



onyx
SOLAR

**VIDRIO FOTOVOLTAICO PARA EDIFICACIÓN
ONYX SOLAR**



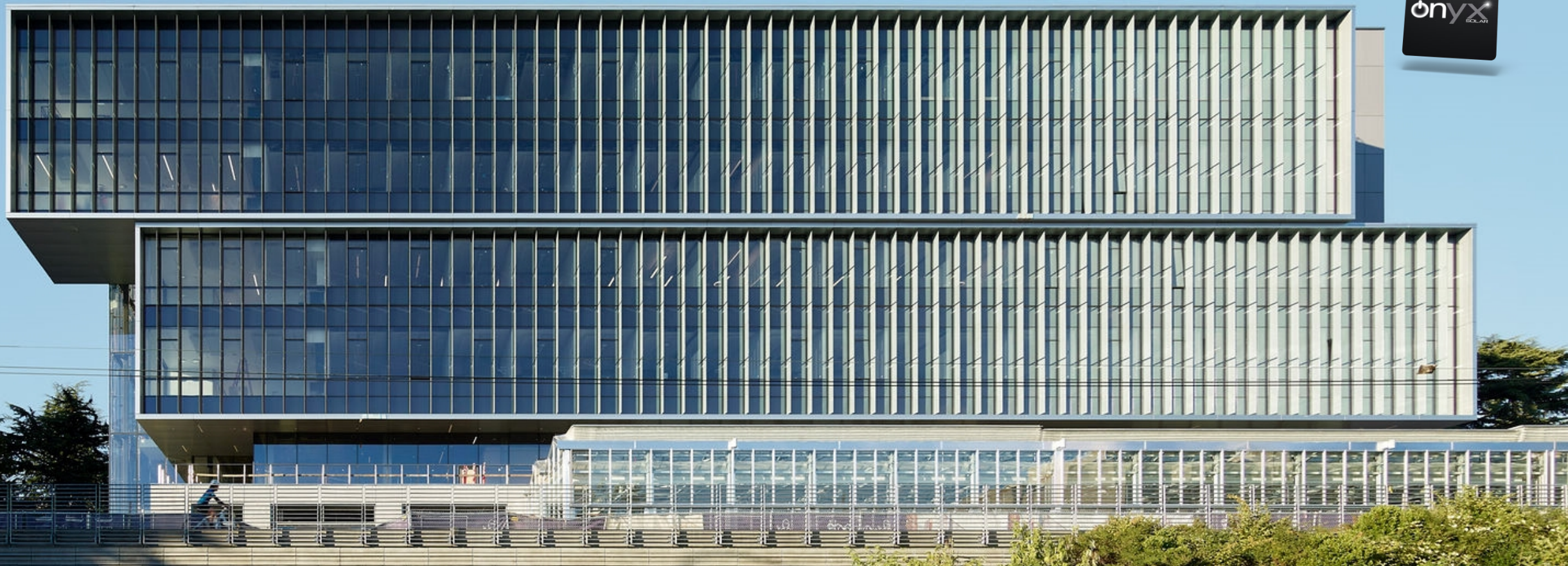
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7. DEMOSTRATIVO ISFOC-ONYX. PROYECTO BIPVBOOST



**Solar architecture is not a fashion,
it is survival.**

Sir Norman Foster



VIDRIO FOTOVOLTAICO (PV)

Vidrio arquitectónico que además de proporcionar al edificio las mismas propiedades pasivas que un acristalamiento convencional, también genera electricidad gratuita gracias al Sol. Por lo tanto, es el **único material de construcción** en el que se consigue en el edificio un **retorno de la inversión**.

PROPIEDADES DEL VIDRIO FV

1	ENERGY GENERATION	
2	UV & IR FILTER	
3	THERMAL & ACOUSTIC INSULATION	
4	NATURAL ILLUMINATION	
5	INNOVATION DESIGN	

→ Disminuye los Costes O&M

→ 99% UV Hasta el 95% IR

→ Tan Bajo como 0,6 W/m²K

→ Transmisión Luminosa (VLT)
según Requerimiento

→ Eficiencia Energética + Estética



SILICIO AMORFO

- Visión sin obstáculos
- Recubrimiento sobre una capa de vidrio plano (CVD)
- Eficiencia 28 – 58 Wp/m²
- Transmisión Luminosa: Opaco, 10, 20, 30%
- Mejor comportamiento en presencia de sombras / nublado (inclinación, orientación)

SILICIO CRISTALINO

- Células solares cuadradas de 158x158 mm.
- 120 – 180 Wp/m²
- Mayor potencia (kWp) instalada por m² (Wp/m²)
- Produce más electricidad bajo radiación solar directa
- Flexibilidad en el diseño funcional – formas trapezoidales



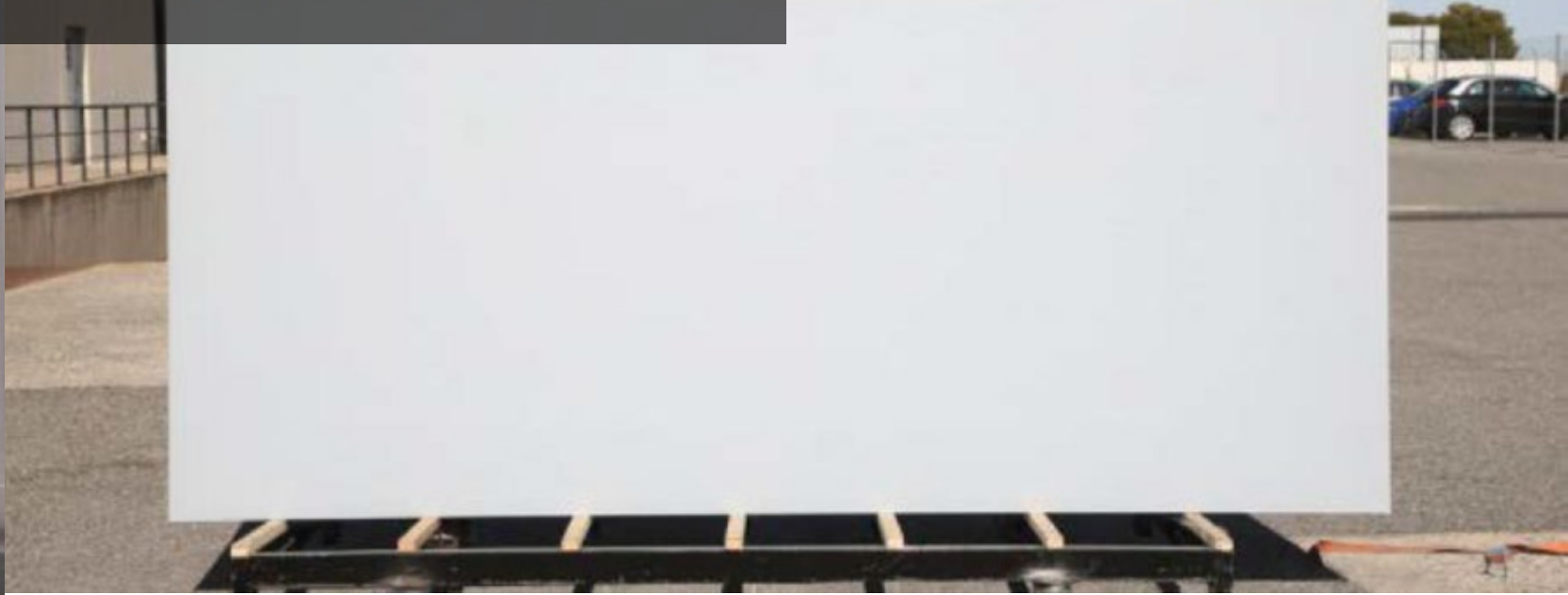
100% Personalizado





TAMAÑO, FORMA Y COLORES

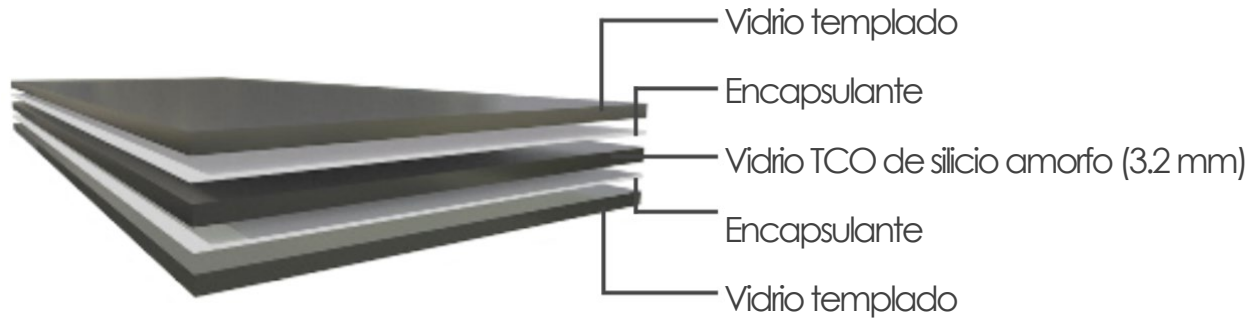
El vidrio se **personaliza** según los **requerimientos específicos** de cada proyecto.



