main building's atrium with photovoltaic glass. This historic **City Hall, constructed in the 19th Century,** holds significant cultural importance in Jaen, and the renovation project aimed to preserve its original architecture.

Onyx Solar was responsible for fabricating **rectangular** and **triangular** photovoltaic glass units using crystalline silicon solar cells, each tailored to fit the existing frame.

The PV glass setup included an air spacer with a low-e coating and strategically placed clear areas to optimize natural daylight within the atrium. This sustainable upgrade not only enhances energy production but also respects the historical significance and architectural integrity of the City Hall in Linares.

Moreover, the installation's Visible Light Transmittance (VLT) and solar heat gain coefficient (g-value) **are excellently suited** for **Jaen's warm climate**, ensuring a comfortable indoor environment while maximizing energy efficiency.



TECHNICAL DATA

Nominal Power (Wp/m²)	69 Wp/m²
Visible Light Transmittance (VLT)	60%
Solar Factor (g-value)	55%
U value (W/m²K)	1.60
U value (Btu/h ft² °F)	0,28
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START

LINARES CITY HALL

JAEN, SPAIN

SKYLIGHT

CRYSTALLINE SILICON TECHNOLOGY

PHOTOVOLTAIC SOLUTION

NEW CONSTRUCTION

The STEM Center at Anatolia College in Thessaloniki, Greece, has enhanced its facilities with a cutting-edge photovoltaic curtain wall and skylight, utilizing PV glass by Onyx Solar.

The newly designed building adheres to strict energy-efficiency standards, including on-site energy generation.

The Onyx Solar photovoltaic glass, crafted from crystalline silicon cells, features a **16 mm argon spacer and a low-e coating,** optimizing thermal performance.

The layout and cell density was totally customized to achieve the **desired balance between shadow, nominal power, visible light transmittance and solar heat gain coefficient.**

TECHNICAL DATA

Nominal Power (Wp/m²)	113 Wp/m²
Visible Light Transmittance (VLT)	41%
Solar Factor (g-value)	22%
U value (W/m²K)	1.10
U value (Btu/h ft² °F)	0,28
Light Reflection (external)	8%

ANATOLIA STEM CENTER

ANATOLIA COLLEGE, THESSALONIKI, GREECE

SKYLIGHT

CRYSTALLINE SILICON TECHNOLOGY

schema4

1886 ANATOLIA COLLEGE

onyx METZ

BACK TO START

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

Onyx Solar successfully completed a 2,900 m² project for the new industrial facility of **AVYNA** Cosmetics in Mexico.

The design of the manufactured PV glass was fully customized to achieve the objectives set by the client.

The PV glass installed in this enormous skylight allows the entrance of a large amount of natural light, which will enable AVYNA to **avoid the use of artificial light during the day**.

In addition, the chosen glass **filters a good part of the heat and harmful radiation** while, of course, allowing AVYNA to generate a large amount of renewable **energy on-site**.

TECHNICAL DATA

Nominal Power (Wp/m²)	107 Wp/sqm
Visible Light Transmittance (VLT)	38%
Solar Factor (g-value)	30%
U value (W/m²K)	5.4
U value (Btu/h ft² °F)	0,95
Light Reflection (external)	< 8%

BACK TO START ▲

onyx METZ.

PHOTOVOLTAIC SKYLIGHT

RENOVATION

Sam Kerr Football Center, in Perth, installed crystalline silicon photovoltaic glass manufactured by Onyx Solar in Spain. The glass design was **fully customized** according to the client's instructions and integrated as **glazed shade structures**.

The PV glass incorporates a high number of cells per square meter with the goal of **maximizing the amount of energy generated** per square meter and filtering the greatest amount of harmful radiation while allowing a significant amount of **natural light to enter.**

Department of
Local Government, Sport
and Cultural Industries
GOVERNMENT OF WESTERN AUSTRALIA

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BACK TO START ▲

STATE FOOTBALL CENTER

PERTH, AUSTRALIA

SKYLIGHT

CRYSTALLINE SILICON TECHNOLOGY

carabiner

BACK TO START ▲

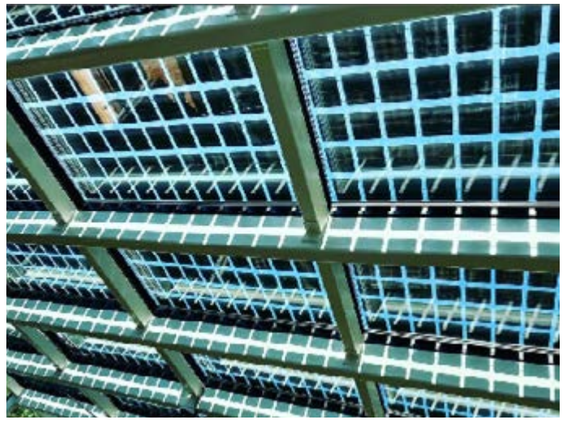
PHOTOVOLTAIC SKYLIGHT

UNDER CONSTRUCTION

Embarking on a revolutionary journey in urban development, **Cascada by Solterra** stands as a beacon of sustainability and luxury.

At the core of Cascada's design philosophy is its **LEED Platinum certification, a testament to its unwavering commitment to wellness and sustainability.**

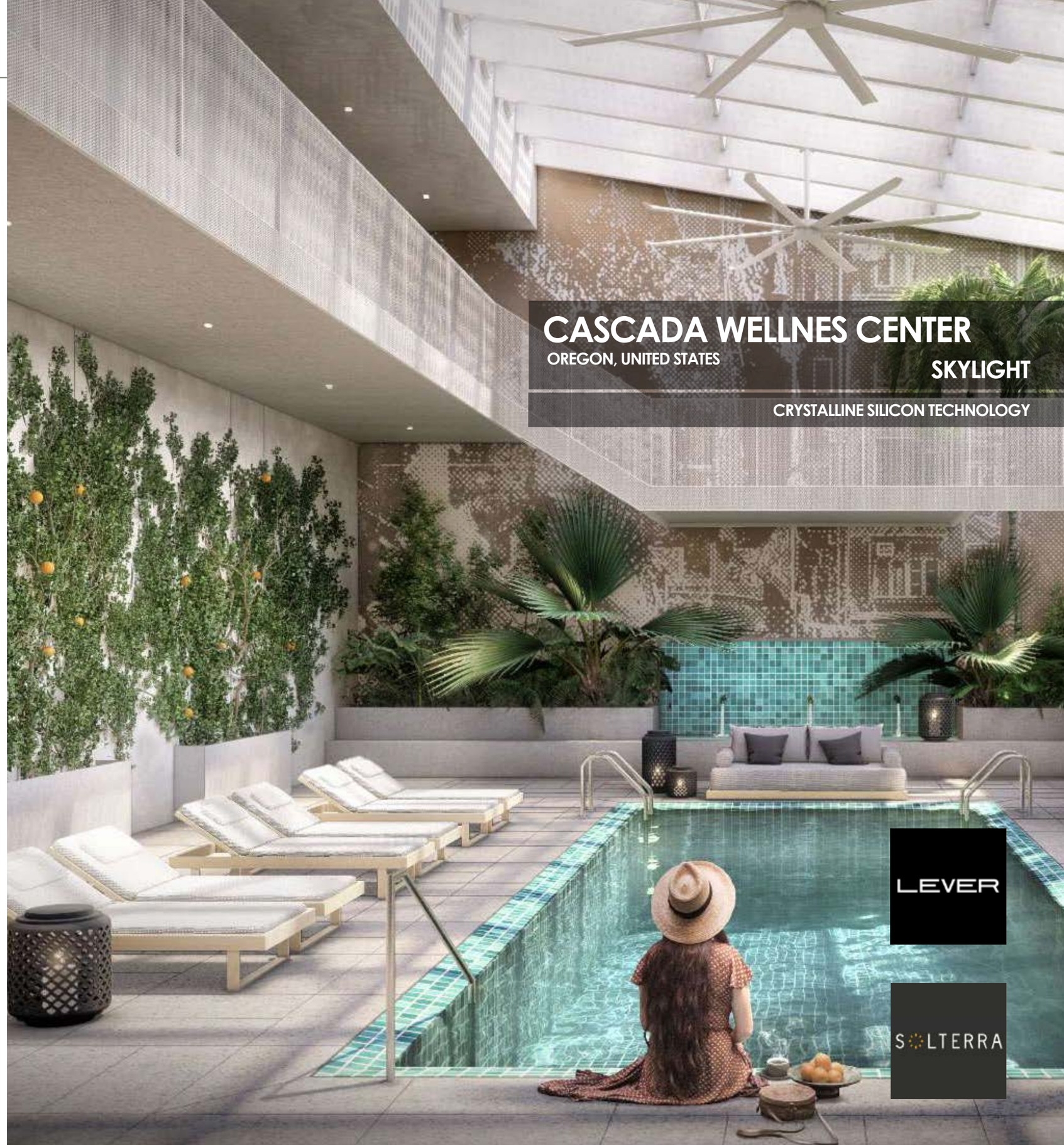
Onyx Solar supplied the custom-designed triple panel **PV IGU units made of crystalline silicon solar cells**, to cover the solarium of the building and the swimming pool. The PV glass offers a 27% visible light transmittance level and a U factor of 0.14 BTU, turning it into a **super-efficient building enclosure material, since it provides outstanding thermal insulation, balanced natural light, and clean, free electricity for the building.**



U.S. GREEN BUILDING COUNCIL
LEED PLATINUM
USGBC

onyx

METZ.



PHOTOVOLTAIC SKYLIGHT

RENOVATION

The photovoltaic glass installed in the Ancona court incorporates **5BB crystalline silicon** cells with an **acid etch finish**.

With the aim of providing optimal insulation, the glass includes a **16mm argon chamber**. In addition, the cell density chosen by the customer allows the glass to reach a nominal power of **131 Wp/m2** while allowing **natural light** to enter.

All this allows the building to save a significant amount of energy and reduce its carbon footprint without sacrificing the comfort of its users.

TECHNICAL DATA

Nominal Power (Wp/m²)	131 Wp/m²
Visible Light Transmittance (VLT)	23%
Solar Factor (g-value)	16%
U value (W/m²K)	1.70
U value (Btu/h ft² °F)	0,29
Light Reflection (external)	8%

TECHNICAL DATA SHEET

ANCONA COURT

ANCONA, ITALY

SKYLIGHT

CRYSTALLINE SILICON TECHNOLOGY

BACK TO START

PHOTOVOLTAIC SKYLIGHT

RENOVATION

The Mercado 2 de Maio, located in the heart of Viseu, is a **historic market** to **1879**. It has undergone several renovations over the years, with the most recent **introducing an innovative focus on sustainability.**

In this latest project, a **photovoltaic glass canopy** was incorporated, enhancing the market's modern aesthetic while also **generating clean energy** on-site. This **photovoltaic glass installation** harnesses sunlight to **produce electricity**, significantly improving the energy efficiency of the space while providing **shade and comfort** for visitors.

The integration of photovoltaic glass into the market's architecture underscores Viseu's commitment to sustainability and urban innovation, positioning Mercado 2 de Maio as a model of contemporary architecture that blends **history with renewable technology.**

Nominal Power (Wp/m²)	34 Wp/sqm
Visible Light Transmittance (VLT)	20%
Solar Factor (g-value)	32%
U value (W/m²K)	5.5
U value (Btu/h ft² °F)	0,98
Light Reflection (external)	8%

BACK TO START ▲

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MERCADO 2 DE MAIO

VISEU, PORTUGAL

SKYLIGHT

AMORPHOUS SILICON TECHNOLOGY

PHOTOVOLTAIC SKYLIGHT

RENOVATION

As part of the comprehensive revitalization former Bell Labs facility into the iconic mixed-use Metroburb in New Jersey, Onyx Solar provided 5,575 m^2 (60,000 SqFt) amorphous silicon photovoltaic architectural glass panes.

This installation facilitated the creation of the **largest photovoltaic skylight of its kind in the USA.**

The PV skylight both **naturally illuminates the complex while it generates free, clean electricity from the sun**. It currently offsets around 60 tons of annual CO_2 emissions, drastically improving the building's energy efficiency and reducing its carbon footprint.

Utilizing state-of-the-art technology, Bell Work's skylight features **24 different sizes of glass** to cover the multiple skylight opening of **Eero Saarinen-designed architectural gem.**

Each glass panel is comprised by amorphous silicon thin film photovoltaic active glass, laminated between two sheets of tempered glass.

The PV glass provides **exceptional light transmittance while simultaneously achieving an optimal solar heat gain coefficient,** enabling the building to **offset HVAC** requirements and maintain its distinctive design.

Originally constructed in 1962, the building is revered for its role in spurring the development of some of the world's foremost inventions and research concepts, including the first practical solar cell. Furthermore, it was home to seven Nobel Prize award winners

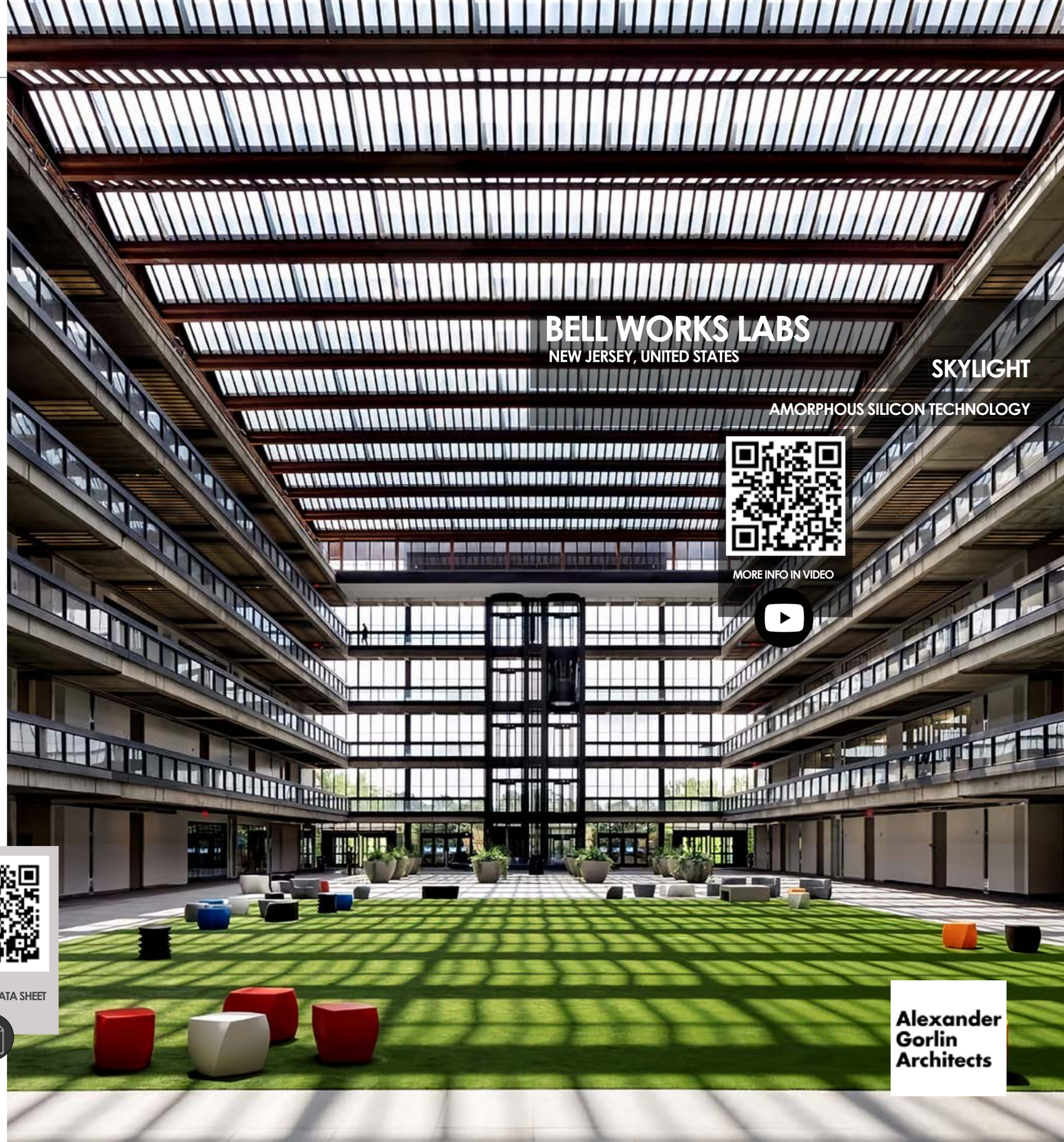
TECHNICAL DATA

Nominal Power (Wp/m^2)	34 Wp/m^2
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	32%
U value (W/m^2K)	N/A
U value ($Btu/h\ ft^2\ °F$)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

Bell Works

onyx METZ



BACK TO START

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

The **largest photovoltaic skylight in Africa** became a reality at the new I&M Bank headquarters in Nairobi, Kenya.