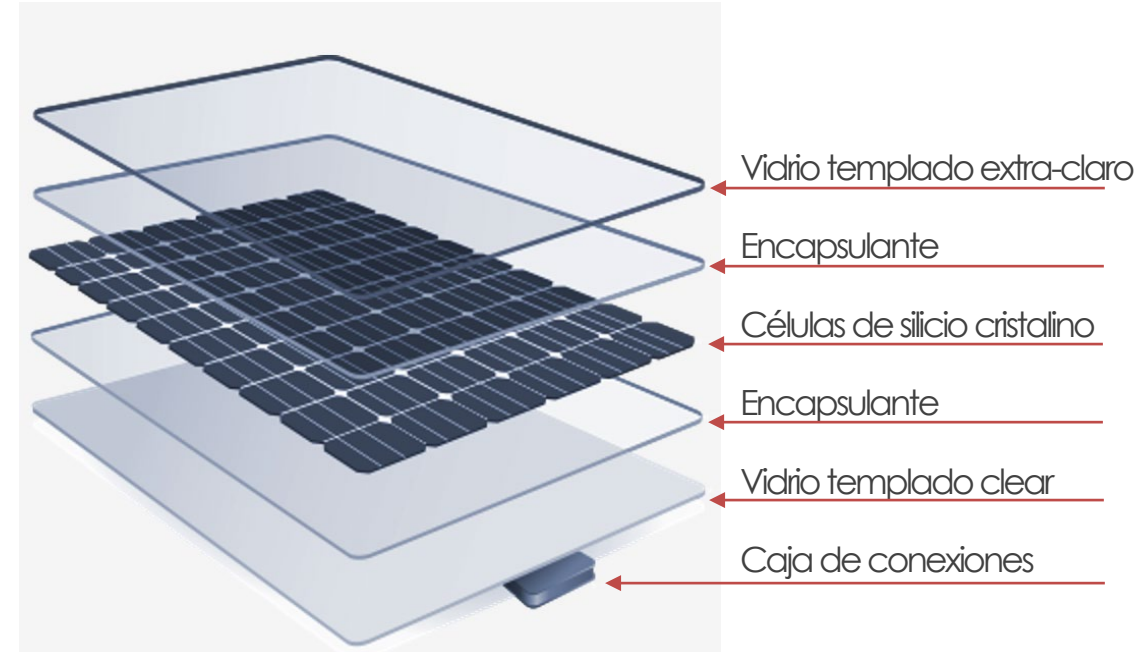
COMPOSICIÓN DEL VIDRIO PV



VIDRIO DE SILICIO AMORFO (THIN FILM)



VIDRIO DE SILICIO CRISTALINO (MONO Y POLY)

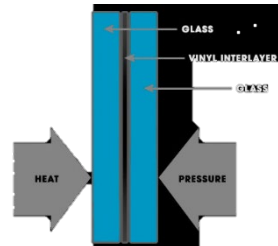


Tratamientos de vidrio & Coatings:



Templados
 Termoendurecidos
 Heat Soak Test
 Bajos emisivos
 Anti-reflectivos
 Otros coatings...

Encapsulantes



PVB
 EVA
 Vanceva Color
 SentryGlass

Cajas de conexión:

Monopolar



Bipolar



Lateral

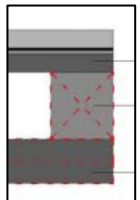


Conectores MC4



Cámaras de aire:

Doble acristalamiento
 Triple acristalamiento
 Aire/Argón





2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

◆ "Complementary action" CDTI
◆ Development of new products for sustainable buildings.
◆ "INNDISOL"
◆ "Multifunctional walkable LED-PV system design"
◆ "HERB"
◆ Solid state Dye-Sensitized Solar Cells
◆ "AUTONOMOUS OFFICE"
◆ "ARTE SUN"
◆ "R2CITIES"
◆ "EUROPHIT"
◆ "REELCOOP"
◆ "SOHIRE"
◆ "ADVANCED BIPV"
◆ "PVSITES"
◆ "PV-INV"
◆ "PV.COM"
◆ "REZBUILD"
◆ "SOLASHARC"
◆ "ENERGYMATCHING"
◆ "ESPRESSO"
◆ "BIPVBOOST"
◆ "COMCO"
◆ "WHITE FAÇADES"
◆ "POCITYF"
◆ "TECH4WIN"
◆ "RESPONSE"

National
Complementary action: Technology transference for the optimization of productive processes during photovoltaic modules manufacturing
CDTI (Interempresas Internacional)
CDTI
47,647.06€/23,227.6 € (G)

Regional
Development of new products for sustainable buildings.
Ade
Inversiones y Servicios
(Nov 2009 to Oct 2011)
ADE (Learning to innovate)
219,518.0€/96,143.13€ (G)

National
INNDISOL (Innovation on photovoltaic devices and solar architectural integration)
Ministerio de Ciencia e Innovación (INNACTO 2010)
Total: 3,988,839€ / 3,735,525€
ONYX: 621,492€ / 590,417.4€ (L)

Regional
LED-PV multifunctional system design walkable
Ade
Inversiones y Servicios
(Jun 2010 to Apr 2012)
ADE (INNOEMPRESA 2.010)
168,004.4€/80,867.2€ (G)

European
HERB (Holistic energy-efficient retrofitting of residential buildings) (Nov 2012 to Apr 2016)
HERB
European Commission (7FP)
Total: 8,306,211.40€ / 5,800,200€
ONYX: 668,058.40€ / 478,538.44€ (G)

Regional
Solid state Dye-Sensitized Solar Cells: nanostructured laminas as precursor of photovoltaic paint for sustainable buildings
Ade
Agencia de Innovación, Financiación e Internacionalización Empresarial
(Apr 2012 to Sept 2014)
ADE (R&D Projects)
256,646.10€/133,199.28 € (G)

European
AUTONOMOUS OFFICE (Model for a green energy autonomous office building)
European Commission (Life+2011)
Total: 1,430,723€ / 851.58€
ONYX: 367,436€ / 177,404.29€ (G)

European
ARTESUN (Efficient, large-area arbitrary shape solar energy) (Nov 2013 to Oct 2016)
European Commission (7FP)
Total: 5,192,648.80€ / 3,683,000€
ONYX: 450,923.20€ / 271,867.87€ (G)

European
R2CITIES (Renovation of Residential urban spaces: Towards nearly zero energy CITIES)
European Commission (7FP)
(Jul 2013 to Jun 2018)
Total: 14,684,094.74€ / 9,011,330.87€
ONYX: 478,513.85€ / 360,637.22€ (G)

European
EUROPHIT (Improving the energy performance of step-by-step refurbishment and integration of renewable energies) (Apr 2013 to Mar 2016 - ONYX incorporated on Apr 2014)
European Commission (CIP Programme, Intelligent Energy Europe)
Total: 1,472,431€ / 1,104,371€
ONYX: 52,578€ / 42,053.73€ (G)

European
REELCOOP (Research Cooperation in Renewable Energy Technologies for Electricity Generation)
European Commission (7FP)
(Sept 2013 to Feb 2018)
Total: 7,478,983.20€ / 5,272,634.15€
ONYX: 428,912€ / 300,489.58€ (G)

National
SOHIRE (Reactive and hybrid solution for sustainable envelopes)
CDTI (Cooperative projects for research and development)
CDTI
(Sept 2014 to Jun 2015)
Total: 673,705€
ONYX: 332,442€ / 282,575.7€ (L)

European
ADVANCED BIPV (New Generation of BIPV glass with advanced integration properties)
European Commission (H2020 – SME Instrument Phase 2)
(Apr 2015 to Mar 2017)
ONYX: 2,695,887.50 / 1,888,368.23€ (G)

European
PVSITES (Building-integrated photovoltaic technologies and systems for large-scale market deployment) (Jan 2016 to Jun 2020)
European Commission (H2020)
Total: 8,490,472.50€ / 5,467,611.76€
ONYX: 716,625.00€ / 534,955.90€ (G)

Regional
PV-INNV (Photovoltaic Greenhouse)
Ade
Agencia de Innovación, Financiación e Internacionalización Empresarial
(Apr 2017 to Mar 2019)
ADE (SME R&D Projects)
ONYX: 171,377€ / 70,264.57€ (G)

European
PVCOM (Multifunctional photovoltaic devices based on transparent composite and CIGS for integration)
European Commission – Eureka – Eurostars 2
(May 2017 to Oct 2019)
CDTI (Eurostars 2)
Total: 1,305,000€
ONYX: 662,500 € (578,469€ national proposal) / 326,299,48 € (G)

European
Rezbuild (REfurbishment decision making platform through advanced technologies for near Zero energy BUILDing renovation)
European Commission (H2020)
(Oct 2017 to Jan 2022)
Total: 8,914,100.09€ / 6,909,476.83€
ONYX: 449,200.00€ / 316,307.67€ (G)

European
SolarSharC (A durable selfclean coating for solar panels to improve PV energy generation efficiency)
European Commission (H2020)
(May 2017 to Apr 2019)
Total: 2,767,469.38€ / 2,267,363€
ONYX: 576,250€ / 403,890.82€ (G)

European
EnergyMatching (Adaptable and adoptive RES envelope solutions to maximize energy harvesting and optimize EU building and district load matching)
European Commission (H2020)
(Oct 2017 to July 2022)
Total: 6,926,301.34€ / 5,389,941.88€
ONYX: 491,875.00€ / 360,803.37€ (G)

European
ESPRESSo (Efficient Structures and Processes for Reliable Perovskite Solar Modules)
European Commission (H2020)
(Apr 2018 to Sept 2021)
Total: 5,412,657.50€ / 5,412,657.50€
ONYX: 280,000.00€ / 297,179.09€ (G)

European
BIPVBOOST (Bringing down costs of BIPV multifunctional solutions and processes along the value chain, enabling widespread NZEBs implementation)
European Commission (H2020)
(Oct 2018 to May 2023)
Total: 11,434,538.75€ / 8,844,070.14€
ONYX: 1,188,750.00€ / 832,125.00€ (G)

European
COMCO (Photovoltaic devices based on composite material and advanced functional coatings).
Eureka – European Commission – CDTI (Eurostars 2)
(Nov 2018 to Oct 2021)
Total: 1,198,875€
ONYX: 700,124€ / 412,927.29€ (G)

European
TECH4WIN (Disruptive sustainable TECHNOLOGIES FOR next generation pvWINDOWS).
European Commission (H2020)
(Jan 2019 to Dec 2022)
Total: 2,877,045.32€ / 2,877,045.32€
ONYX: 394,025.00€ / 394,025.00€ (G)

European
POCITYF (A Positive Energy CITY Transformation Framework).
European Commission (H2020)
(Oct 2019 to Sept 2024)
Total: 22,494,291.76€ / 19,998,275.34€
ONYX: 688,125€ / 481,687.5€ (G)

Regional
WHITE FAÇADES (Development and study of new BIPV solutions).
ICE (2018 R&D Projects)
(May 2019 to Oct 2022)
ONYX: 174,955.50€ / 54,236.21€ (G)

European
RESPONSE (Integrated Solutions for Positive energy and resilient Cities)
European Commission (H2020)
(Oct 2020 to Sept 2025)
TOTAL: 23,518,824.75€ / 19,820,169.47€
ONYX: 869,571.25€ / 608,699.88€ (G)



R & D & I projects carried out or participated by ONYX until 14.12.2022
Total: total eligible costs / total amount received by the project
ONYX: eligible costs / amount received by ONYX (G: grant; L: loan)

Completed project
 Ongoing project
 Granted but no initiated project




◆ "RENERMAP"
◆ "CIRCTHREAD"
◆ "METABUILDING LABS"
◆ "ENSNARE"

◆ "SEAMLESS-PV"
◆ "NEUTRALPATH"

European

ENSNARE (Envelope mesh and digital framework for building Renovation)





(Jan 2021 to Jan 2025)
European Commission (H2020)

Total: 10,168,332.88€ / 7,994,645.66€
ONYX: 591,843.75€ / 414,290.63€ (G)

Regional

RENERMAP (Mapa dinámico del potencial renovable a escala municipal)

(Apr 2021 to Dec 2022)
ICE (2018 R&D Projects)

Total: 245,000.00€
ONYX: 75,000.00€ / 31,500.00€ (G)

European

NEUTRALPATH (Pathway towards Climate-Neutrality through low risky and fully replicable Positive Clean Energy Districts)





(Jan 2023 to Dec 2027)
European Commission (Horizon Europe)

Total: 23,932,617.34€ / 19,618,158.39€
ONYX: 1,102,925.00€ / 772,047.50€ (G)

European

METABUILDING LABS (METAclustered, SME oriented European Open Innovation Test Bed for the BUILDING envelope materials industrial sector using a harmonised and upgraded technical framework and living LABS)





(Jan 2021 to Jan 2026)
European Commission (H2020)

Total: 16,324,769.80€ / 14,944,528.75€
ONYX: 286,250.00€ / 200,375.00€ (G)

European

SEAMLESS-PV (Development of advanced manufacturing equipment and processes aimed at the seamless integration of multifunctional PV solutions, enabling the deployment of IPV sectors)



(Jan 2023 to Dec 2026)
European Commission (Horizon Europe)

Total: 16,190,714.78€ / 12,582,309.3€
ONYX: 972,887.50€ / 681,021.25€ (G)

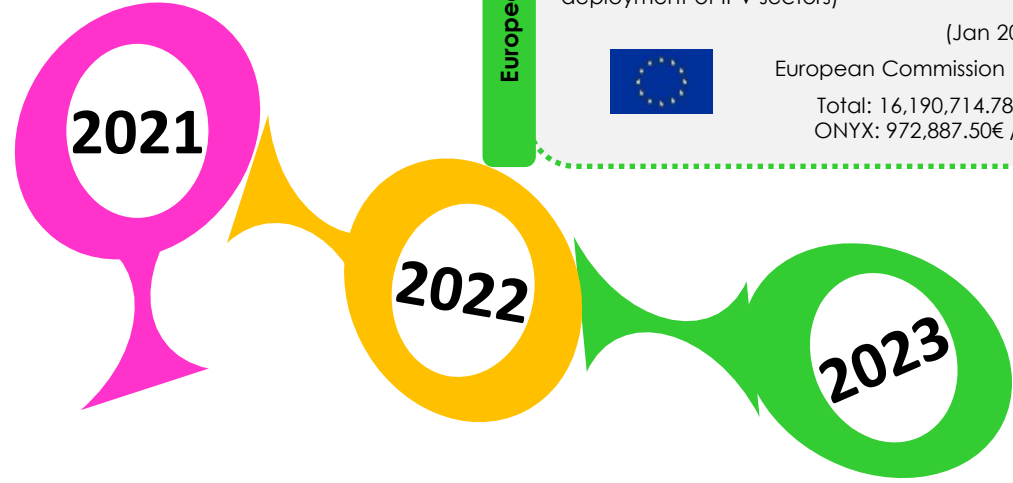
European

CIRCTHREAD (Building the Digital Thread for Circular Economy Product, Resource & Service Management)




(Jun 2021 to May 2025)
European Commission (H2020)

Total: 9,883,198.21€ / 7,994,956.75€
ONYX: 159,750.00€ / 111,825.00€ (G)



R & D & I projects carried out or participated by ONYX until 14.12.2022

Total: total eligible costs /total amount received by the project
ONYX: eligible costs / amount received by ONYX (G: grant; L: loan)