It is made up of 2.200 m^2 of amorphous silicon laminated PV glass panes with **varying degrees of transparency and various dimensions tailored** to meet the project's design requirements.

This PV skylight serves as a **natural light source that filters harmful radiation and heat** to ensure the comfort of the bank's employees and visitors.

On top of that the glass constitutes a **stable source of renewable energy** sufficient to illuminate more than **6.500 light points inside the building.**

All this contributes significantly to reducing the environmental impact associated with energy consumption.

TECHNICAL DATA

Nominal Power (Wp/m^2)	34 Wp/m^2
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	32%
U value (W/m^2K)	N/A
U value ($Btu/h\ ft^2\ °F$)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START

I&M BANK

NAIROBI, KENYA

SKYLIGHT

AMORPHOUS SILICON TECHNOLOGY

"This beautiful new building is a state of the art green design building, with integrated photovoltaic glass installation, one of a kind in East & Central Africa. The building is a Grade A office development with environmentally conscious design."

Gul Khan - CEO I&M Bank

BACK TO START ▲

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

Lucia building is an applied research center located at the University of Valladolid.

It won the distinction of being the **most sustainable building in Europe and the entire northern hemisphere in 2015** owing to its energy-efficient design and architectural ingenuity.

Two central photovoltaic atriums crafted from **see-through amorphous silicon PV laminated safety glass** allow the entrance of **natural light** into the building.

The PV glass was manufactured with a **low-e** coating and an **argon spacer**, significantly enhancing the building's thermal performance.

This building achieved **LEED Platinum** certification along with 5 leaves in Certification "Verde".

TECHNICAL DATA

Nominal Power (Wp/m²)	40 Wp/m²
Visible Light Transmittance (VLT)	10%
Solar Factor (g-value)	10%
U value (W/m²K)	1.60
U value (Btu/h ft² °F)	0,28
Light Reflection (external)	8%

TECHNICAL DATA SHEET

VALLADOLID UNIVERSITY

VALADOLID, SPAIN

SKYLIGHT

AMORPHOUS SILICON TECHNOLOGY

Universidad de Valladolid

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

A partnership between BioMed Realty, the University of California and the design team of Perkins-Will led to the award-winning Center for Novel Therapeutics (CNT).

The atrium allows the massive **entrance of natural light** inside the building and constitutes an important **source of clean energy.**

The insulated PV glass units installed incorporate a **12mm air chamber** that offers a great thermal insulation throughout the whole year reducing the need for heating and cooling.

U.S. GREEN BUILDING COUNCIL LEED GOLD USGBC

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	12%
U value (W/m²K)	1.60
U value (Btu/h ft² °F)	0,21
Light Reflection (external)	8%

TECHNICAL DATA SHEET

CENTER NOVEL THERAPEUTICS

UNIVERSITY OF CALIFORNIA, UNITED STATES

SKYLIGHT

AMORPHOUS SILICON TECHNOLOGY

"One of the more notable features of the CNT is the atrium. The atrium serves as a gathering place where people are encouraged to experiment, collaborate and share ideas of their on-going research and discoveries. **The atrium serves as the central lung for the building introducing generous amounts of daylight into the adjacent offices and meeting areas."**

Project Manager - Perkins+Will Architects

Perkins&Will

BioMed Realty Discover here.

Center for Novel Therapeutics SAN DIEGO

onyx METZ

BACK TO START

BACK TO START ▲

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

ING is one of the largest online banks of the world. They integrated a-Si photovoltaic glass panes in the central atrium located in their offices in Madrid.

This skylight is capable of generating a sufficient amount of energy to **feed over 700 light points** throughout the building. Thus preventing the **release of tons of CO_2** into the atmosphere.

Besides energy generation the PV glass panes supplied **filter harmful radiation and heat** while also allowing the **natural light to pass through to ensure the comfort** of workers and visitors.

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	32%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

onyx METZ

ING DIRECT BANK

MADRID, SPAIN

SKYLIGHT

AMORPHOUS SILICON TECHNOLOGY

"ING aims to put sustainability at the heart of what we do, defining new ways of doing business where the planet is just as important as economic growth. Our buildings and data centres align with the low-carbon economy of the future."

Steven van Rijswijk - CEO of ING Bank

ING DIRECT People in progress

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

This construction features a photovoltaic skylight made of **amorphous silicon photovoltaic glass**, uniquely shaped like a Holy Cross. It aids the church in reducing its operation and maintenance costs by generating energy and allowing **natural light to enter.** Covering an area of 617 m^2, the skylight is composed of amorphous silicon glass panes.

The installed PV glass enables the generation of clean energy, thereby preventing the release of nearly 21 tons of CO_2 into the atmosphere annually and also allows the entrance of natural light.

It camouflages itself perfectly, appearing as normal glass, **maintaining the aesthetic integrity of the building** while producing energy. This integration of renewable energy technology is a subtle yet powerful enhancement, aligning with environmental sustainability without compromising the building's appearance.

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	32%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

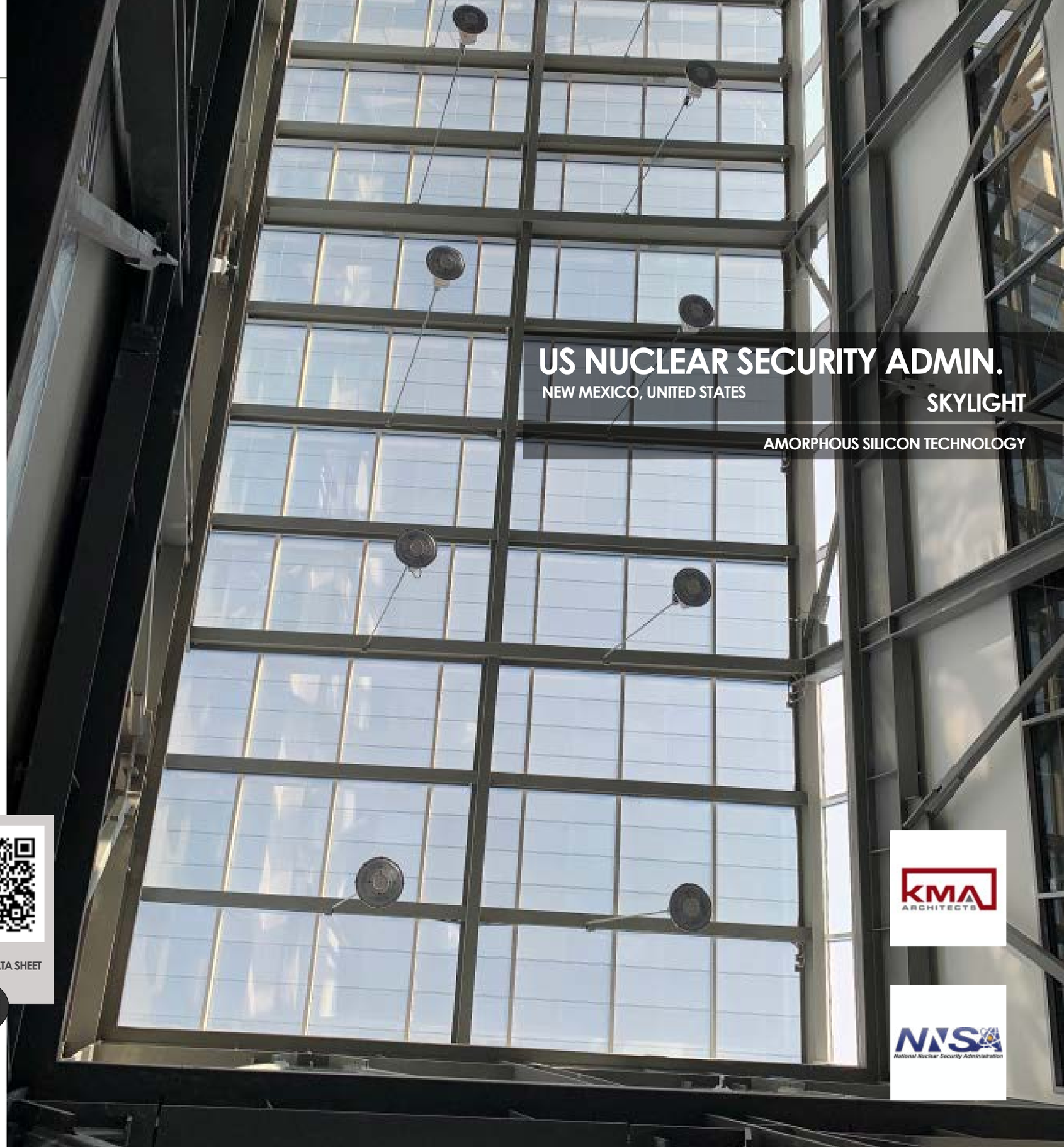
The US National Nuclear Security Administration (NNSA) complex in Albuquerque, New Mexico, shifted its focus **from nuclear to solar energy** by installing a photovoltaic glass atrium in its renovated facilities.

The client opted for **amorphous silicon insulating glass units**, facilitating natural light inside the building. To adapt to local heat conditions, the glass makeup included a **16 mm (31/50") Argon spacer and a low-e coating, optimizing the thermal performance of the PV glass.**

TECHNICAL DATA

Nominal Power (Wp/m²)	32 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	12%
U value (W/m²K)	1.35
U value (Btu/h ft² °F)	0,23
Light Reflection (external)	8%

TECHNICAL DATA SHEET



US NUCLEAR SECURITY ADMIN.

NEW MEXICO, UNITED STATES

SKYLIGHT

AMORPHOUS SILICON TECHNOLOGY

BACK TO START

PHOTOVOLTAIC SKYLIGHT

RENOVATION

The BIPV solution provided by Onyx Solar for Hôtel Lou Calen features **amorphous silicon energy generating glass with a 16 mm argon chamber** to achieve a great thermal and acoustic insulation.

The photovoltaic skylight features **red, blue, yellow, and green colored PV glass**. This innovative technology is produced in a **range of sizes, transparency levels, and colors,** evoking the style of Piet Mondrian's work.

Beyond their aesthetic appeal, **the colored glasses diffuse natural light in a way that creates intriguing shadows on surrounding surfaces, adding a dynamic interplay of light and shadow** throughout the day.

Hôtel Lou Calen is an eco-friendly resort in Cotignac, Provence-Alpes-Côte d'Azur.

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	12%
U value (W/m²K)	1.10
U value (Btu/h ft² °F)	0,19
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START ▲

HÔTEL LOU CALEN

COTIGNAC, FRANCE

SKYLIGHT

AMORPHOUS SILICON TECHNOLOGY

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

McLaren successfully delivered this development located in Chancery Lane for **DAR Consultancy Group**, now called **Sidara**. The new development unite over 1,000 members of staff in a single state-of-the-art workplace.

Sidara is home to seventeen leading specialist firms in the built environment, including **Dar, Perkins&Will, Currie & Brown, TYLin, and Penspen**. Its companies have worked on some of the most iconic and challenging projects where **the natural environment and humanity co-exist.**

Their office in London **placed sustainability at the core** of the design, designed to be energy efficient and adaptable to climate change with increased resilience from features such as the Onyx Solar's PV glass installed in the atrium.

Crafted with **amorphous silicon solar technology,** the PV glass produce clean on-site power and serves as a natural light source while filtering ultraviolet and infrared radiation.

TECHNICAL DATA

Nominal Power (Wp/m²)	40 Wp/m²
Visible Light Transmittance (VLT)	10%
Solar Factor (g-value)	12%
U value (W/m²K)	2.70
U value (Btu/h ft² °F)	0,48
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START ▲

onyx METZ

CHANCERY LANE

LONDON, UNITED KINDOM

SKYLIGHT

AMORPHOUS SILICON TECHNOLOGY

McLaren

Perkins&Will

dargroup

Sidara

PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

Onyx Solar, honored as an Official Partner of the European Commission for "Sustainable Power for Europe" following its installation of the photovoltaic skylight at the San Anton Market.

The skylight **features amorphous silicon photovoltaic glass**, which, despite its advanced functionality, **resembles regular glass**. This unassuming glass reduces the market's electricity bills, while simultaneously **enhancing natural light and indoor comfort.** Its ability to filter out 99% of UV and 95% of IR radiation makes it especially suitable for covered areas.

This sustainable feature of the market is not only a testament to Onyx Solar's innovative technology but also a significant contributor to environmental protection, **preventing 5 tons of CO_2 emissions annually.**

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	32%
U value (W/m²K)	2.70
U value (Btu/h ft² °F)	0,48
Light Reflection (external)	8%

TECHNICAL DATA SHEET

Official Partner

SAN ANTON MARKET

MADRID, SPAIN

SKYLIGHT

AMORPHOUS SILICON TECHNOLOGY

BACK TO START

PHOTOVOLTAIC SKYLIGHT

RENOVATION

The historic food market in Salamanca, Spain, underwent a remarkable **rehabilitation and historic preservation.**

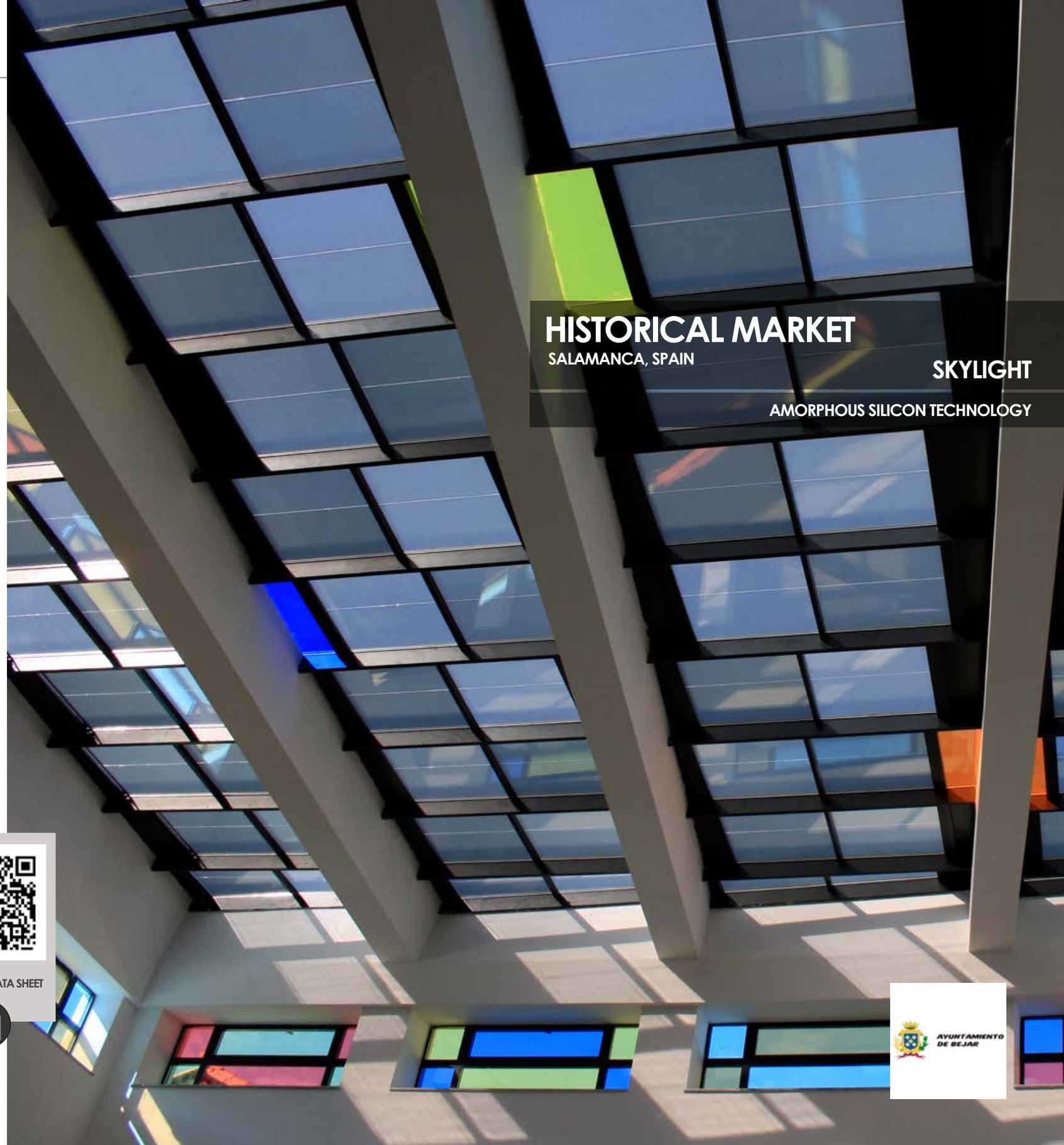
Onyx Solar replaced the old skylight in the interior courtyard with a **new photovoltaic skylight**. This innovative skylight combines three different levels of light transmittance using amorphous silicon glass: **10%, 20%, and 30%.**

The installed system prevents 6 tons of CO_2 emissions annually, marking a significant contribution to sustainability.