— Completed project - - - Ongoing project Granted but no initiated project



LUCERNARIO



PÉRGOLA



FACHADA VENTILADA



SUELO



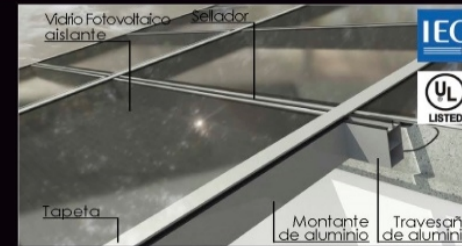
MURO CORTINA



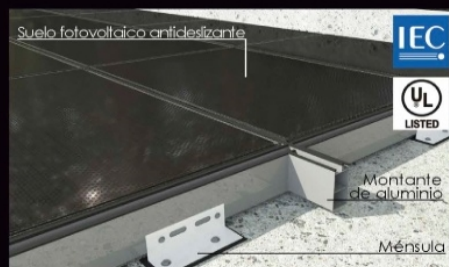
BARANDILLA

CONVIERTE EDIFICIOS COMPLETOS EN GENERADORES DE ENERGÍA

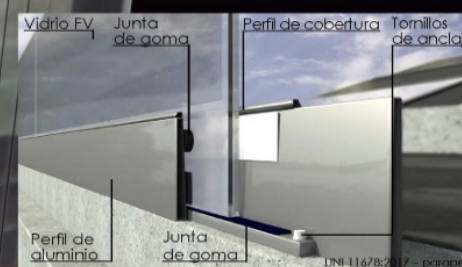
ESCENARIO FOTOVOLTAICO



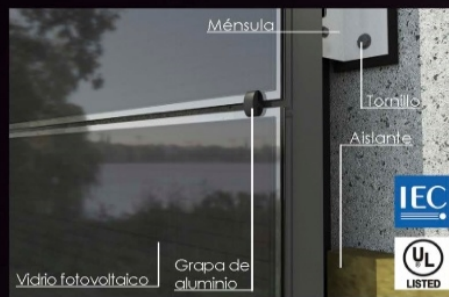
PAVIMENTO TÉCNICO FOTOVOLTAICO



BARANDILLA FOTOVOLTAICA



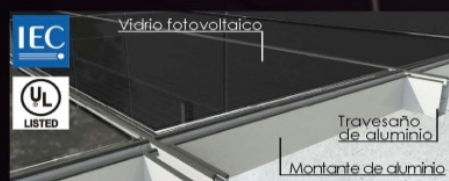
FACHADA Y CUBIERTA VENTILADA FOTOVOLTAICAS



MURO CORTINA FOTOVOLTAICO

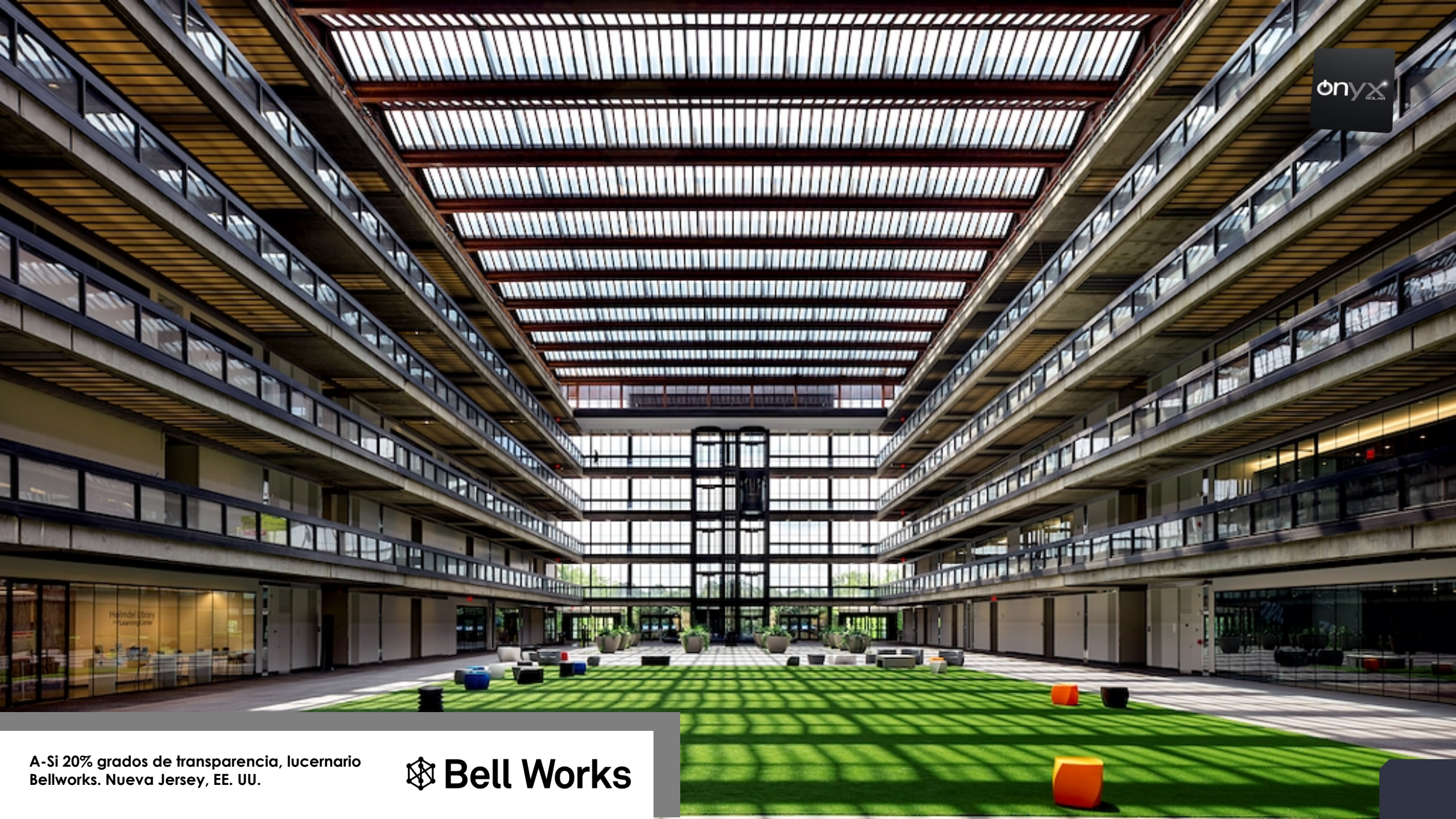


MARQUESINA Y PÉRGOLA FOTOVOLTAICAS



PARASOL FOTOVOLTAICO





A-Si 20% grados de transparencia, lucernario
Bellworks. Nueva Jersey, EE. UU.

 **Bell Works**



Silicio Amorfo. 20% Transparencia. Lucernario.
Aduana Histórica Rangeerloods. Países Bajos.





Silicio Amorfo. 10% Transparencia. Lucernario.
Hotel Neya Oporto. Oporto, Portugal.





Lucernario Monocristalino.
Sede de Novartis. Nueva York.





Silicio Amorfo. 10% Transparencia. Lucernario.
Edificio de Oficinas Ombú. Madrid, España.

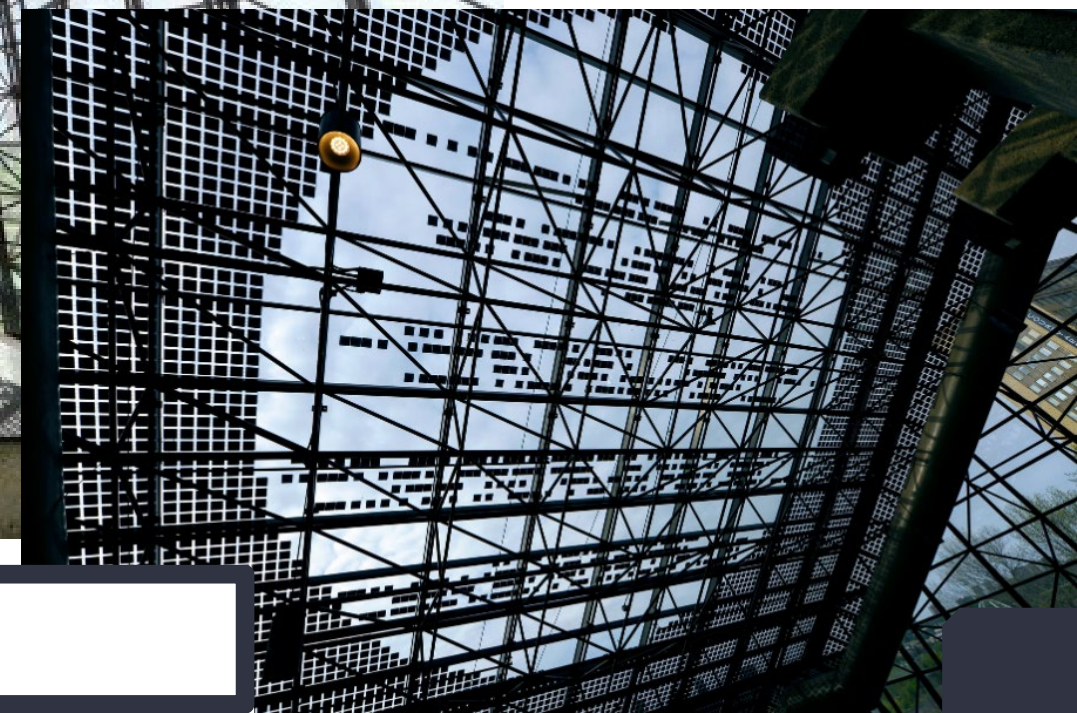
Foster + Partners  **acciona**



Lucernario. Silicio monocristalino.
Edmonton Convention Centre, Canada



DIALOG



Lucernario. Silicio monocristalino
Edmonton Convention Centre, Canada



DIALOG



Lucernario. Silicio monocristalino
National Petroleum Tech Center, Reino de Arabia Saudí