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	12%
U value (W/m²K)	2.70
U value (Btu/h ft² °F)	0,48
Light Reflection (external)	8%

TECHNICAL DATA SHEET



BACK TO START ▲

PHOTOVOLTAIC SKYLIGHT

RENOVATION

Originally erected in 1905 by architect Luis de Landecho **this historic building was totally refurbished** in 2022 by two titans: **Norman Foster** (Laureate of the Pritzker Prize) and **Acciona** (gobal leader in renewables and infraestructures).

Onyx Solar's was key in achieving Platinum LEED certification. We manufactured see-through PV insulating glass units of 4 x 2 meters.

These units, configured with 6+3+6 mm glass and a **16 mm argon chamber,** provide enhanced **thermal and acoustic insulation,** boasting an impressive U-value of 1. At the same time they allow the entrance of natural light, block the heat and produce free and clean energy thanks to the sun.

TECHNICAL DATA

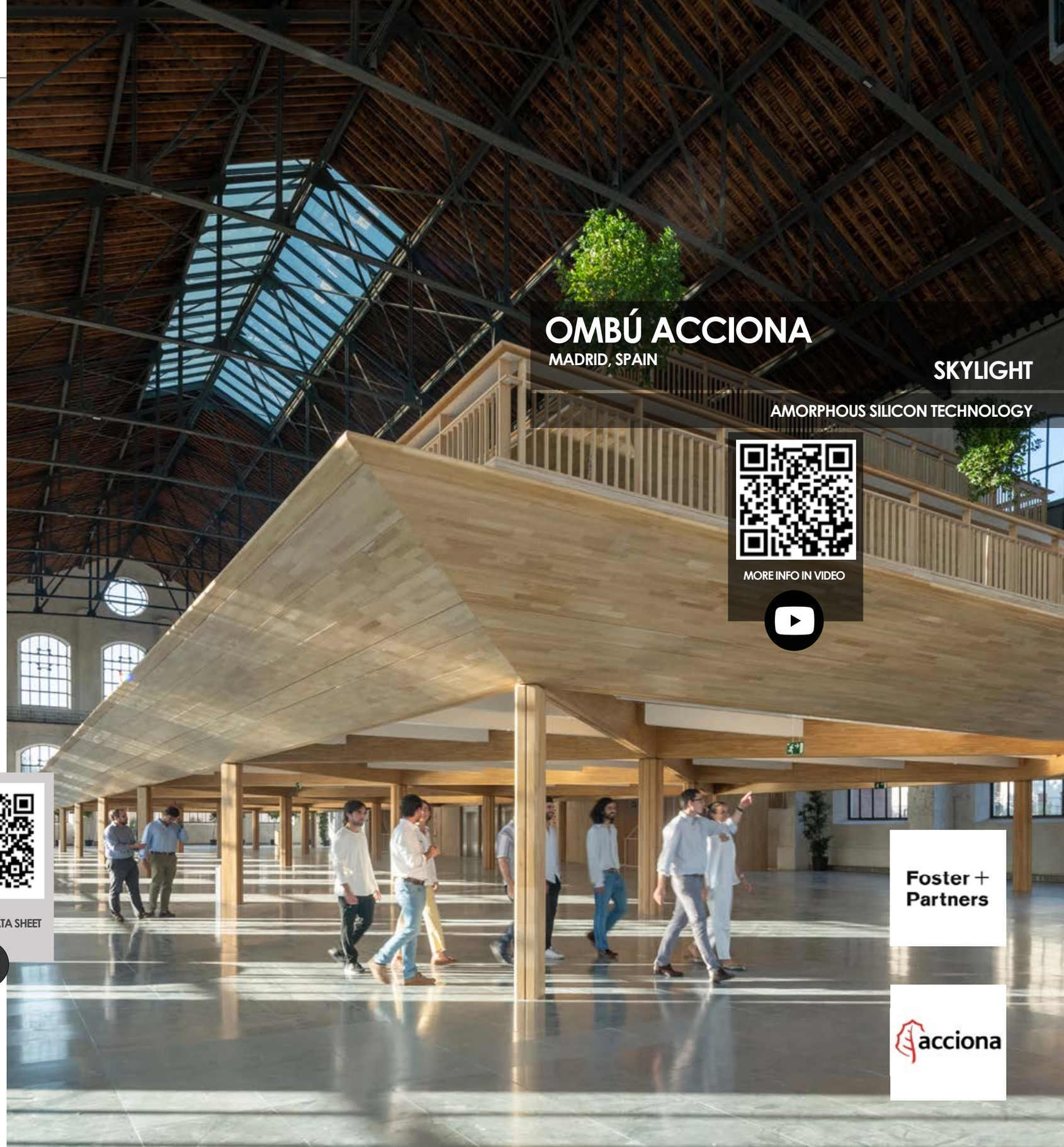
Nominal Power (Wp/m²)	40 Wp/m²
Visible Light Transmittance (VLT)	10%
Solar Factor (g-value)	29%
U value (W/m²K)	1.06
U value (Btu/h ft² °F)	0,18
Light Reflection (external)	8%

TECHNICAL DATA SHEET

U.S. GREEN BUILDING COUNCIL PLATINUM USGBC

onyx METZ

BACK TO START



PHOTOVOLTAIC SKYLIGHT

NEW CONSTRUCTION

Azurmendi is a **3 Michellin Star** restaurant that was awarded as the **Most Sustainable Restaurant in the World and obtained the LEED Gold Certification.**

They installed Onyx Solar's photovoltaic insulated glass units integrated within the curtain wall and skylight.

The glass installed is made of amorphous silicon solar cells and features a **semi-transparency degree of 20%.** This architectural choice promotes the **entrance of natural light meanwhile filters 99% and 95% of ultraviolet and infrared radiation**, thus preventing interior aging and ensuring comfort among the demanding foodies who decide to delight themselves with the food that comes out from chef Eneko's stoves.

TECHNICAL DATA

Nominal Power (Wp/m²)	40 Wp/m²
Visible Light Transmittance (VLT)	10%
Solar Factor (g-value)	28%
U value (W/m²K)	2.70
U value (Btu/h ft² °F)	0,47
Light Reflection (external)	8%

BACK TO START

AZURMENDI RESTAURANT

BILBAO, SPAIN

SKYLIGHT

AMORPHOUS SILICON TECHNOLOGY

Azurmendi was conceived and built with a priority on sustainability. The design of the building allows for a space where boundaries are broken and modern architecture blends with nature, penetrating the interior and extending onto the external roof, which houses the sustainability center.

Eneko Atxa - Owner Azurmendi

BACK TO START ▲

PHOTOVOLTAIC SKYLIGHT

RENOVATION

This building, which dates back to the **early 1900s**, originally functioned as a transhipment warehouse and served as a border station between Belgium and the Netherlands.

Now fully retrofitted, it stands as a center for sustainability.

Onyx Solar was crucial in the manufacturing of photovoltaic glass that was installed to rejuvenate the existing skylight.

The 750 m² (8,070 SqFt) skylight integrates 440 units of amorphous silicon PV glass boasting a **great capability to allow the entrance of natural light.**

The PV glass units manufactured incorporate **15mm argon chamber** to provide the insulation required by customer.

On top of this these insulated glass units (IGU) will generate **600 MWh of clean energy** and avert the emission of **400 tons of CO_2** into the atmosphere throughout their lifespan.

The glass **was custom-made to achieve the desired balance between nominal power, VLT and SHGC (g-value).**

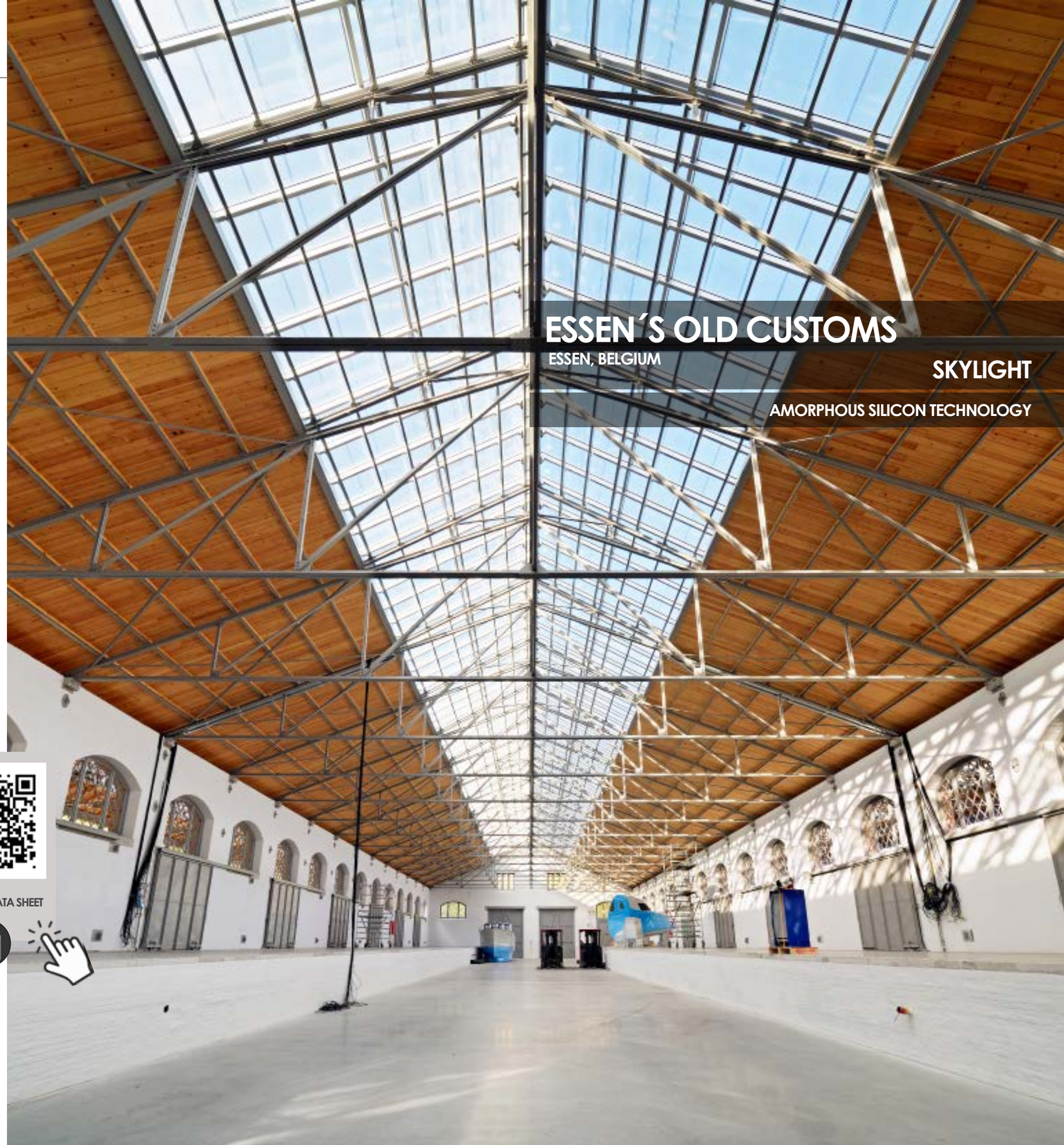
TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	12%
U value (W/m²K)	1.10
U value (Btu/h ft² °F)	0,19
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BUILT ENVIRONMENT cabe AWARDS 2020
Winners announced during first-ever CABE Round Table

onyx METZ



ESSEN´S OLD CUSTOMS

ESSEN, BELGIUM

SKYLIGHT

AMORPHOUS SILICON TECHNOLOGY

PHOTOVOLTAIC SKYLIGHT

RENOVATION

Eglon House, the former home of Tim Burton in London, integrated a **photovoltaic atrium on the building's upper floor.**

Eglon House's innovative **amorphous silicon photovoltaic atrium** not only invites a formidable amount of **natural light** to enter the space but **produce energy and filters harmful radiation and insulate the building.**

Each PV glass unit is manufactured with an **argon chamber** to drastically **improve the thermal and acoustic insulation.**

This atrium can presume of achieving **a perfect balance** among natural light entrance, insulation and energy production.

TECHNICAL DATA

Nominal Power (Wp/m²)	40 Wp/m²
Visible Light Transmittance (VLT)	10%
Solar Factor (g-value)	10%
U value (W/m²K)	1.00
U value (Btu/h ft² ºF)	0,18
Light Reflection (external)	8%

onyx METZ

BACK TO START

EGLON HOUSE

LONDON, UNITED KINGDOM

SKYLIGHT

AMORPHOUS SILICON TECHNOLOGY

THE MODERN HOUSE

CHASSAY + LAST ARCHITECTS

PHOTOVOLTAIC SKYLIGHT

RENOVATION

This hotel located in Porto's area has a rich historical background as a former convent. Through a **meticulous renovation**, the **original architecture and historical artifacts of the abbey were preserved**, maintaining the essence of the building's heritage.

Onyx Solar manufactured **amorphous silicon photovoltaic glass panes** for the project. A key feature of these panes is their efficient **U-value**, which is essential **for thermal insulation.** In a climate like Porto's, known for its diverse weather conditions, the ability to maintain a stable indoor temperature is crucial for guest comfort while also reducing energy costs associated with heating and cooling.

One of the most remarkable aspects of Onyx Solar's photovoltaic glass is that **it feels and looks like conventional architectural glass.** This characteristic allows the Neya Hotel to reap the benefits of modern solar technology without compromising the aesthetic integrity of the historic building.

TECHNICAL DATA

Nominal Power (Wp/m²)	47 Wp/m²
Visible Light Transmittance (VLT)	10%
Solar Factor (g-value)	10%
U value (W/m²K)	1.20
U value (Btu/h ft² °F)	0,21
Light Reflection (external)	8%

TECHNICAL DATA SHEET

NEYA HOTEL

PORTO, PORTUGAL

SKYLIGHT

AMORPHOUS SILICON TECHNOLOGY

BACK TO START ▲

PHOTOVOLTAIC SKYLIGHT

RENOVATION

Onyx Solar supplied photovoltaic glass for the **renovation of the existing atrium in the oldest church in Australia**, showcasing the seamless integration of historical preservation and modern technology.

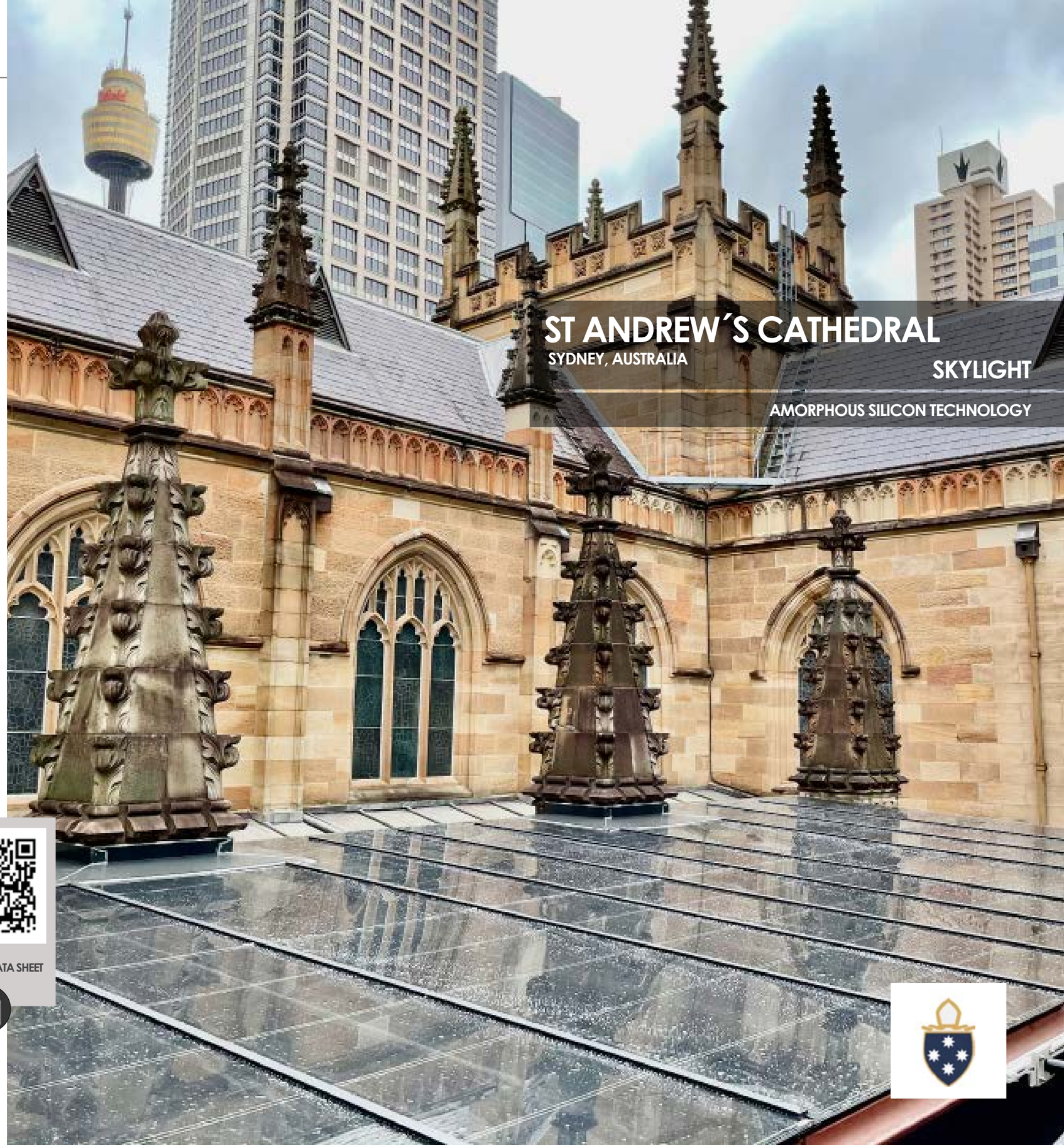
This allows the cathedral to retain its historical charm. The installation comprises custom-designed **amorphous silicon PV insulated glass units**, precisely tailored to fit the original frames of the atrium.