Lucernario. Silicio monocristalino
National Petroleum Tech Center, Arabia Saudi





Lucernario. Silicio monocristalino
McDonalds Restaurant. First Zero Emissions Restaurant in USA. Orlando, FL



ross barney architects



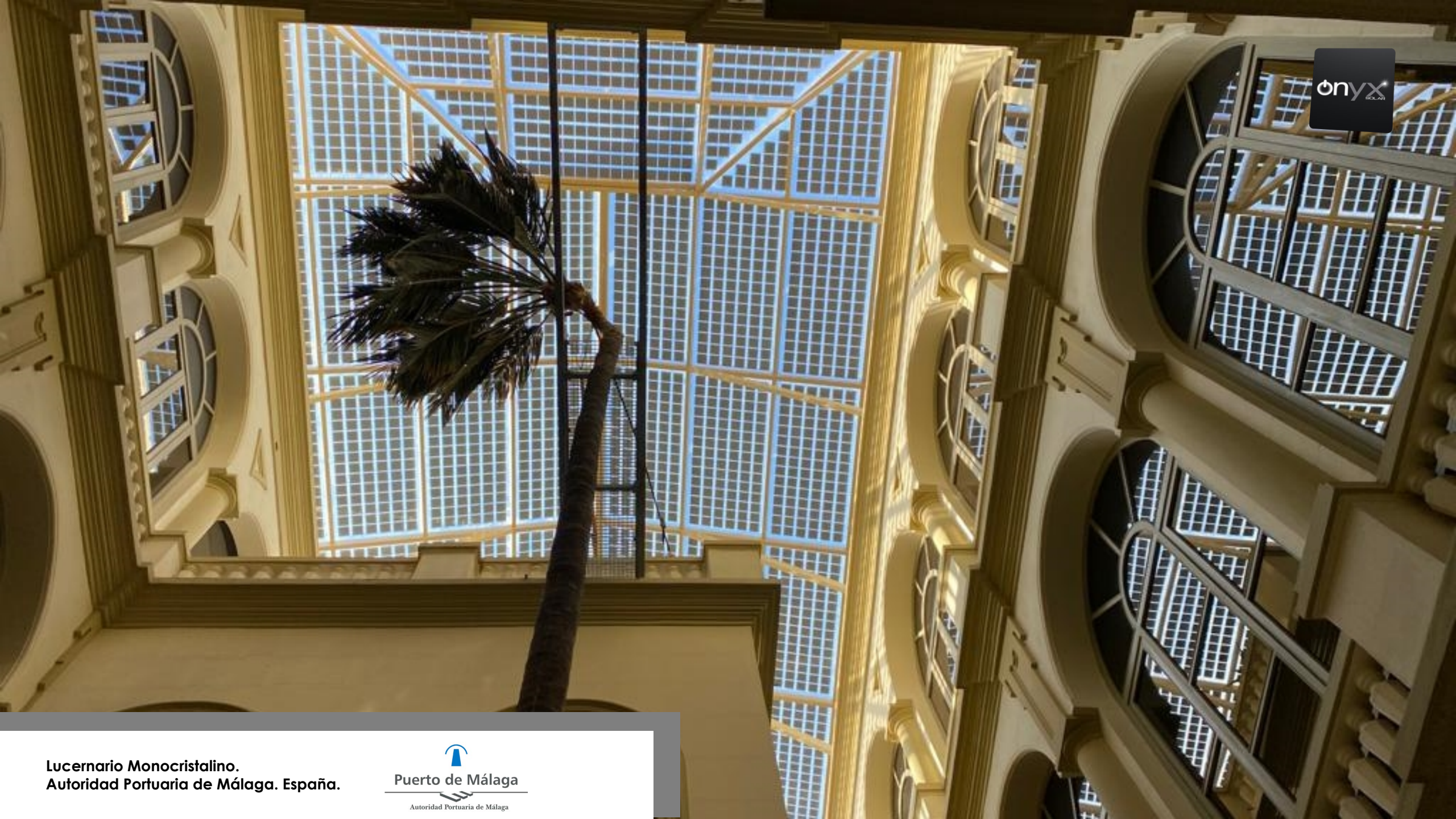
Pérgola de Silicio Monocristalino.
Punto de recarga de vehículos eléctricos, Ayuntamiento de Valladolid.



Pérgola de Silicio Monocristalino.
Punto de recarga de vehículos eléctricos, Ayuntamiento de Valladolid.

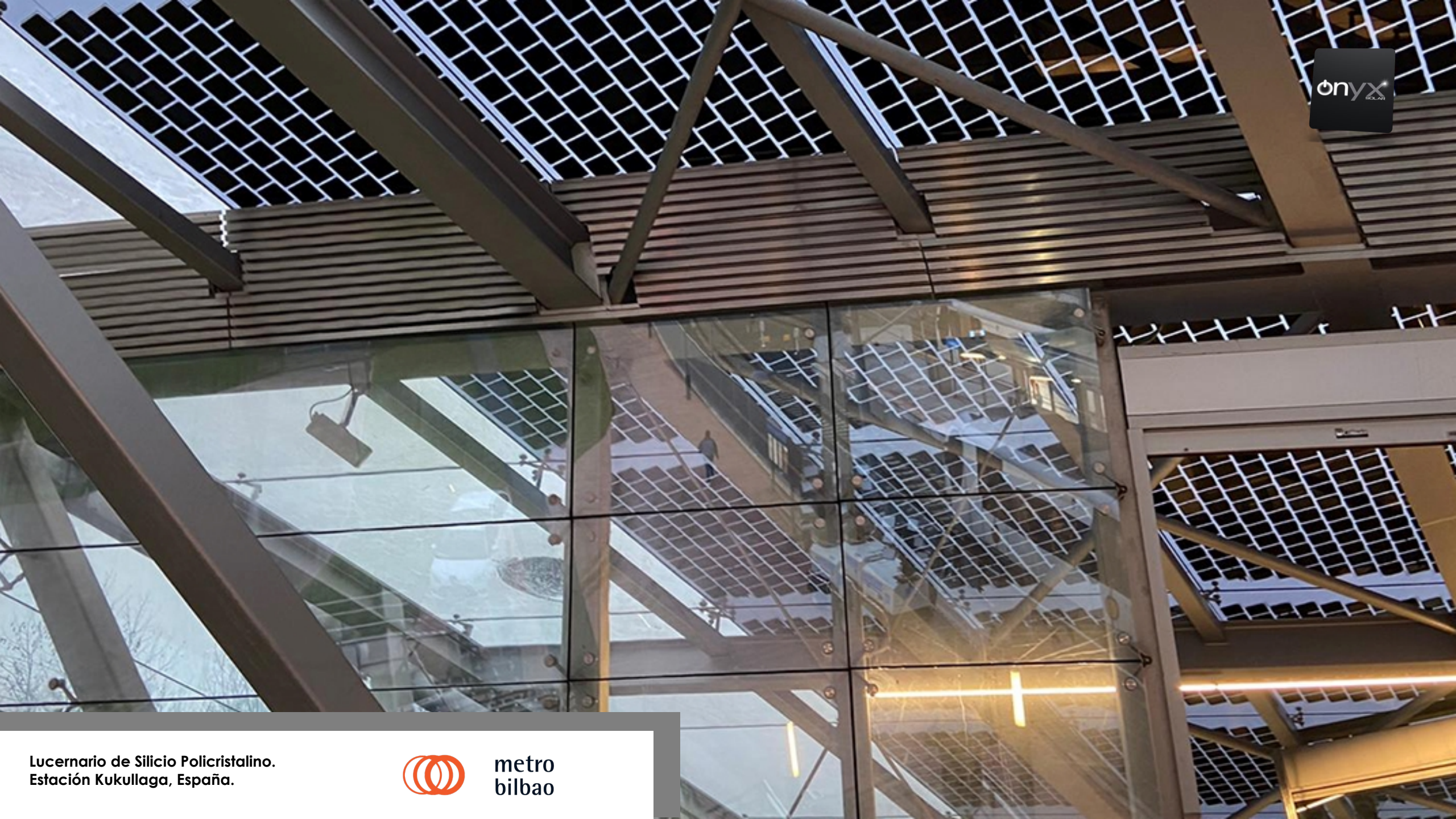


Pérgola de Silicio Monocristalino.
Punto de recarga de vehículos eléctricos, Ayuntamiento de Valladolid.