It also filters harmful radiation while allowing the entrance of natural light to this cathedral that was founded in 1819.

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	32%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET



BACK TO START

PHOTOVOLTAIC SKYLIGHT

RENOVATION

Onyx Solar significantly contributed to the **historic refurbishment of the emblematic Santa Clara's lighthouse** in San Sebastian, Spain. The installation of amorphous silicon PV glass for the new skylight marked a milestone groundbreaking integration of **photovoltaic technology into historical buildings.**

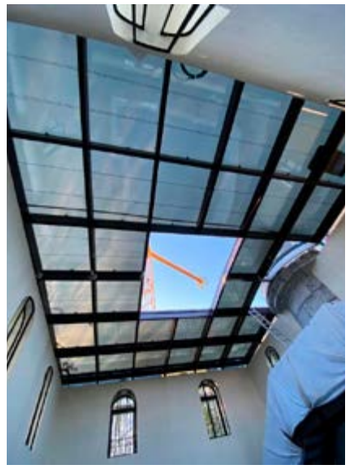
To enhance safety, an **anti-slip treatment** was applied to the exterior surfaces, enabling ease of access. These insulating PV glass units were designed with a **16 mm air spacer** to achieve the U-value required by the design team.

This lighthouse, that **was constructed in 1864** and it was recently **refurbished** to host a unique bronze sculpture of **Cristina Iglesias** aims to be transformed into a captivating tourism attraction.

TECHNICAL DATA

Nominal Power (Wp/m²)	40 Wp/m²
Visible Light Transmittance (VLT)	10%
Solar Factor (g-value)	14%
U value (W/m²K)	2.70
U value (Btu/h ft² °F)	0,48
Light Reflection (external)	8%

TECHNICAL DATA SHEET



BACK TO START

PHOTOVOLTAIC SKYLIGHT

RENOVATION

Onyx Solar participated in the **rehabilitation** of the historic building Le Petit Écho de la Mode in collaboration with **SPIE**.

Located in France, the building preserves the spirit of **Eiffel** with its metal structure, considered national heritage.

The photovoltaic skylight harnesses solar energy to generate electricity in a sustainable way. This not only reduces dependence on non-renewable energy sources, but also contributes to the **mitigation of the building's carbon footprint**, aligning with environmental and energy efficiency goals.

The semi-transparency of the glass allows the entry of natural light, creating a **brighter and more pleasant interior environment**.

This aspect is crucial as it improves the visitor experience, provides a more welcoming environment and **reduces the need for artificial lighting** during the day.

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	32%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

BACK TO START

LE PETIT ECHO DE LA MODE

BRITTANY, FRANCE

SKYLIGHT

AMORPHOUS SILICON TECHNOLOGY

BACK TO START

PHOTOVOLTAIC CANOPY

NEW CONSTRUCTION

McDonald's unveiled its groundbreaking Global Flagship on the west side of Disney's Theme Park in Florida, marking the establishment as McDonald's **first Zero-Energy Building in the country.** Onyx Solar played an important role in achieving sustainability goals with photovoltaic glass units installed on the outdoor dining patio canopy.

The **photovoltaic glass canopy** over the dining patio is particularly important in this context; it provides **critical shade**, reducing direct solar heat gain and **creating a cooler environment** underneath.

This feature is vital in a place like Florida, where intense sunlight can significantly increase temperatures. At the same time, the photovoltaic glass generates energy, contributing to the building's zero-energy goal and creating a sustainable, comfortable space for visitors.

TECHNICAL DATA

Nominal Power (Wp/m²)	118 Wp/m²
Visible Light Transmittance (VLT)	39%
Solar Factor (g-value)	42%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

PHOTOVOLTAIC CANOPY

NEW CONSTRUCTION

The **Healthpeak Callan Ridge Campus** in San Diego, California, now boasts an extraordinary architectural addition: a photovoltaic canopy from Onyx Solar, showcasing BIPV (Building Integrated PhotoVoltaics) solutions.

The canopy incorporates **crystalline silicon photovoltaic glass** in different sizes. Each glass module allows a light transmission between **27% to 30%**, effectively converting sunlight into clean and free energy.

Complementing the photovoltaic canopy, the project integrates multiple sustainable architectural features, including a green roof, solar panels, and a large canopy providing shading to reduce heat gain on south-facing glass surfaces.

TECHNICAL DATA

Nominal Power (Wp/m²)	135 Wp/m²
Visible Light Transmittance (VLT)	27%
Solar Factor (g-value)	31%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

CALLAN RIDGE
TORREY PINES SCIENCE PARK

onyx METZ

HEALTHPEAK CAMPUS

SAN DIEGO, UNITED STATES

CANOPY

CRYSTALLINE SILICON TECHNOLOGY

FPBA FERGUSON PAPE BALDWIN ARCHITECTS

Healthpeak PROPERTIES

BACK TO START

MICROSOFT

NAIROBI, KENYA

CANOPY

CRYSTALLINE SILICON TECHNOLOGY

AFRICA DEVELOPMENT CENTER

The Africa Development Center, housed within Dunhill Towers, represents **Microsoft's** inaugural engineering offices in Africa. Its rooftop embodies a dual function, **harnessing solar energy to generate clean electricity while allowing natural light to permeate through**. This photovoltaic glass not only produces free power but also **shields against harmful UV and IR radiation,** ensuring a safer and more comfortable environment for Microsoft's employees who utilize this space for breaks and relaxation.

Comprising **crystalline silicon photovoltaic glass**, the installation boasts a peak power output of 27.20 KWp and features **a transparency degree** exceeding **23%**.

TECHNICAL DATA

Nominal Power (Wp/m²)	155 Wp/m²
Visible Light Transmittance (VLT)	23%
Solar Factor (g-value)	29%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

Microsoft

PHOTOVOLTAIC CANOPY

NEW CONSTRUCTION

The new Terminal A at Newark Liberty International Airport is set to **replace the existing terminal with a cutting-edge,** 1 million-square-foot structure featuring 33 gates dedicated to domestic flights.

The terminal's crystalline silicon photovoltaic glass canopy boasts a power output of each glass panel in this system varies, ranging from 228 watts per unit to 381 watts per unit.

Comprising **540 photovoltaic glasses available in various sizes**, such as 2,134 x 1,677 mm and 2,286 x 1,677 mm, this system is a testament to adaptable solar energy solutions.

The PV glasses, featuring a heat-soak tested **10T+10T mm glass configuration**, are designed for both durability and efficiency. Moreover, **they provide a 60% transparency degree,** striking a balance between **energy generation and natural light transmittance.**

TECHNICAL DATA

Nominal Power (Wp/m²)	82 Wp/m²
Visible Light Transmittance (VLT)	60%
Solar Factor (g-value)	N/A
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START ▲

onyx METZ

BACK TO START

PHOTOVOLTAIC CANOPY

RENOVATION

The **refurbishment** of Union City's high-speed multimodal station near San Francisco included a drop-off canopy incorporating Onyx Solar's crystalline silicon photovoltaic glass.

This canopy structure utilized nearly **800 pieces** of laminated safety glass, each consisting of 5/16" over 5/16" fully tempered glass. The PV glass panels, sized at 1,805 mm x 1,137 mm (5.92 x 3.73 Ft), generating up to **172 Watt/unit**, generating **175,000 kWh/year**.

To enhance the interior aesthetics, **the glass features a white color ceramic frit** on surface that partially conceals the solar cell screen print on its reverse side.

TECHNICAL DATA

Nominal Power (Wp/m²)	140 Wp/m²
Visible Light Transmittance (VLT)	25%
Solar Factor (g-value)	20%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

onyx METZ

BART STATION

UNION CITY, CALIFORNIA, UNITED STATES

CANOPY

CRYSTALLINE SILICON TECHNOLOGY

MORE INFO IN VIDEO

ROMA COLLABORATIVE

BART ba

PHOTOVOLTAIC CANOPY

RENOVATION

Representing one of the globe's largest and most advanced centers for digital printing technology in HP's new 3D Research and Development Center in Barcelona, Spain, the project involves a **photovoltaic canopy** crafted from **high-density solar cell glass.**

This design not only **offers shade** but also maximizes **energy generation capacity**. Each PV glass panel measures approximately **2,890 x 730 mm**, covering a total area of **1,000 m²**.

The cumulative system size amounted to **138 kWp**, allowing the client to offset a substantial portion of its daily energy consumption through sustainable energy generation.

TECHNICAL DATA

Nominal Power (Wp/m²)	129 Wp/m²
Visible Light Transmittance (VLT)	33%
Solar Factor (g-value)	40%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START

BACK TO START

PHOTOVOLTAIC CANOPY

RENOVATION

The Old Coal Loader in North Sydney undergone a transformation into an **innovative center for sustainability** featuring an installation of photovoltaic laminated safety glass with **crystalline** cells that was customized to be installed using a spider fitting system.

Each glass panel boasts a nominal power output of **626 Wp/ unit.** These frameless PV glass units provide clean energy and shade for visitors to the center.

TECHNICAL DATA

Nominal Power (Wp/m²)	111 Wp/m²
Visible Light Transmittance (VLT)	42%
Solar Factor (g-value)	43%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

CENTRE FOR SUSTAINABILITY

SYDNEY, AUSTRALIA

CANOPY

CRYSTALLINE SILICON TECHNOLOGY

"The centre **showcases innovation and best practice** and facilitates hands-on learning about sustainability in everyday life."

David Banbury - Architect - North Sydney Council

BACK TO START

PHOTOVOLTAIC CANOPY

NEW CONSTRUCTION

This photovoltaic canopy, spanning nearly 600 square meters (6,458 square feet), stands at the entrance of the Mohammed VI Polytechnic University.

This innovative structure offers a **shaded pathway between buildings**, providing a much-needed respite from the scorching temperatures often experienced in Morocco. Creating this canopy presented a manufacturing challenge for Onyx Solar due to its size and the required efficiency.

Custom engineered PV glass panes, each boasting 144 crystalline silicon solar cells, were essential, resulting in 626 Watt/unit rating.

The canopy **generates 135.000 kWh/year** of renewable energy while curbing CO_2 emissions by 100 tons annually.

Architects Ricardo Bofill and Elie Mouyal blended modern design with the traditional Arab latticework, **preserving the architectural heritage of the region.**

TECHNICAL DATA

Nominal Power (Wp/m²)	147 Wp/m²
Visible Light Transmittance (VLT)	22%
Solar Factor (g-value)	25%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

UM6P

onyx METZ

MOHAMMED VI UNIVERSITY

BEN GUERIR, MOROCCO

CANOPY

CRYSTALLINE SILICON TECHNOLOGY

RBTA

JACOBS

PHOTOVOLTAIC CANOPY

RENOVATION

Thanks to Onyx Solar's PV glass, **this station located in Australia** runs on solar power during daytime providing a clean energy supply.

In addition the photovoltaic glass serves to **filter harmful UV and IR rays**, improving the overall passenger experience and creating an aesthetic mosaic pattern throughout the station.

The **cell density was customized** following customer's requirements to achieve the **best balance between energy generation, visible light transmittance and solar heat gain coefficient.**

Through this modernization initiative, the station was transformed into a beautiful and contemporary facility that emphasizes sustainability along with aesthetic appeal.

TECHNICAL DATA

Nominal Power (Wp/m²)	142 Wp/m²
Visible Light Transmittance (VLT)	26%
Solar Factor (g-value)	30%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

RAILWAY CENTRAL STATION

SYDNEY, AUSTRALIA

CANOPY

CRYSTALLINE SILICON TECHNOLOGY

BACK TO START

PHOTOVOLTAIC CANOPY

RENOVATION

Onyx Solar actively participated in the transformation of this park by providing **energy generating glass** for the installation of a photovoltaic canopy that works like a shaded walkway area offering a pleasant experience for visitors.

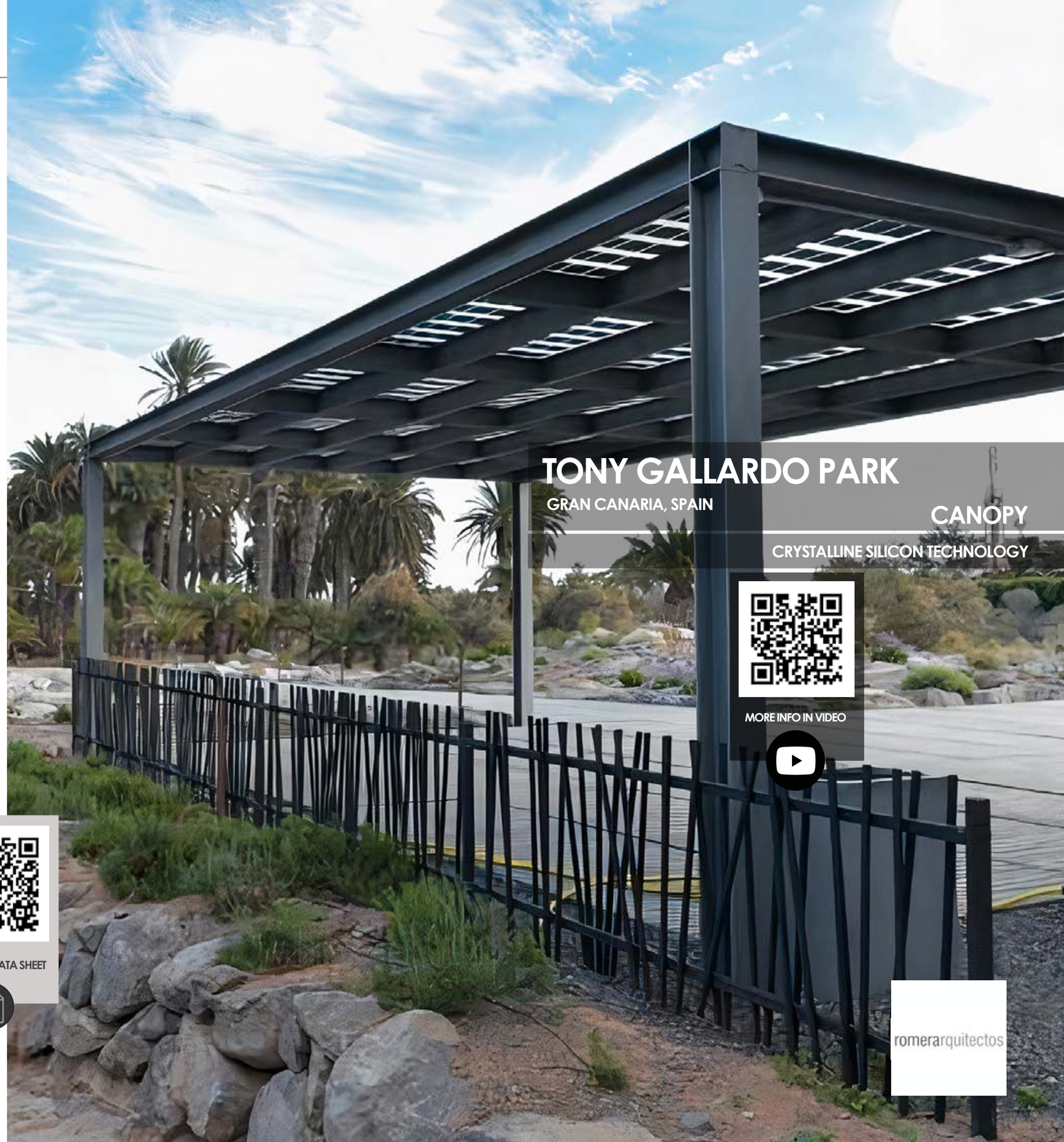
The **cell density design was customized to achieve the best balance between nominal power, visible light transmittance and solar heat gain coefficient.**

The aim stated by our customer is to optimize resources as much as possible, in favor of minimal maintenance and a reduction in energy consumption.

TECHNICAL DATA

Nominal Power (Wp/m²)	109 Wp/m²
Visible Light Transmittance (VLT)	43%
Solar Factor (g-value)	45%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET



BACK TO START

PHOTOVOLTAIC CANOPY

NEW CONSTRUCTION

The headquarters of CompuTech in Florida feature a cantilevered canopy that surrounds the building's roof.

This project includes a photovoltaic (PV) canopy made of crystalline silicon **laminated safety glass**, which is not only aesthetically pleasing but also provides a highly efficient source of clean and free energy. Such a capability is particularly important for companies like CompuTech, aligning with their commitment to sustainability, technology, and innovation.

TECHNICAL DATA

Nominal Power (Wp/m²)	114 Wp/m²
Visible Light Transmittance (VLT)	39%
Solar Factor (g-value)	40%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

AIA 2018 Award

onyx METZ

COMPUTECH CITY

ORLANDO, UNITED STATES

CANOPY

CRYSTALLINE SILICON TECHNOLOGY

HGA

CompuTech City "City With Solutions" Billed Right "Where we Bill Right"

BACK TO START

PHOTOVOLTAIC CANOPY

RENOVATION

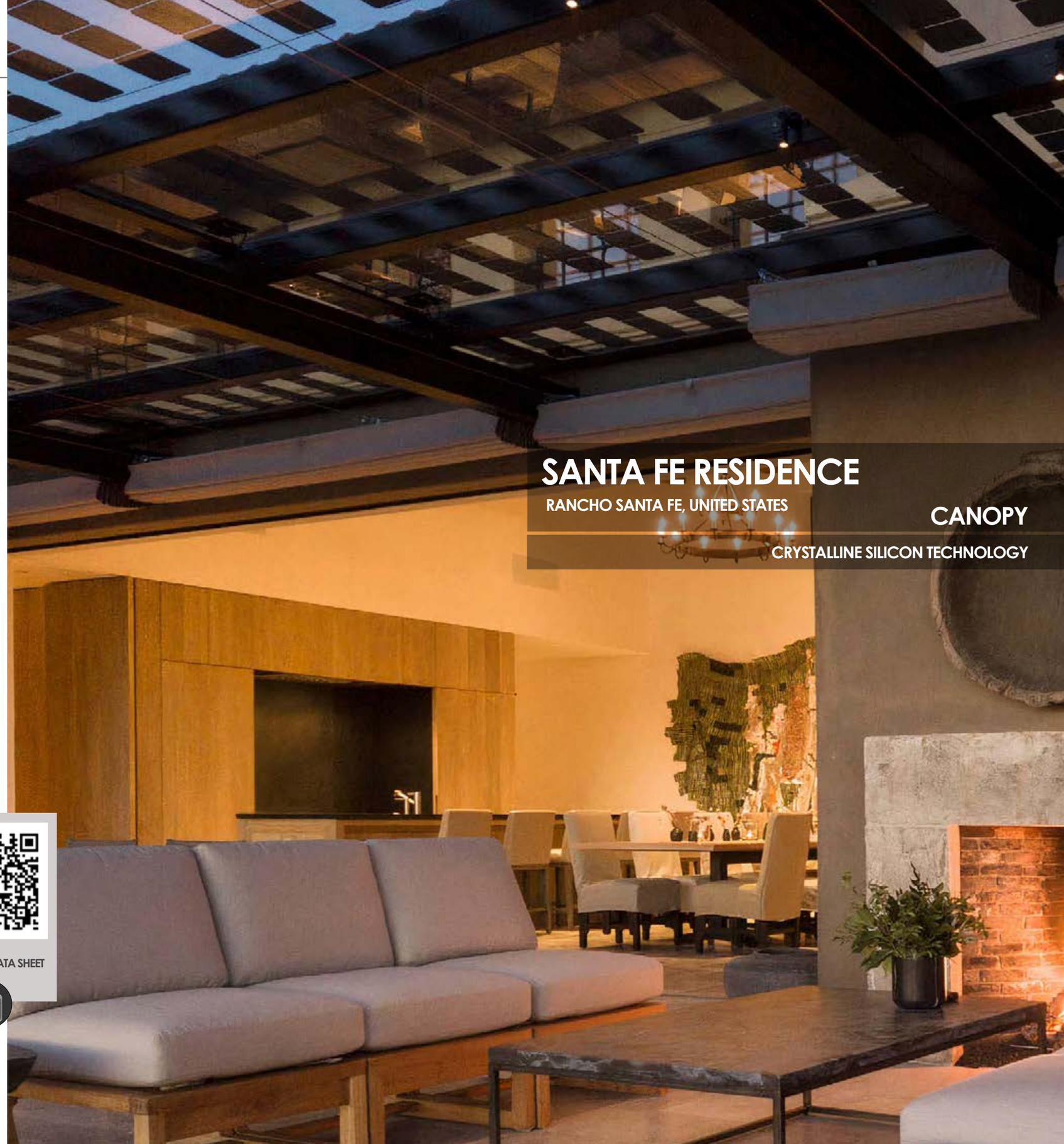
The terrace of this luxurious residence in California now boasts the innovative addition of Onyx Solar PV glass as part of a canopy crafted from crystalline silicon that serves a dual purpose by offering shade and generating clean power for the owners of this sophisticated property.

The crystalline **cells layout was totally customized according to the customer's needs in order to let natural light to pass through and block a huge amount of heat meanwhile clean energy is produced to feed the property needs.**

TECHNICAL DATA

Nominal Power (Wp/m²)	84 Wp/m²
Visible Light Transmittance (VLT)	57%
Solar Factor (g-value)	65%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET



BACK TO START

PHOTOVOLTAIC CANOPY

NEW CONSTRUCTION

This project is located in King Abdullah University for Science and Technology (KAUST) near Jeddah in **Saudi Arabia.**

Each student's house pursues excellence in all areas related to environmental impact and user's experience. As part of this strategy the University decided to install photovoltaic canopies made of **crystalline silicon PV laminated glass** manufactured by Onyx Solar.

These canopies offer **shelter and shade to students while generating clean, renewable energy on-site.** The cell density was customized following customer's requirements to **filter a good amount of heat** something strategic in this location.

This innovative and sustainable design helped the KAUST campus earn the **LEED Platinum certification** from the U.S. Green Building Council, making it Saudi Arabia's first LEED-certified project.

TECHNICAL DATA

Nominal Power (Wp/m²)	113 Wp/m²
Visible Light Transmittance (VLT)	39%
Solar Factor (g-value)	40%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

LEED PLATINUM 2014

onyx METZ

KAUST UNIVERSITY VILLAS

JEDDAH, SAUDI ARABIA

CANOPY

CRYSTALLINE SILICON TECHNOLOGY

"KAUST outstanding efficiency is achieved through a combination of the most advanced techniques including the highest levels of insulation in all enveloping and a photovoltaic on-grid system with optimum levels of energy production."

Project Manager - US Green Building Council

KAUST

BACK TO START

BACK TO START ▲

PHOTOVOLTAIC CANOPY

NEW CONSTRUCTION

Onyx Solar has supplied crystalline silicon photovoltaic glass that has been installed as a photovoltaic canopy system in Plaza Ciudad de Brujas, a well know square located in the city centre of Valencia, in Spain.

The solar PV installation harvest the sun from *safety laminated glass* panels which were **customized** in size, shape and **cell density** to reach a Nominal Power of 131 Wp and block a good amount of harmful radiation and heat.

Now tourists and citizens of Valencia can enjoy shadow meanwhile the energy produced **feed the electric cars situated in the parking below.**

TECHNICAL DATA

Nominal Power (Wp/m²)	131 Wp/m²
Visible Light Transmittance (VLT)	32%
Solar Factor (g-value)	35%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

onyx METZ

PLAZA CIUDAD DE BRUJAS

VALENCIA, SPAIN

CANOPY

CRYSTALLINE SILICON TECHNOLOGY

AJUNTAMENT DE VALÈNCIA

PHOTOVOLTAIC CANOPY

NEW CONSTRUCTION

Yahoo´s founder trusted Onyx Solar to build a photovoltaic canopy of 3.500 SqFt in his private residence in Hawaii. This photovoltaic canopy efficiently harness the abundant Hawaii´s solar radiation, providing a reliable and sustainable source of electricity.

The project, one of the first ones Onyx completed in the USA back in 2010, has been **up-and-running for over a decade**, producing clean, free power to the owner of the building.

The PV glass was made with an inboard dot-pattern ceramic frit that enhanced the aesthetics of the product while improving its shading capabilities.

The installed canopy is capable of generating enough power to power the **3.300 lights in the building and avoid the emission of 38 tons of CO_2** into the atmosphere.

TECHNICAL DATA

Nominal Power (Wp/m²)	106 Wp/m²
Visible Light Transmittance (VLT)	32%
Solar Factor (g-value)	35%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

onyx METZ

BACK TO START ▲

YAHOO

HAWAII, UNITED STATES

CANOPY

CRYSTALLINE SILICON TECHNOLOGY

LundbergDesign

yahoo!

BACK TO START ▲

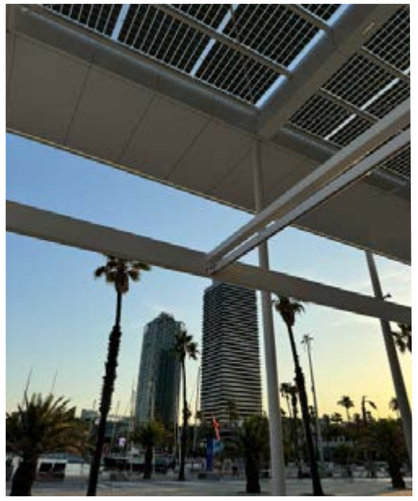
PHOTOVOLTAIC CANOPY

NEW CONSTRUCTION

Barcelona City Council, alongside **Barcelona de Serveis Municipals, Barcelona Regional,** and **ORDEIC**, has renovated **24,000 m²** at Port Olímpic. This major project revitalizes the area to enhance training facilities, aquatic sports, and attract entrepreneurs focused on innovation and the circular economy. In anticipation of the **America's Cup 2024**, the redevelopment will improve connectivity with its surroundings, stimulate maritime economic activity, and reinforce its commitment to the community.

OnyxSolar has installed **2,579 m²** of **solar canopies** featuring **1,194 photovoltaic panels**. Each panel provides **344 Wp of power** and **18% light transmission**, achieving a total of **410 kWp in renewable energy** and enhancing comfort on the terraces.

Our panels, with **6 mm double glazing** and an **acid-treated interior**, ensure efficient **light transmission** and effective **shadow diffusion**. Designed specifically for the project, they guarantee uniform cell distribution and precise adaptation to the space. The installation, carried out in collaboration with **COPCISA** and **ACCIONA**, was meticulously aligned withthe project specifications, ensuring seamless integration with the existing structures.



TECHNICAL DATA

Potencia Nominal (Wp/m²)	159 Wp/m²
Transmisión de Luz Visible (VLT)	18%
Factor Solar (valor g)	31%
Valor U (W/m²K)	N/A
Valor U (Btu/h ft² ºF)	N/A
Índice de reflexión(externo)	8%

onyx

METZ.

OLIMPIC PORT

BARCELONA, SPAIN

CANOPY

CRYSTALLINE SILICON TECHNOLOGY

acciona

37TH AMERICA'S CUP LOUIS VUITTON

copcisa

BACK TO START ▲

PHOTOVOLTAIC CANOPY

NEW CONSTRUCTION

Onyx Solar Energy S.L. has partnered with Ajax Building Company, Architectural Glass Services, QCfacades, and Jacobs to develop the new 24-acre campus, "The Reliable One," for Orlando Utilities Commission (OUC - The Reliable One) in St. Cloud, Florida. This facility is designed to achieve net-zero emissions through conservation, sustainable design, and the use of on-site renewable energy.

Our photovoltaic glass has been integrated into wall claddings, skylights, and canopies throughout the campus, transforming these elements into energy-generating structures. This project underscores OUC's commitment to reducing carbon emissions and promoting sustainability.

TECHNICAL DATA

Potencia Nominal (Wp/m²)	84 Wp/m²
Transmisión de Luz Visible (VLT)	16.3 %
Factor Solar (valor g)	32 %
Valor U (W/m²K)	N/A
Valor U (Btu/h ft² ºF)	0.28
Índice de reflexión(externo)	8%

TECHNICAL DATA SHEET

onyx

METZ.

ORLANDO UTILITIES COMMISSION

ORLANDO, UNITED STATES

CANOPY

CRYSTALLINE SILICON TECHNOLOGY

OUC The Reliable One

PHOTOVOLTAIC CANOPY

NEW CONSTRUCTION

Tanjon Pagar is Singapore's tallest building. It is an architectural marvel designed by SOM and built by Samsung that embodies **sustainability at its core.**

The huge photovoltaic canopy, spanning over **2.600 m² at the building's main entrance** was built with more than **850 units of amorphous silicon PV glass** to generate energy in-situ and filter harmful radiation to provide shade and comfort to its visitors. The incorporation of photovoltaic glass was vital for the tower's achievement of Greenmark and Platinum LEED certifications.

The canopy generates enough energy to the power over **7.000 light-points within the building**. In Singapore's climate, known for its heat and high humidity, BIPV solutions are of crucial importance to achieve energy efficiency and comfort.

TECHNICAL DATA

Nominal Power (Wp/m²)	40 Wp/m²
Visible Light Transmittance (VLT)	10%
Solar Factor (g-value)	29%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

TANJONG PAGAR

SINGAPORE

CANOPY

AMORPHOUS SILICON TECHNOLOGY

"Confronting the climate crisis requires meaningful collaboration and new ways of working. For decades, SOM has developed innovative strategies to reduce the carbon impact of the buildings we design."

Kent Jackson - Design Partner SOM

SOM

SAMSUNG

BACK TO START

PHOTOVOLTAIC CANOPY

RENOVATION

Onyx Solar was engaged by the design team to supply amorphous silicon photovoltaic glass units for the rehabilitation of this private house's roof. **The roof used to be a conventional, solid one with conventional PV panels on top. Its design prevented the owners from enjoying expansive views** to the bay area and therefore, they decided to move forward with a glazed atrium to enclose their indoor pool.

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	32%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START ▲

onyx METZ

PHOTOVOLTAIC CANOPY

RENOVATION

The embassy in Jakarta features a cutting-edge design incorporating Onyx Solar's amorphous silicon semi-transparent glass on a photovoltaic canopy.

Each individual **glass panel was customized to offer a 10% Visible Light Transmission (VLT) and efficiently filters out 99% of harmful UV radiation.**

The canopy contribute significantly to reduce the building's carbon footprint while concurrently curbing its electricity expenses.

TECHNICAL DATA

Nominal Power (Wp/m²)	40 Wp/m²
Visible Light Transmittance (VLT)	10%
Solar Factor (g-value)	29%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

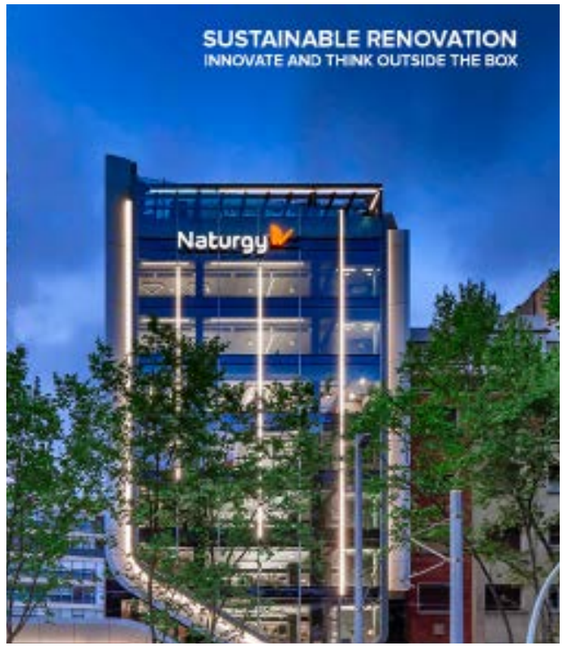
BACK TO START

PHOTOVOLTAIC BRISE SOLEIL

RENOVATION

Naturgy headquarters in Spain boasts a design that features a state-of-the-art photovoltaic sunshade system made of **crystalline silicon PV glass** with a customized cell density to reach a nominal power of **150 Wp/m²**

The PV sunshades, mounted horizontally over a second skin façade and facing south not only provide **critical sun control,** reducing heat gain and glare inside the building, but also **produce clean, free energy, contributing to the building's energy efficiency and sustainability** reaching LEED Gold certification. The strategic south-facing orientation of the sunshades maximizes solar energy capture, making the most of Barcelona's sunny climate.