Lucernario Monocristalino.
Autoridad Portuaria de Málaga. España.





Lucernario de Silicio Policristalino.
Estación Kukullaga, España.



metro
bilbao



Lucernarios. Silicio monocristalino .
Miami Heat Stadium, Miami, USA.



SKANSKA



Doble piel. Silicio monocristalino: Piezas hexagonales.
Science Pyramid. Denver, USA.

DENVER BOTANIC
GARDENS

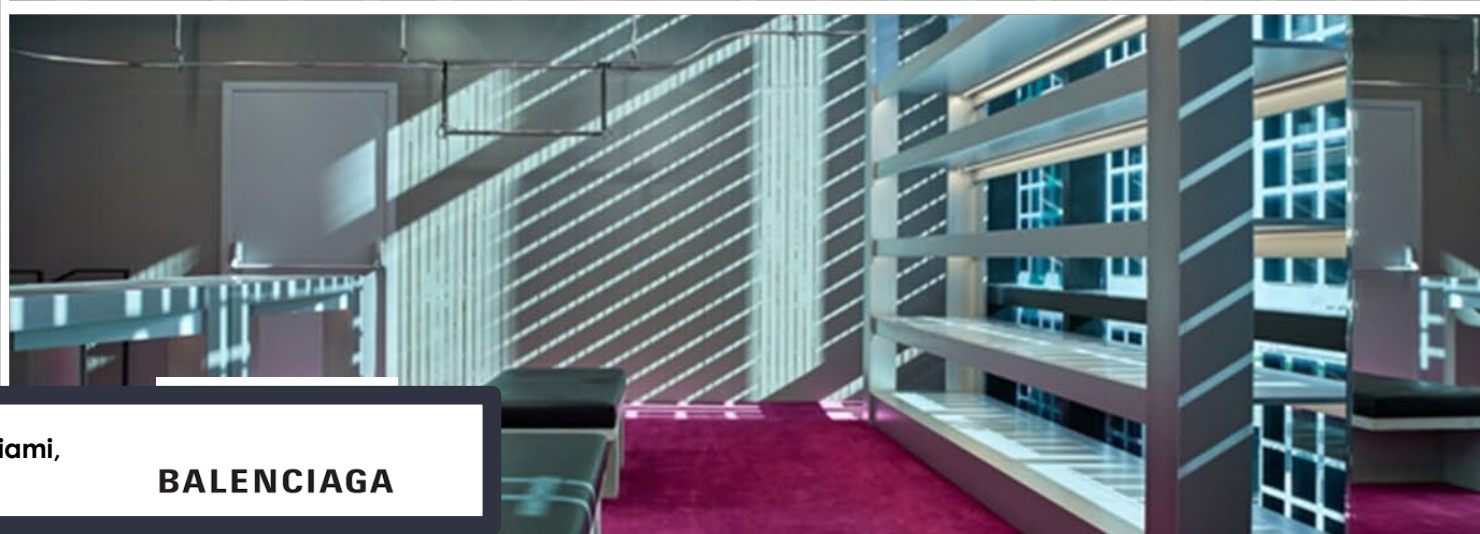


Muro Cortina de Silicio Monocristalino.
Caja Siete. Santa Cruz de Tenerife, España.





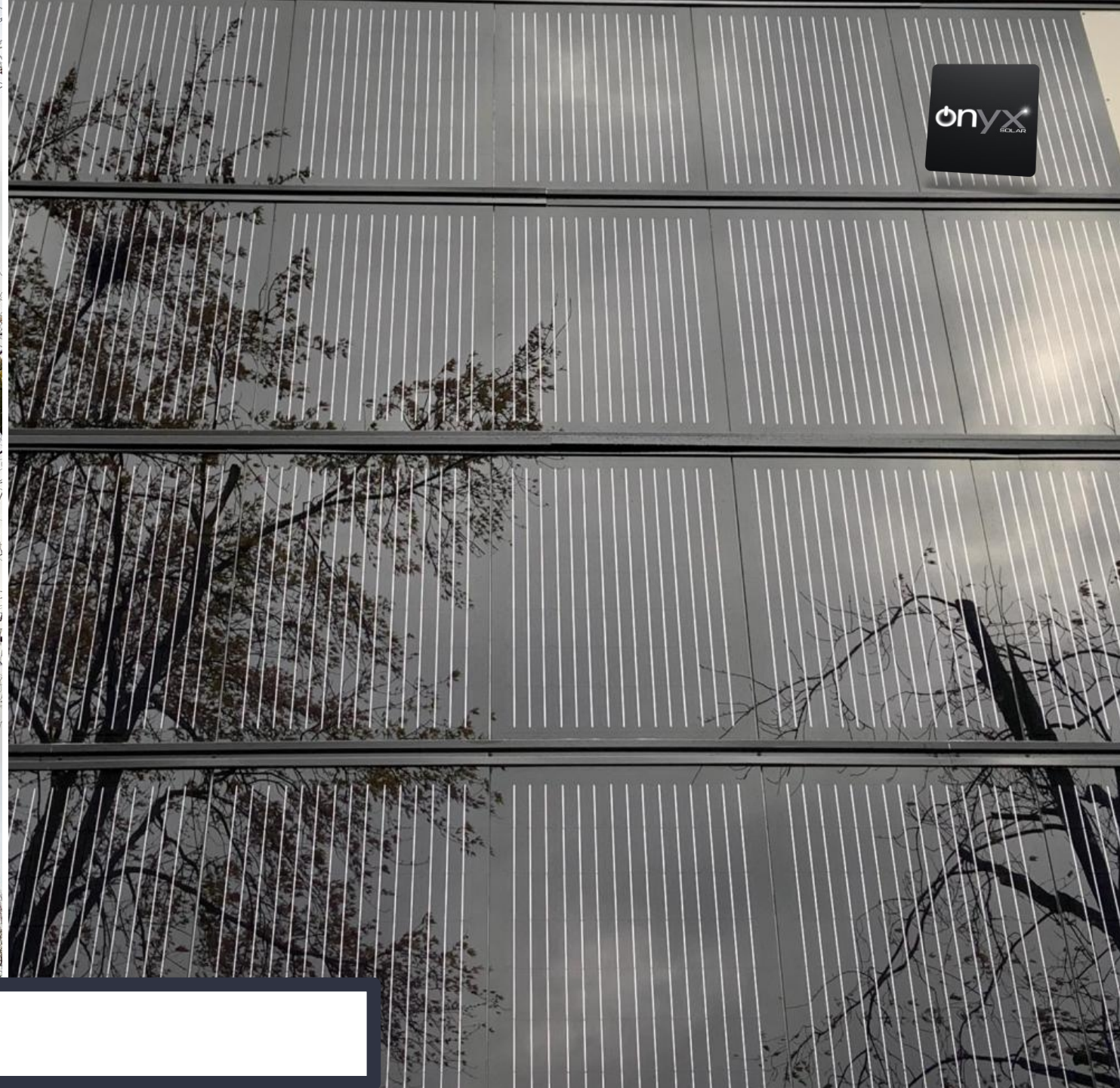
Muro cortina en silicio policristalino con vidrio trasero azul. Balenciaga Store. Miami, USA.



BALENCIAGA



Fachada de Silicio Monocristalino.
Edificio Regent's Crescent, Londres, Reino Unido



Fachada ventilada con células de silicio cristalino y vidrio negro trasero
Lille, France.



Spandrel de Silicio Monocristalino.
Gioia 22. Milán. Italia.





**Mono-Crystalline Silicon Technology in Spandrel area
Gioia 22 Tower, Porta Nuova , Milan - Italy**





Doble piel. Silicio amorfo 20% transparencia
Monterrey, Mexico.





Fachada de Silicio Amorfo. 0% Opaco.
La Escocesa. Barcelona, España.