TECHNICAL DATA

Nominal Power (Wp/m²)	150 Wp/m²
Visible Light Transmittance (VLT)	21%
Solar Factor (g-value)	34%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

onyx METZ

MORE INFO IN VIDEO

NATURGY OFFICES

BARCELONA, SPAIN

BRISE SOLEIL - FINS

CRYSTALLINE SILICON TECHNOLOGY

Colonial

Naturgy

BACK TO START

PHOTOVOLTAIC BRISE SOLEIL

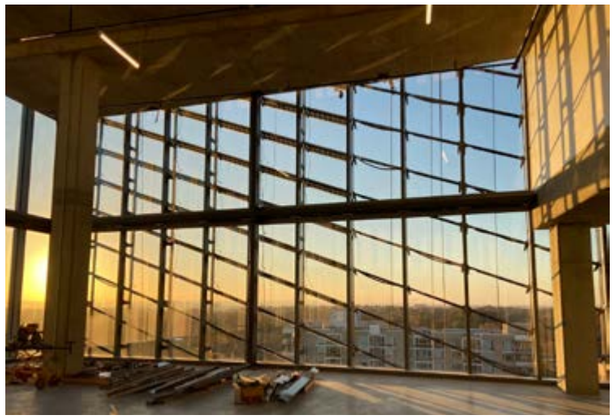
UNDER CONSTRUCTION

Photovoltaic glass sunshades are now enhancing George Mason University's new Institute for Digital Innovation (IDIA) at Mason Square in Arlington.

This cutting-edge installation integrates over 340 crystalline silicon units into the building's design, contributing to onsite renewable energy generation while significantly reducing CO_2 emissions.

Featuring a distinctive trapezoidal design, these sunshades are installed diagonally to form a functional screen that seamlessly combines shading with clean power generation. It's a perfect blend of aesthetic appeal and sustainability.

We are proud to collaborate with Service Glass Industries and Clark Construction Group on this project and extend our gratitude to Page Architects for their visionary leadership in sustainable and innovative design.



TECHNICAL DATA

Nominal Power (Wp/m²)	138 Wp/m²
Visible Light Transmittance (VLT)	28%
Solar Factor (g-value)	32%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	0.92
Light Reflection (external)	8%

TECHNICAL DATA SHEET

MORE INFO IN VIDEO

GEORGE MASON UNIVERSITY

VIRGINIA , USA

BRISE SOLEIL - FINS

CRYSTALLINE SILICON TECHNOLOGY

BACK TO START

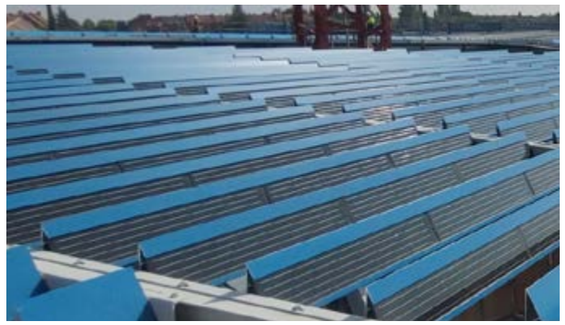
PHOTOVOLTAIC BRISE SOLEIL

UNDER CONSTRUCTION

Onyx Solar has participated in the construction of the new **Faculty of Science building at the National University of Distance Education (UNED) in Las Rozas, Madrid**. This building, designed by architects Begoña Fernández-Shaw Zulueta and Luis Rojo de Castro, stands out for its **avant-garde approach**, integrating cutting-edge architectural solutions with the use of **photovoltaic glass**.

The building features an efficient roof made up of slats incorporating **Onyx Solar's photovoltaic glass. Over 4,000 units of crystalline silicon glass**, measuring 933 mm x 190 mm, have been installed. This glass not only enhances the **building's aesthetics** but also helps **reduce energy consumption**, aligning with the campus's sustainability goals. The integration of this glass allows the building to **generate clean energy**, strengthening the **energy self-sufficiency** of the project.

The building's modular design optimizes natural light and promotes interaction with the environment, thanks to interior courtyards and skylights that facilitate ventilation and harness solar energy. This project, a collaboration between **SEGIPSA, ENAR, TRAGSA, and Grupo Aluman**, highlights **UNED**'s commitment to leading the **integration of advanced technologies** in its infrastructure, providing students with a modern, efficient, and functional environment.



TECHNICAL DATA

Nominal Power (Wp/m²)	141 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	0%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A

TECHNICAL DATA SHEET

MORE INFO IN VIDEO

UNED FACULTY OF SCIENCE

MADRID, SPAIN

BRISE SOLEIL - FINS

CRYSTALLINE SILICON TECHNOLOGY

BACK TO START

PHOTOVOLTAIC BRISE SOLEIL

RENOVATION

Onyx Solar's innovative photovoltaic glass has been prominently featured in the Freedom Building, located in Paris, France.

Opting for amorphous silicon glass with a **27% visible light transmittance level, the design seamlessly integrates aesthetic appeal with functionality**. It allows for **unobstructed views while harnessing clean, free solar energy**.

TECHNICAL DATA

Nominal Power (Wp/m²)	28 Wp/m²
Visible Light Transmittance (VLT)	27%
Solar Factor (g-value)	37%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START

FREEDOM PARIS

PARIS, FRANCE

BRISE SOLEIL - FINS

AMORPHOUS SILICON TECHNOLOGY

PHOTOVOLTAIC BRISE SOLEIL

NEW CONSTRUCTION

The Dubai Energy and Water Authority R&D Laboratories in Dubai installed a **1.000 m² double skin of semi-transparent colored photovoltaic glass** made in **different colors** that include green, yellow and orange to produce energy on-site and insulate efficiently the building filtering the harmful radiation.

The installation of brise soleil, or sun-shading devices, is **particularly crucial** in places with **hot and arid climate like Dubai**. These innovative features enhance the building's energy efficiency while also ensuring a **comfortable indoor** environment for its visitors effectively addressing the challenging local weather conditions.

The installation of this brise soleil was a key factor to achieve LEED Platinum certification. The center focus its work in four main areas: solar power, smart grid integration, energy efficiency and water.

GOVERNMENT OF DUBAI

TECHNICAL DATA

Nominal Power (Wp/m²)	28 Wp/m²
Visible Light Transmittance (VLT)	26%
Solar Factor (g-value)	37%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

MORE INFO IN VIDEO

DEWA R&D LAB

DUBAI, UNITED ARAB EMIRATES

BRISE SOLEIL - FINS

AMORPHOUS SILICON TECHNOLOGY

Dubai Electricity & Water Authority

BACK TO START

PHOTOVOLTAIC BRISE SOLEIL

NEW CONSTRUCTION

This innovative building located in Las Palmas (Spain) attained **LEED Platinum certification** from the US Green Building Council.

It serves as the home for a Higher Education Institute and features a striking glass cladding integrating **amorphous silicon PV glass** on vertical fins that measure nearly three meters in height and half a meter in width.

This fins **generate free and clean power** for the institution while filtering UV and IR radiation meanwhile allow natural light to pass inside the building.

TECHNICAL DATA

Nominal Power (Wp/m²)	39 Wp/m²
Visible Light Transmittance (VLT)	20%
Solar Factor (g-value)	32%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

LEED PLATINUM 2014

onyx METZ

ICSE EDUCATIONAL CENTER

LAS PALMAS, SPAIN

BRISE SOLEIL - FINS

AMORPHOUS SILICON TECHNOLOGY

ICSE

BACK TO START

BACK TO START

PHOTOVOLTAIC BRISE SOLEIL

NEW CONSTRUCTION

Bursagaz, is a prominent gas supplier from Turkey that installed an attractive façade made of **amorphous silicon PV glass** in its headquarters showcasing a commitment to sustainability and energy efficiency. This installation was a key contributor to achieve the LEED gold certification.

The PV glass apart of **producing electricity, filters UV and IR radiation** meanwhile allows the entrance of natural light in order to maximize the **comfort of the Bursagaz's workers.**

TECHNICAL DATA

Nominal Power (Wp/m²)	49 Wp/m²
Visible Light Transmittance (VLT)	10%
Solar Factor (g-value)	32%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

U.S. GREEN BUILDING COUNCIL LEED GOLD USGBC

onyx METZ

MORE INFO IN VIDEO

BURSAGAZ HQ

BURSA, TURKEY

BRISE SOLEIL - FINS

AMORPHOUS SILICON TECHNOLOGY

TAGO ARCHITECTS

BURSAGAZ

PHOTOVOLTAIC BRISE SOLEIL

NEW CONSTRUCTION

Onyx Solar supplied colored **amorphous silicon PV glass** for the SJD Pediatric Cancer Center's fins system in Barcelona, Spain. The installation consists of medium transparency amorphous silicon glass units that come in **four different colors**, and a **variety of dimensions and configurations.**

The selection of soothing cheerful colors contributes to a **welcoming and positive atmosphere**, which is vital in healthcare environments, especially those designed for children. This set-up not only provides shading but also improves the building's visual appeal, perfectly aligning with the architectural demands and fulfilling the client's specifications while **generating energy in situ, filter the harmful radiation & heat.**

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	26%
Solar Factor (g-value)	34%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

BACK TO START

MORE INFO IN VIDEO

SJD PEDIATRIC CANCER CENTER

BARCELONA, SPAIN

BRISE SOLEIL - FINS

AMORPHOUS SILICON TECHNOLOGY

PINEARQ

SJD

PHOTOVOLTAIC BRISE SOLEIL

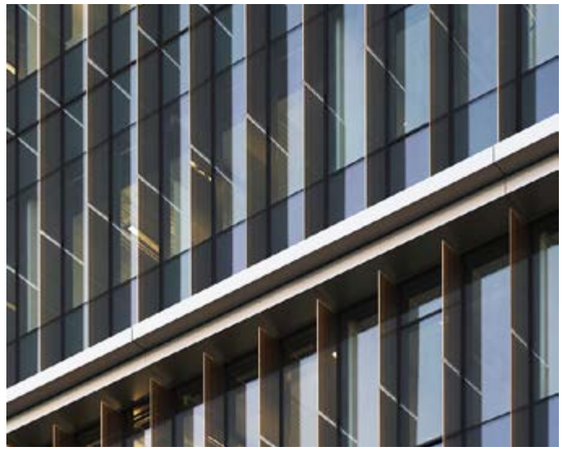
NEW CONSTRUCTION

The Life Sciences Building at the University of Washington features **custom vertical glass solar fins on its façade**. The fins generate enough electricity to **light more than 12,400 square feet of the building's office space each year**. These first-of-its-kind fins were designed by the leading architectural firm **Perkins+Will** that has led for decades the AEC industry toward exceptional environmental performance. The building was constructed by **Skanska**, one of the main general contractors of the world.

Each three-ply laminated tempered glass fin is **installed "framelessly" and vertically at a 90-degree angle to the curtain wall.** Boasting concealed junction boxes and wires, the fins ensure a seamless architectural appearance.

Innovative solar glass fins put science on display while generating enough electricity to light all of offices year-round helping achieve LEED Gold and the AIA 2030 Challenge.

Much more than a building, LSB provides the foundation for innovative and collaborative cutting-edge research on climate change. It acts as a hub for student discovery, transforming the way we teach and how the next generation of scientists learn with sustainability at the core.



TECHNICAL DATA

Nominal Power (Wp/m²)	40 Wp/m²
Visible Light Transmittance (VLT)	10%
Solar Factor (g-value)	29%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

MORE INFO IN VIDEO

ENR AWARD of EXCELLENCE

U.S. GREEN BUILDING COUNCIL LEED PLATINUM USGBC

AIA 2030 COMMITMENT

UNIVERSITY of WASHINGTON

LIFE SCIENCES BUILDING

UNIVERSITY WASHINGTON, SEATTLE, USA

BRISE SOLEIL - FINS

AMORPHOUS SILICON TECHNOLOGY

"Most of the world's leading companies and institutions realize now that their license to do business is severely threatened by climate change and loss of ecosystem function. As a result, the urgency to act is more palpable than it was even two years ago."

Jason McLennan - Chief Sustainability Officer

Perkins&Will

SKANSKA

onyx

METZ

BACK TO START

PHOTOVOLTAIC BRISE SOLEIL

NEW CONSTRUCTION

Onyx Solar's provision of photovoltaic fins for the façade of the EIC Building within Bizkaia Technology Park in Spain demonstrate the **enriching potential of Building Integrated Photovoltaic** (BIPV) solutions.

The project features **horizontal photovoltaic fins** composed of amorphous silicon photovoltaic laminates safety glass panes with a robust configuration of **8+3+8 mm**, that were manufactured in **27 different sizes** to be perfectly integrated.

The use of these photovoltaic fins, or 'brise soleil', are specially beneficial in architectural design. They function as **solar shading structures**, effectively **reducing heat gain inside the building and subsequently decreasing the energy needed for cooling.**

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	32%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

BACK TO START ▲

MORE INFO IN VIDEO

EIC INTELLIGENCE CENTER

BILBAO, SPAIN

BRISE SOLEIL - FINS

AMORPHOUS SILICON TECHNOLOGY

"The Energy Intelligence Center is a project aimed at positioning Bizkaia and the Basque Country as an international reference in the field of energy."

Project Manager - Gobierno Vasco

PHOTOVOLTAIC BRISE SOLEIL

RENOVATION

Onyx Solar participated in the **refurbishment of CESCE headquarters** transforming this building situated in the heart of Madrid in a great example that demonstrates that is **sustainability and photovoltaics are compatible with aesthetic.**

Constructed in 1974 this building has evolved to embrace modern energy solutions including an innovative **photovoltaic brise soleil seamlessly integrating solar technology** into the building's facade.

The customized **amorphous silicon see-through PV glass** manufactured for the project is a great example of this evolution. It looks like regular architectural glass, but it possesses photovoltaic properties that enable it to **generate energy on-site, while filtering harmful radiation and blocking heat.**

TECHNICAL DATA

Nominal Power (Wp/m²)	34 Wp/m²
Visible Light Transmittance (VLT)	16%
Solar Factor (g-value)	32%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

onyx METZ

BACK TO START ▲

CESCE HEADQUARTERS

MADRID, SPAIN

BRISE SOLEIL - FINS

AMORPHOUS SILICON TECHNOLOGY

"The electrical energy consumed by CESCE for several years has come from 100% renewable sources"

Project Manager - CESCE

ARQUITECTURA ASVALOR

cesce

WALKABLE PV FLOOR

NEW CONSTRUCTION

The shareholders of Kirk Kapital are the direct descendants of Ole Kirk Kristiansen, **the founder of LEGO.**

A total of **446 glass units, varying in shape and size,** were utilized for the project to achieve its distinctive circular design.

Fjord House sets a new standard for integrating renewable energy sources into everyday infrastructure with a walkable photovoltaic floor that reach a nominal power of **173 Wp per m².**

The **PV crystalline glass** features complete opacity, incorporating a 100% coverage ceramic frit. This innovation proves to be **highly efficient**, generating over **40,000 kWh per year.**

Fjord House is the first building designed entirely by artist Olafur Eliasson and architect Sebastian Behmann. Rising directly from the harbour of Vejle, the building brings together years of research in diverse fields into one project: urban space, light conditions, nature, physical movement, and the most innovative sources of renewable energy.

TECHNICAL DATA

Nominal Power(Wp/m²)	173 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	0%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

MORE INFO IN VIDEO

KIRK KAPITAL HQ

VEJLE FJORD, DENMARK

WALKABLE PV FLOOR

CRYSTALLINE SILICON TECHNOLOGY

BACK TO START

WALKABLE PV FLOOR

NEW CONSTRUCTION

In the vibrant streets of San Francisco, Apple store exemplifies a blend of **cutting-edge technology** and **environmental consciousness**, a hallmark of Apple's brand philosophy. A particularly noteworthy feature of this store is its innovative **photovoltaic (PV) walkable floor installed on the rooftop,** a clear indicator of Apple's commitment to innovation, sustainability and renewable energy.

Thanks to the design of **Foster+ Partners, Apple** has been able to implement this walkable roof that also generates electricity, padding the way to a clean and sustainable future.

Onyx Solar supplied approx. 6,000 SqFt of crystalline Silicon PV glass, featuring a **textured, anti-slip finish and a black color ceramic frit for maximum opacity**. Each PV glass panel is about 10' x 5', and it was installed by renowned Seele.

FROM "THINK DIFFERENT" TO "ACT DIFFERENT".

onyx METZ

BACK TO START ▲

APPLE STORE

SAN FRANCISCO, UNITED STATES

WALKABLE PV FLOOR

CRYSTALLINE SILICON TECHNOLOGY

"Led by our environmental engineering team, we assess the environmental performance of our projects and develop innovative, future-proof solutions to mitigate the impact of climate change."

Norman Foster

Foster + Partners

seele

WALKABLE PV FLOOR

RENOVATION

The City of Arts and Sciences of Valencia has installed more than 6,000 square meters of **photovoltaic walkable pavement** on the cantilevers of the Science Museum.

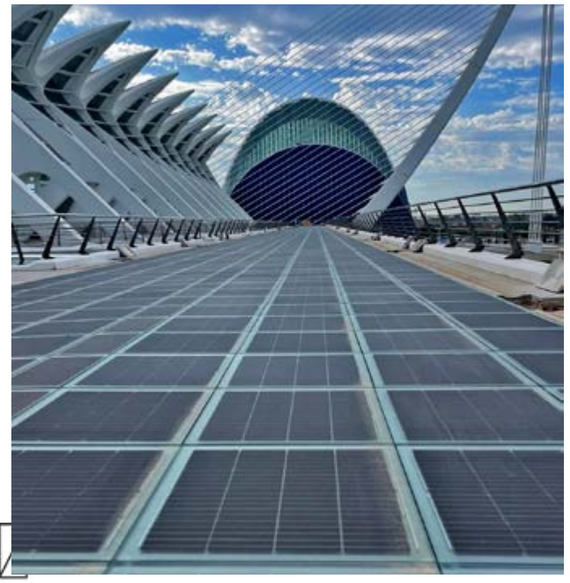
This floor made up of crystalline silicon cells that **is patented by Onyx Solar** generates a good part of the electricity demanded by the building's facilities.

The execution of the project to install photovoltaic solar pavement on the Museum's cantilevers contemplate its placement on the two exterior cantilevers, with a maximum **installed power of 553 kWp, which mean generating up to 30% of the energy demanded** by the building in some seasons of the year.

This museum is a cultural and architectural complex located in Valencia, Spain, that has become the most important and modern tourist destination in this city and one of the main treasures of Spain. **It was designed by Santiago Calatrava and Felix Candela.**

TECHNICAL DATA

Nominal Power (Wp/m²)	129 Wp/m²
Visible Light Transmittance (VLT)	28%
Solar Factor (g-value)	N/A
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%



BACK TO START

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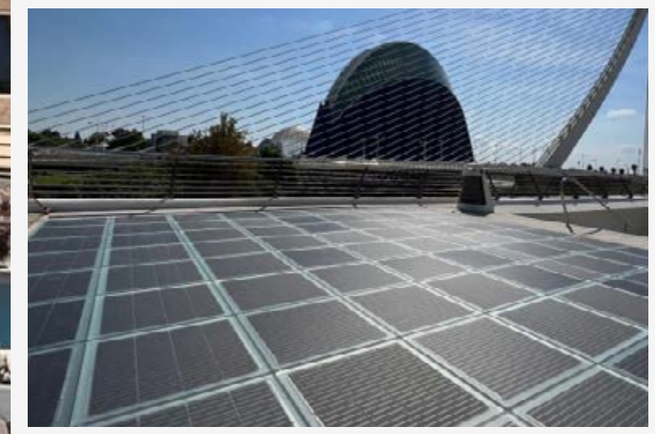
METZ.

MORE INFO IN VIDEO



THE CITY OF ARTS AND SCIENCES

VALENCIA, SPAIN

WALKABLE PV FLOOR

CRYSTALLINE SILICON TECHNOLOGY

SANTIAGO CALATRAVA
ARCHITECTS & ENGINEERS

CIUDAD DE LAS ARTES Y LAS CIENCIAS
VALENCIA

WALKABLE PV FLOOR

UNDER CONSTRUCTION

Located near the Empire State Building in New York, 6 th Avenue is an innovative photovoltaic installation that **combines solar technology with natural design.**

The project, executed by Solar Deck, **includes 240 photovoltaic** tiles forming a solar pavement that generates clean energy. Alongside this photovoltaic surface, there is also a wooden deck that enhances the aesthetic of the space.

Additionally, **the area is complemented by a green roof**, which contributes to sustainability.

By combining solar technology, natural materials, and vegetation, 6th Avenue stands as a remarkable example of renewable energy integration in New York's urban landscape.

TECHNICAL DATA

Nominal Power (Wp/m²)	133 Wp/m²
Visible Light Transmittance (VLT)	28%
Solar Factor (g-value)	0.21
U value (W/m²K)	5.2
U value (Btu/h ft² °F)	0,91
Light Reflection (external)	<6%

TECHNICAL DATA SHEET

6TH AVENUE

NEW YORK, UNITED STATES

WALKABLE PV FLOOR

CRYSTALLINE SILICON TECHNOLOGY

SOLAR DECK™

BACK TO START

WALKABLE PV FLOOR

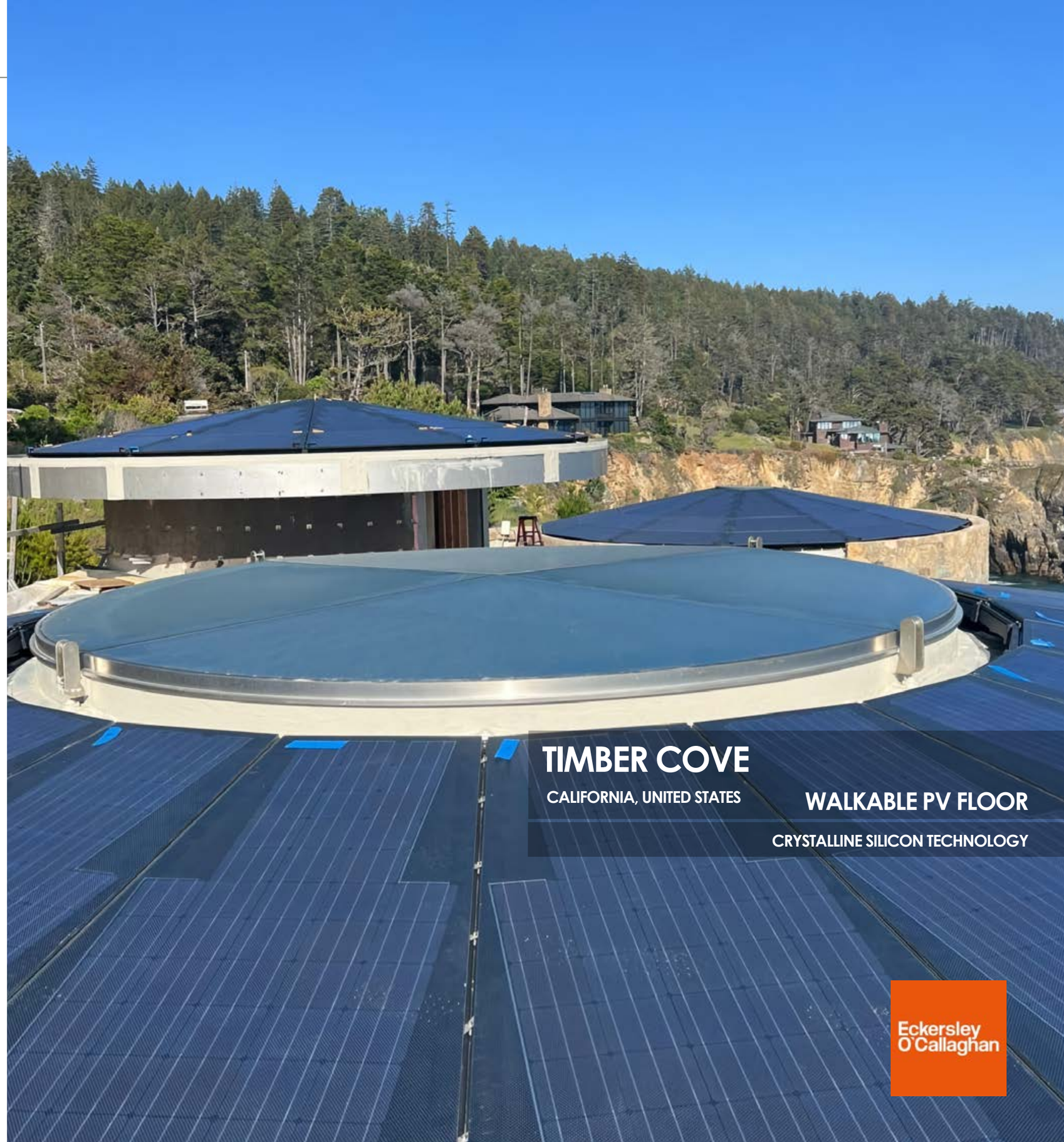
NEW CONSTRUCTION

Onyx Solar provided **crystalline silicon photovoltaic glass** for a high-end residential resort in Sonoma County, located in Timber Cove, a picturesque cliff side area overlooking the Pacific Ocean. This project involves **three roofs for three buildings**: the main hall, guest rooms, and the garage.

The installation includes **trapezoidal crystalline silicon pieces** in **three shapes**, an **anti-slip finish** and a **ceramic black frit** on the back. Collaborating with Eckerseley O'Callaghan, this project marks a significant step in constructing such complexes, proving that luxury service standards can coexist with sustainability and self-consumption.

BACK TO START ▲

onyx METZ



PV BALCONY PARAPETS

NEW CONSTRUCTION

The innovative energy harvesting technology installed in this project reduces **home running costs to almost zero.**

In this development the **photovoltaic material is discreetly integrated into the façade of the building and the balcony parapets**. The PV building material supplied for the balconies have a **white satin finish** on the front and black ceramic frit on the reverse for optimal aesthetics and integration.

Onyx Solar's innovative building material supply energy to homes throughout the year, which drastically **reduces the cost of running the apartments.** The surplus energy in summer is injected into the supply network.

This residential complex in Urdorf (Switzerland) is demonstrating how pioneering technology can allow tenants **to live comfortably with little or no electricity or heating costs.** It has the potential to be replicated because it contributes to the achievement of the federal energy strategy and also illustrates a method to counteract winter energy shortages.

TECHNICAL DATA

Nominal Power (Wp/m²)	124 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	0%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	0,96
Light Reflection (external)	8%

watt d'or 2021

onyx METZ

BACK TO START

PHOTOVOLTAIC RAILING

NEW CONSTRUCTION

This project located in Melbourne, The General, an 8-story mixed-use development stands out as a pioneering sustainable building. **It is the first in Australia to integrate solar photovoltaic glass on a façade and railing**, achieving a high-quality, **7.5-star energy rating**, and offering a sustainable alternative to typical apartment buildings.

In the "The General" project, Onyx Solar provided **amorphous silicon photovoltaic glass, selected for its low light transmittance,** is a testament to the architect's vision of creating a building that is both functionally and visually harmonious with its urban surroundings.

TECHNICAL DATA

Nominal Power (Wp/m²)	40 Wp/m²
Visible Light Transmittance (VLT)	10%
Solar Factor (g-value)	17%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	0,98
Light Reflection (external)	8%

BACK TO START

ASIA PACIFIC PROPERTY AWARDS

THE GENERAL

MELBOURNE, AUSTRALIA

PV RAILING

AMORPHOUS SILICON TECHNOLOGY

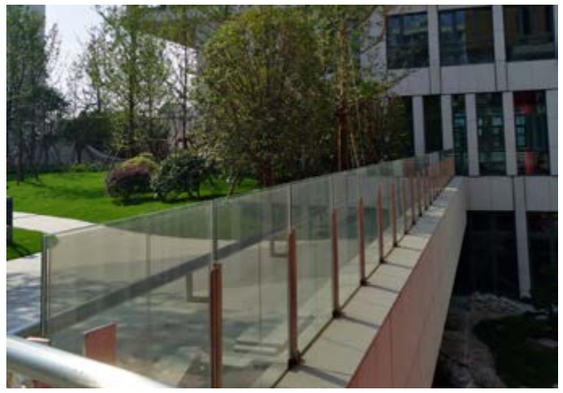
C.KAIROUZ ARCHITECTS & ASSOCIATES INCORPORATING LJ+2B

PHOTOVOLTAIC RAILING

RENOVATION

One of the key attributes of the PV glass manufactured for this project in Shanghai is its **see-through** possibilities. This allows for natural light to permeate the building, creating a bright and welcoming environment. At the same time, it provides the necessary **shading** to maintain a comfortable environment.

We worked closely with our clients to **tailor the level of transparency** and power output to their specific needs and preferences. For this project in Shanghai, we manufactured PV glass with a **high degree of transparency, striking the perfect balance between visibility and energy generation.**



TECHNICAL DATA

Nominal Power (Wp/m²)	28 Wp/m²
Visible Light Transmittance (VLT)	30%
Solar Factor (g-value)	38%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	0,98
Light Reflection (external)	8%

ECO BUILDING

SHANGHAI, CHINA

PV RAILING

AMORPHOUS SILICON TECHNOLOGY

BACK TO START ▲

PHOTOVOLTAIC ROOF

RENOVATION

Marriot hotel situated in Imperial Beach (California) installed Onyx Solar´s PV safety glass on its courtyard roofs, demonstrating the **flexibility in design** that contemporary photovoltaic glass can bring to any project.

The PV glass was designed to cover an oval rooftop space, needing the engineering of **trapezoidal photovoltaic glass units** specifically for this project to conform the roof's shape. This customization led to the use of **55 different PV glass** shapes to complete the project.

Each PV Glass is entirely **frameless** and is supported by four clamps that mechanically attach the glass to the aluminum rails, ensuring stability against wind uplift.

U.S. GREEN BUILDING COUNCIL
LEED SILVER
USGBC

AUTOGRAPH COLLECTION HOTELS

onyx METZ

BACK TO START

MORE INFO IN VIDEO

MARRIOTT HOTEL

CALIFORNIA, UNITED STATES

PV ROOF

AMORPHOUS SILICON TECHNOLOGY

"Sustainable tourism presents an option to seize growth opportunities, especially with tourists becoming more conscious about the environment and are looking for more sustainable options,"

Rivero Delgado - Vice President Marriott

MARRIOTT

WALKABLE PV FLOOR

RENOVATION

Located in the heart of ST. Helena, California, Corison Winery has always been known for its **commitment to quality** and the cradtsmanship in the fabrication of their fine wines. Now, they will take lead in **sustainabillity and design,** by installing a photovoltaic glass in their roof that **color-matches exactly the metal panel** of the roof. It is a dark-green color that goes extremely well with its surrounding landscapes of Napa Valley.

Cathy Corison and William Martin, owners of Corison Winery, Knew their roof was due for an update and wanted to go solar.

Onyx Solar **custom-fabricated 148 photovoltaic glass panels** with the colors of the original design are combining with the new energy efficient roof. Each glass measures **1.700 mm x 1000 mm** and offers **226 Wp**

The installation covers a total area of **250 m² (2.700 SqFt)** and reaches a t**otal nominal size of 21.4 kWp.**

BACK TO START

TECHNICAL DATA

Nominal Power(Wp/m²)	132 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	22%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

CORISON WINERY

CALIFORNIA, UNITED STATES

PV ROOF

CRYSTALLINE SILICON TECHNOLOGY

¨Our misión at corison winery is to produce world-class Cabernet Sauvignon eith integrity. With this intention, one of our founding principles is to minimize negative impacts on the enviroment¨

Cathy Corison, Winemaker

BACK TO START ▲

WALKABLE PV FLOOR

NEW CONSTRUCTION

The Faustino Winery, one of the world's leading producers of Rioja wine, has launched a sustainable expansion at its facilities in Oyón, Spain. In collaboration with renowned **architectural firm Foster + Partners**, the winery's visitor center features an innovative roof system incorporating monocrystalline silicon photovoltaic glass with a **sleek grey front finish**, strategically designed to support the winery's commitment to achieving complete energy self-sufficiency.

The installation includes **126 photovoltaic glass units,** each measuring **1678 x 986 mm**, producing clean energy while seamlessly blending with the aesthetic of the building. This advanced technology ensures that the visitor center consumes **only 20% of the energy it generates**, with the remaining energy directed to support other areas of the winery complex. Through this innovative installation, Onyx Solar has been instrumental in helping Bodegas Faustino realize its vision for a **fully sustainable energy project**, marking a milestone in renewable integration in prestigious facilities dedicated to high-quality wine production.

TECHNICAL DATA

Nominal Power(Wp/m²)	132 Wp/m²
Visible Light Transmittance (VLT)	0%
Solar Factor (g-value)	22%
U value (W/m²K)	N/A
U value (Btu/h ft² °F)	N/A
Light Reflection (external)	8%

TECHNICAL DATA SHEET

PV ROOF TILES

NEW CONSTRUCTION

Sustainability and energy self-sufficiency have become fundamental pillars in modern home design and construction. Onyx Solar has taken a leading role in this movement by developing and manufacturing **high-efficiency photovoltaic solar roof tiles**, which have been successfully installed in this private residence in Germany.

These **innovative roof tiles incorporate photovoltaic cells directly into laminated glass**, allowing for efficient and direct solar energy capture from the roof itself. This integration not only **maximizes the production of renewable energy** but also preserves the **aesthetic and functional aspects** of the architectural design.

Two different exterior sizes were used in the fabrication of these tiles—**725 x 400 mm and 406 x 400 mm**—demonstrating the **flexibility of the design** to meet various architectural needs. Aesthetically and functionally, the **front glass underwent a precise acid-etch treatmen**t, giving it an elegant matte finish and adds a touch of sophistication to the home's exterior. Meanwhile, the **rear glass was treated with black frit**, a process that enhances both the durability and the distinctive, refined appearance, perfectly complementing the architectural vision of the residence.