Fachada de Silicio Amorfo. 0% Opaco.
La Escocesa. Barcelona, España.



Muro Cortina de Silicio Amorfo. 20% transparencia.
Oficinas Meridia Capital. Barcelona, España.

MeridiaCapital



A-Si 20% grado de transparencia, doble piel.
Dubai Electricity and Water Authority (DEWA), Dubai, EAU.





A-Si 20% grado de transparencia, doble piel.
Pediatric Cancer Center. Barcelona, España.

SJD Sant Joan de Déu
Barcelona · Hospital

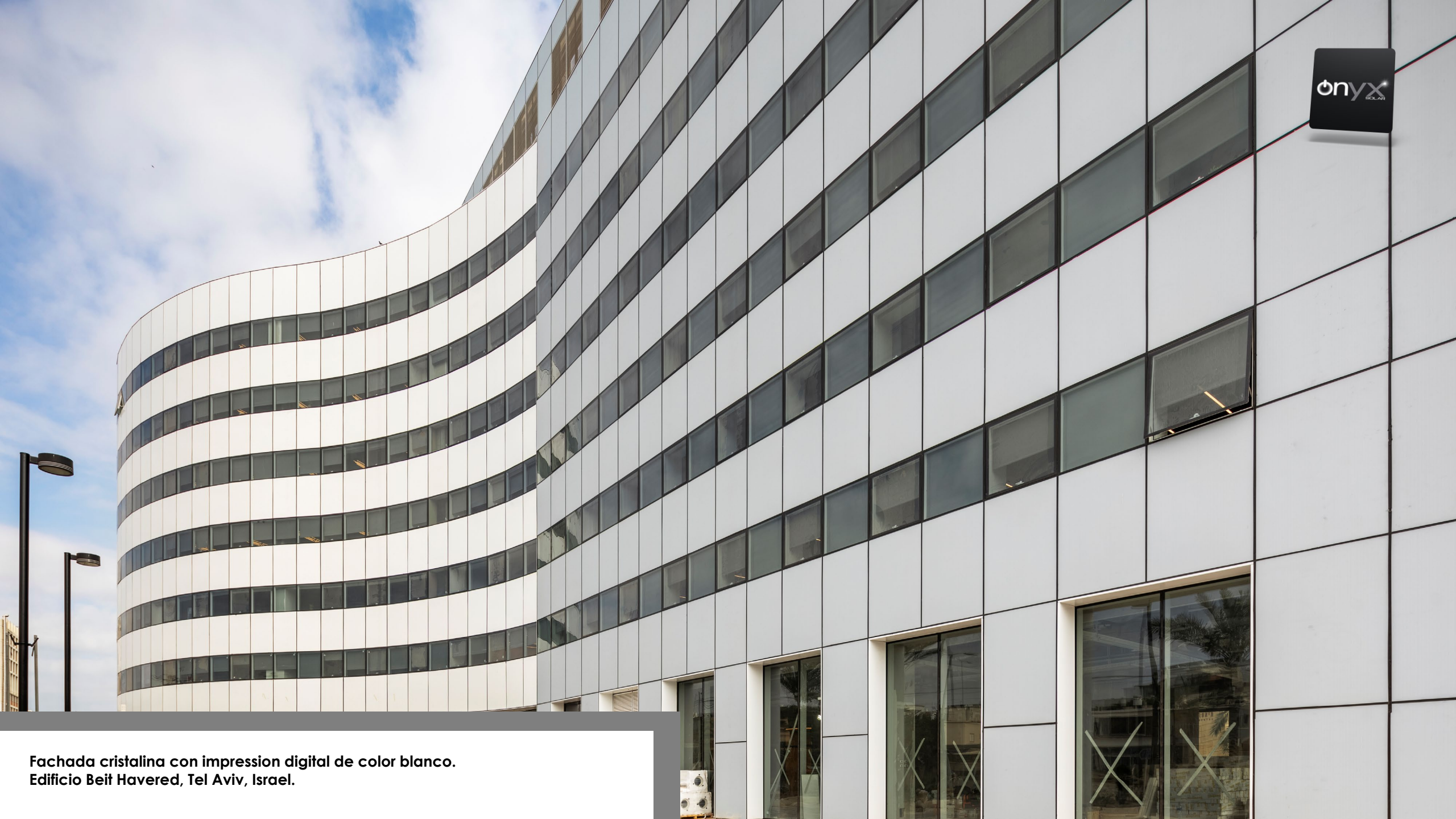


Polycrystalline Silicon Facade.
Sterling Bank. Lagos. Nigeria.



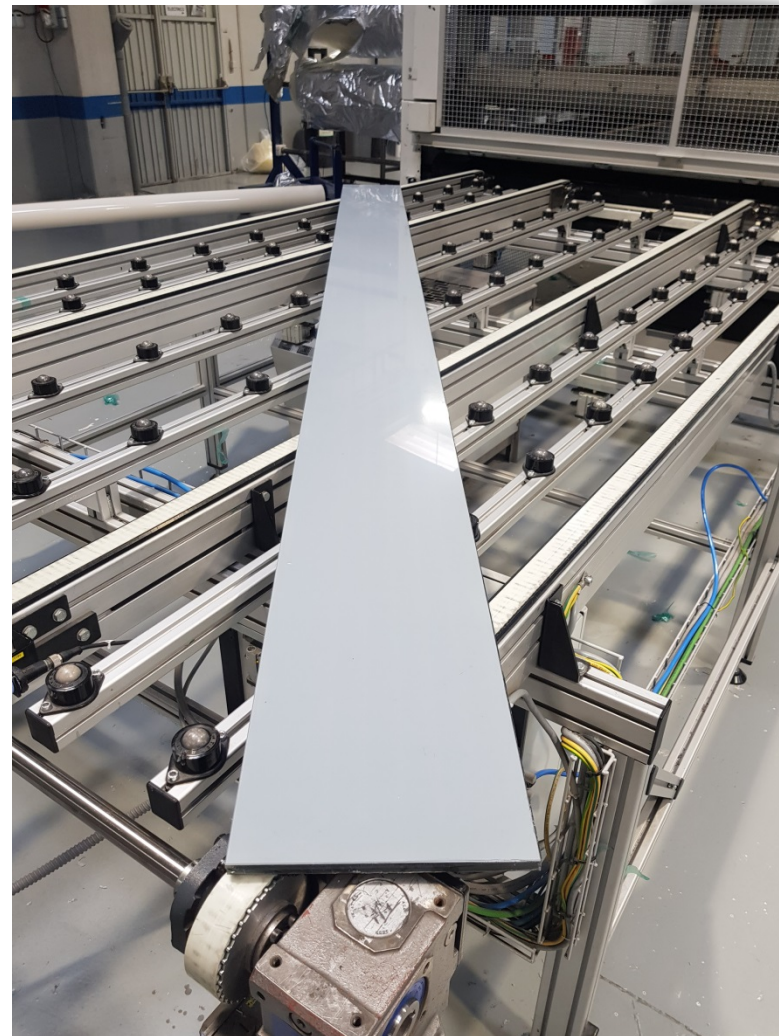


**Fachada cristalina con impresion digital de color blanco.
Edificio Beit Havered, Tel Aviv, Israel.**



Fachada cristalina con impresion digital de color blanco.
Edificio Beit Havered, Tel Aviv, Israel.