BACK TO START ▲

PRIVATE HOUSE

GERMANY

PV ROOF TILES

CRYSTALLINE SILICON TECHNOLOGY

TECHNICAL DATA SHEET

SOLARPLEXUS

onyx METZ

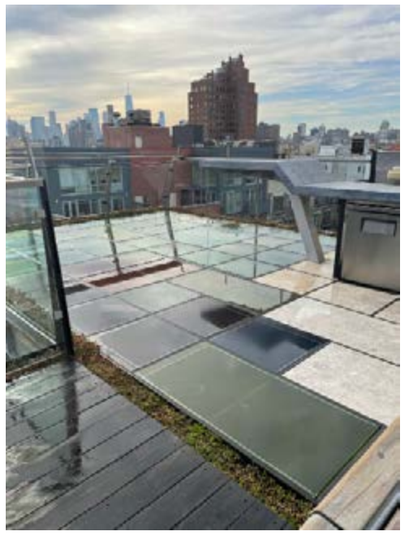
STREET FURNITURE

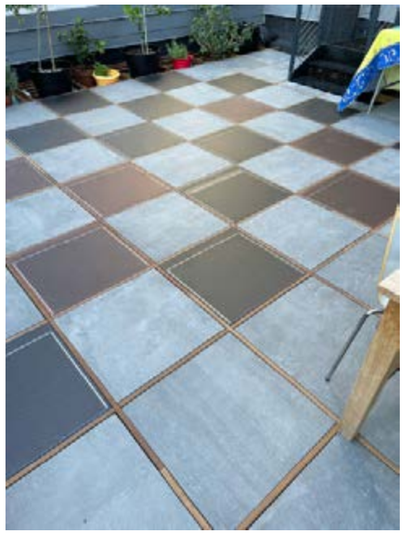
DIFFERENT LOCATIONS

SUN SHADE

Bus station's roof with photovoltaic glass

Solar tree in a park made with PV glass





BACK TO START

Onyx Solar is committed to delivering high-quality products only, which meet international standards, codes, and safety guidelines. Both the production process and materials have been verified by independent certifying associations.

CERTIFICATIONS

SCAN THE QR TO BE UPDTAED ABOUT ALL OUR CERTIFICATIONS

UL CERTIFICATION

More than 50 of our products have obtained their corresponding UL certifications, thereby making Onyx Solar the leader in safety for photovoltaic glass in the U.S. Onyx Solar's crystalline and amorphous silicon glass panes are certified by UL in accordance with the safety standards UL-1703 & ULC/ ORD-C1703 'Standards for Flat-Plate Photovoltaic Modules and Panels'.

IEC CERTIFICATION

Our photovoltaic products comply with IEC61215: 2021 (Terrestrial photovoltaic (PV) modules - Design qualification and type approval) and IEC 61730:2016 (Photovoltaic (PV) module safety qualification), among many others.

FIRE TESTS

Our PV glass is classified as **CLASS A** material as per UL790 and MST23 & MST24 per IEC 61730-2: 2016.

MCS (UK) and OTHER CERTIFICATIONS

Scan the QR above for updated information about specific standards in other countries.

AENOR ENVIRONMENTAL MANAGEMENT ISO 14001

AENOR QUALITY MANAGEMENT ISO 9001

Onyx Solar counts on a comprehensive quality control protocol as part of our **ISO 9001 and ISO 14000** certifications. From raw material traceability and in-house inspection, to product testing and post-production control, we ensure that each individual PV glass unit that departs our factory meets our quality standards.

BACK TO START

GlobalEPD
A VERIFIED ENVIRONMENTAL DECLARATION

ECO PLATFORM EPD VERIFIED

Environmental Product Declaration

EN ISO 14025:2010
EN 15804:2012+A2:2019

AENOR

CRYSTALLINE PHOTOVOLTAIC SOLAR GLASS

G/GM07244
G/GM07211
G/GM03644
G/GM01688A

First publication date: 31-01-2024
Expiry date: 30-01-2029

The declared validity is to registration and publication on www.aenor.com

GlobalEPD Code: GlobalEPD EN15804-063

GLOBAL EPD

SCAN THE QR TO DOWNLOAD OUR EPD

The Environmental Product Declaration (EPD) is a certified document that provides our clients with reliable, verified, and transparent information regarding the environmental impact throughout the life cycle of a product. This information is based on a **Life Cycle Analysis (LCA)** study conducted in accordance with the Product Category Rules (PCR) developed by the Eco-labeling Program. In our specific case, the study has been carried out under the **Product Category Rule for Construction Products UNE EN 15804:2012+A2.**

ECO PLATFORM & AENOR

ECO Platform is a European Association made up of DAP Verification Program Administrators, industrial associations, and life cycle analysis experts, which guarantees the quality and conformity of environmental declarations of construction products in accordance with ISO 14025 and EN 15084 Standards. ECO Platform represents a common pan-European framework for DAPs. The Programs commit to common quality and verification criteria, which are regularly audited.

AENOR is a founding member of ECO Platform and passed audits in 2014 to issue Environmental Declarations with the ECO Platform EPD EN 15804 VERIFIED™ logo, being one of the first four European Administrators along with International EPD System (Sweden), IBU (Germany) and BAU EPD (Austria).

BACK TO START

COURSES & WEBINARS

Scanning this QR code, you will find Webinars available in several languages. These Webinars provide comprehensive details about our technology, along with all the necessary documentation to guide the specification, prescription, and installation of our photovoltaic glass in your projects.

To access, please **scan or click on the QR code.**

WEBINARS IN OUR WEBSITE

AIA COURSES:

We offer courses certified by the American Institute of Architects, designed for a broad audience, including architects, designers, and engineers. These courses are particularly beneficial for professional advancement and keeping up with current architectural practices.

For more information, contact us at usa@onyxsolar.com.

RESOURCES

We have dedicated a section of our website to support architects, engineers, and the construction community with a range of online tools, technical information, and additional resources for understanding and specifying PV glass. This section, titled 'Resources,' is accessible to anyone seeking more information for their upcoming PV glass projects.

To access, please **scan or click on the QR code.**

1. TECHNICAL GUIDE

Document containing datasheets for some of our PV glass products, along with other useful information.

Please contact us for any special requirements to customize your PV glass.

2. PRODUCT MANUAL

Manual for electrical and mechanical installation, handling and packaging, preventive maintenance, certifications, cleaning, and warranties.

3. INSTALLATION GUIDE

A glossary of terms to fully understand specific words related to the integration of Photovoltaic Glass into buildings.

4. GLASS SPECIFICATIONS

Examples of specifications in the formats of both the Construction Specifications Institute (CSI) and the National Building Specification (NBS).

BACK TO START

OUR FACTORY

As Onyx Solar, we are proud to be the **world leader i**n the design and manufacture of architectural, photovoltaic glass for buildings. Our journey from the early stages of research and prototyping to the final stages of product design, manufacturing, and customer validation has been a testament to our commitment to innovation and excellence. Today, our cutting-edge products are installed in over **500 projects worldwide.**

We have successfully brought together two independent industries in a way that has never been done before. Under our roof, the traditional photovoltaic industry and the construction sector merge to create a superior, **multifunctional architectural glass with photovoltaic properties**.

Our Onyx Solar PV glass has been rigorously tested to UL and IEC standards, which are among the most important test programs to complete in both the USA and Europe for commercializing our products.

Our **state-of-the-art facilities** are located in Avila, Spain, just an hour away from Madrid. These facilities are not just production sites; they also include a large **showroom** with full-size mock-ups, providing a comprehensive view of our products. We encourage visits to our facilities to learn more about what we offer.

We are also proud to hold the **ISO 9001 and ISO 14001** certifications, which ensure the quality of our products and processes, further affirming our commitment to excellence and environmental responsibility.

AENOR
ENVIRONMENTAL MANAGEMENT
ISO 14001

AENOR
QUALITY MANAGEMENT
ISO 9001

BACK TO ST

RESEARCH & DEVELOPMENT

SCAN THE QR TO VISIT OUR WEBSITE FOR MORE INFORMATION

Since our inception, we have remained steadfast in our commitment to continuous investment in **Research and Development (R&D)**, a crucial element for success in this rapidly evolving technological landscape. These programs often include collaborations with **research centers, universities, and third-party companies**.

Our R&D department is bolstered by a **dedicated team of physicists, architects, and engineers** who work in close coordination. There's a strong, direct, and ongoing communication channel between this department and our sales and marketing team. This synergy fosters an evolving R&D corporate strategy that merges the critical thinking of our technical team with the market insights from our sales and marketing department. Our collective aim is to lead the industry, designing new products that can be integrated efficiently and economically into the **building envelope of any building worldwide.**

To discover some of the exciting projects we are currently involved in, we invite you to scan the **QR code above.**

BACK TO START ▲

AWARDS

Since our inception, **Onyx Solar has received over 100 international distinguished awards**, establishing us as the most award-winning photovoltaic company worldwide.

Among these, we are particularly proud of the recognition from the US Glass Industry as the most innovative glass of the year. Additionally, buildings outfitted with our technology have earned numerous awards, frequently achieving **LEED certification**. These honors are a testament to our unwavering commitment to innovation and sustainability in the photovoltaic industry.

Nevertheless, the greatest affirmation of our work is the trust placed in us by our clients. This is what we strive to earn every day through our steadfast dedication to delivering the highest quality and excellence in all our endeavors.

+100 AWARDS

BACK TO START ▲

SHAREHOLDERS

Onyx Solar has a solid shareholder base that provides it with the necessary long-term stability to undertake large projects. Behind **Alvaro Beltrán** and **Teodosio del Caño**, founders of the company, is the **JME** fund led by **Jose Manuel Entrecanales** (major shareholder of Acciona[1]).

The company's shareholders also include major businessmen such as **Christian Gut** (Prosegur's largest shareholder[2]), as well as leading figures from the financial sector such as **Jaime Castellanos** (Chairman of Lazard[3]) and **Claudio Aguirre** (Chairman of Altamar Capital Partners[4]).

(1) Acciona is a Spanish infrastructure and renewable energy development and management company. It is present in 65 countries and has an annual turnover of around 15,000 million euros and 2,000 euros of EBITDA.

(2) Prosegur is a multinational security company with a presence in 31 countries and more than 160,000 workers.

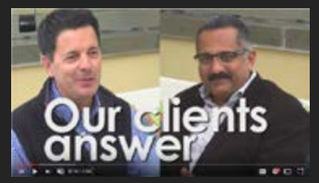
(3) Lazard, based in New York, is one of the most respected names in global financial services and is the world's leading financial advisory and asset management firm.

(4) Altamar is the largest independent alternative asset management group with a Spanish passport, with a portfolio valued at around 17 billion €.

BACK TO START

CLIENTS TESTIMONIALS

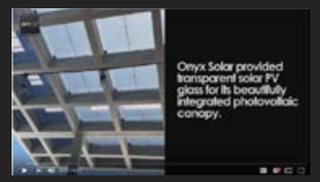
Somerset Development,
Bell Works (USA)



Marriott Group,
Pier South Hotel (USA)

FEMSA/Coca-Cola,
(Mexico)

ROMA Group,
Union City Station (USA)



SAA Associates,
Madrona Marsh NC (USA)

Heineken,
(Mexico)

Charl Gous,
ACES South Africa

Armando Solano,
Zaha Hadid Architects

Joel Shandelman,
CTO/ Bell Works

Enrique Ruiz,
CC LUMEN- plaza Olivar

Segun Abergunrin,
SAA Associates

Axel Laisnter,
Expert for Aviation

We have completed **over 400 projects in more than 60 countries**, several of which are large-scale developments for renowned companies such as **Apple, Samsung, Microsoft, Hewlett Packard, Pepsi, Coca-Cola, McDonald´s, Heineken, Balenciaga, Marriott, Pfizer** and **Novartis.**

We also collaborate with architects, engineers, consultants and contractors worldwide, including **Foster+Partners, Perkins+Will, SOM, Pelli Clarke, Viñoly, AECOM or Eckersley O'Callaghan.** We have also worked with some of the most important global titans in the construction and real estate industry such as **ACS, Skanska, Acciona, Turner Construction, Ferrovial, or Jacobs.**

Please take a look to our customer's testimonials and much more scanning the QR.

ONYX at YOUTUBE

FOLLOW US:

CONSTRUCTIVE SOLUTIONS

ENERGY GENERATION

ELECTRICITY COST REDUCTION

ENERGY DEMAND REDUCTION FOR INDOOR AIR CONDITIONING

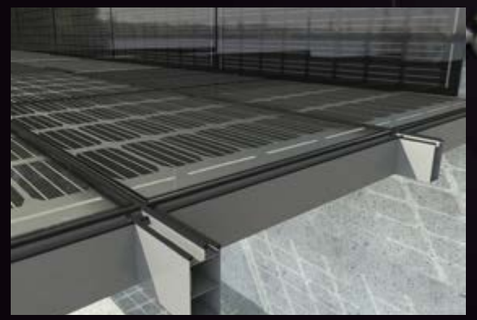
PV WALKABLE FLOOR

PV SKYLIGHT

PV RAILING

PV RAINSCREEN CLADDING

PV CURTAIN WALL



PV CANOPY

PV BRISE SOLEIL

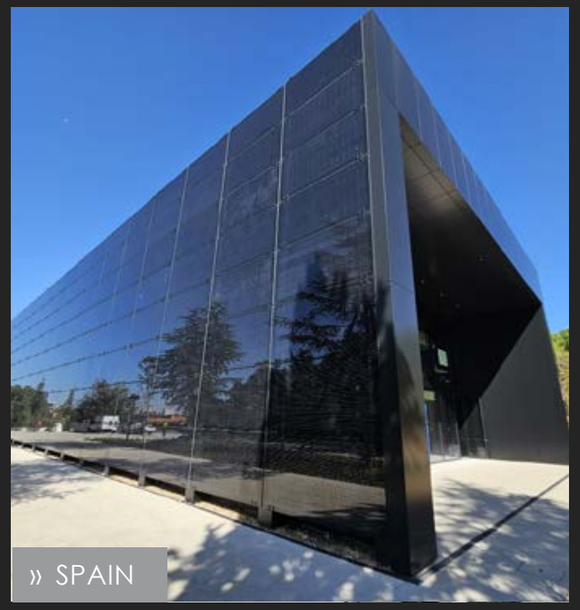
BACK TO START ▲

BACK TO START

» NIGERIA

» NETHERLANDS

» USA

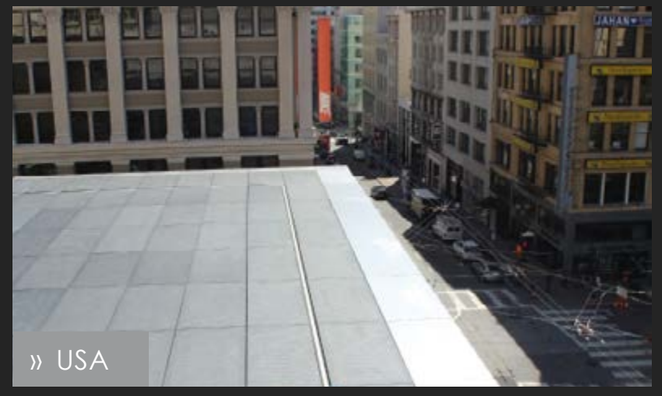


» SPAIN

» USA

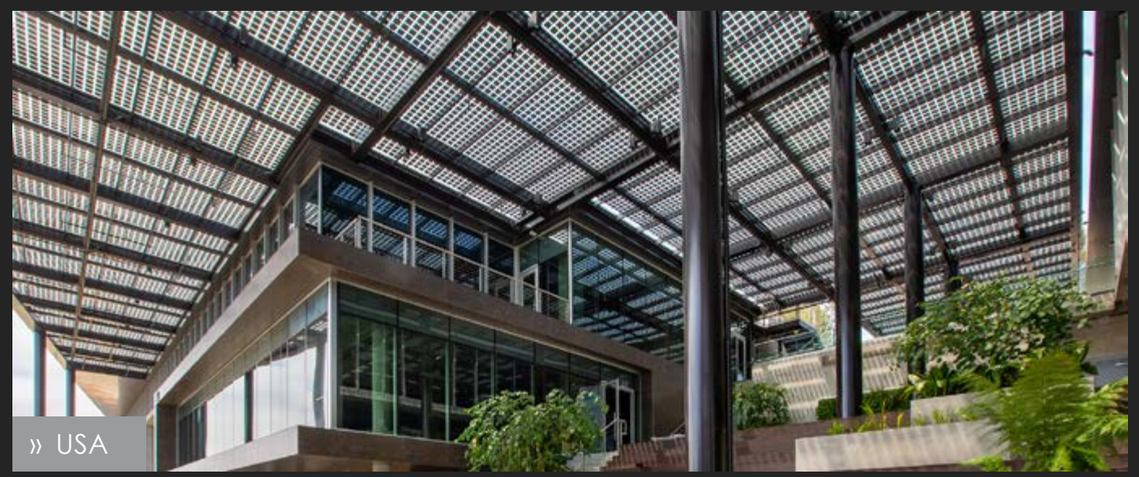
» DUBAI

» DENMARK



» USA

» USA



» USA

ENERGY INDEPENDENCE, BUILDING EXCELLENCE

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