VIDRIO FRONTAL COLOR GRIS+ TRASERO NEGRO FOTOS DE MUESTRA DE VIDRIO FOTOVOLTAICO



Registered
Company

ISO 9001

VIDRIO FRONTAL COLOR GREY



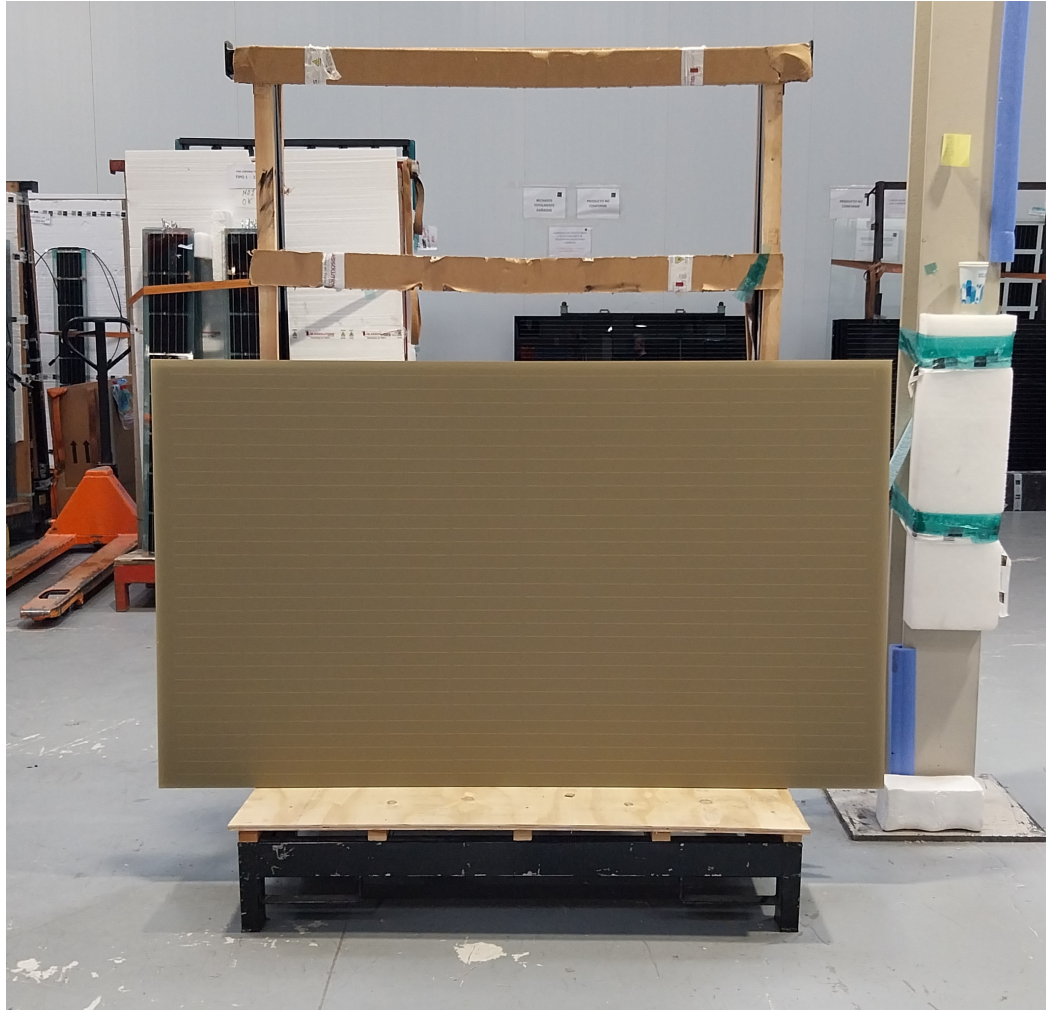
VIDRIO FRONTAL COLOR BLUE



VIDRIO FRONTAL COLOR CORTEN STEEL



VIDRIO FRONTAL COLOR CORAL BROWN Y TERRACOTA



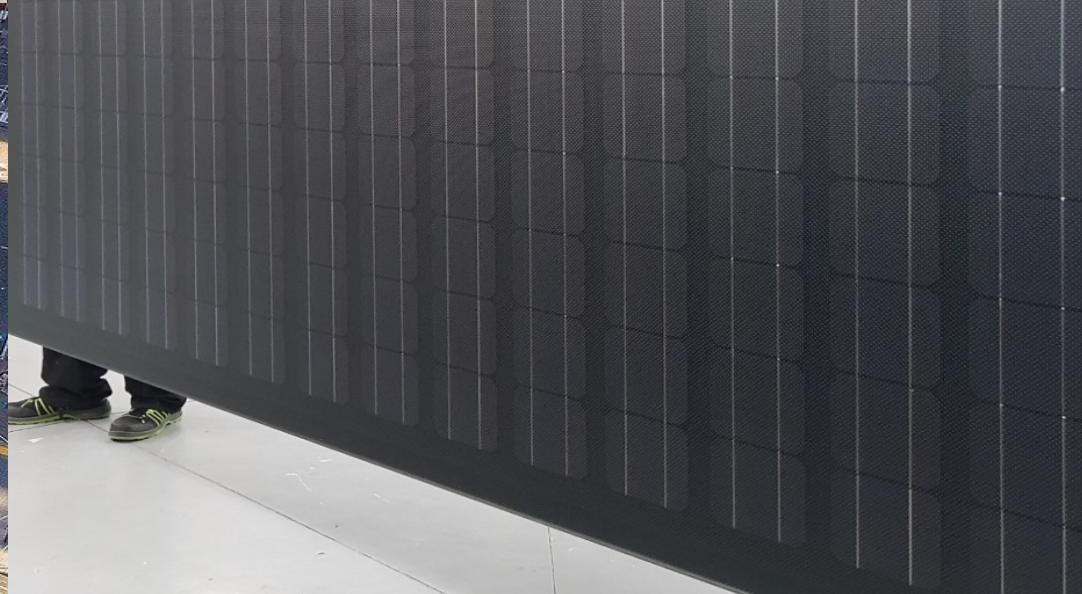
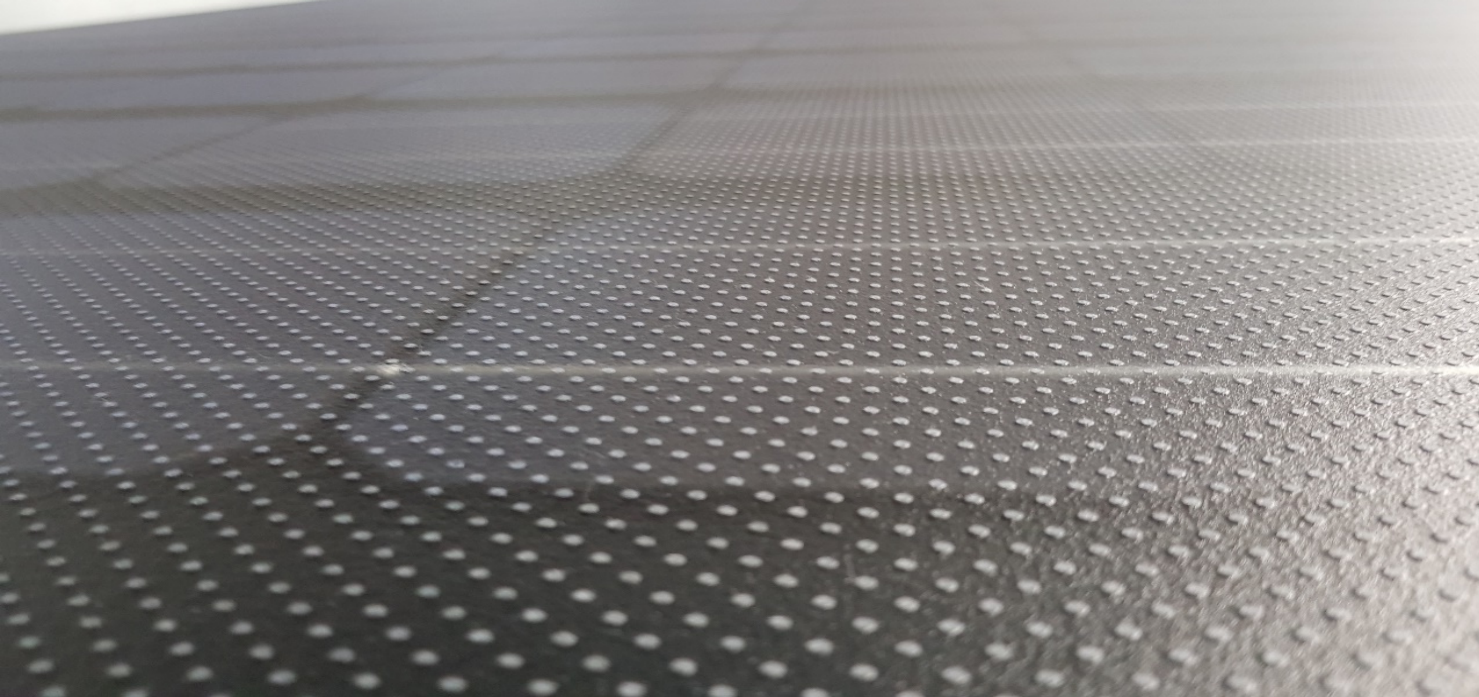


Cubierta plana transitable. Suelo fotovoltaico. Silicio monocristalino (vidrio anti-deslizante).

Foster + Partners



Apple Store. San Francisco, USA.



Cubierta plana transitable. Suelo fotovoltaico. Silicio monocristalino (vidrio anti-deslizante).
Apple Store. San Francisco, USA.

Foster + Partners





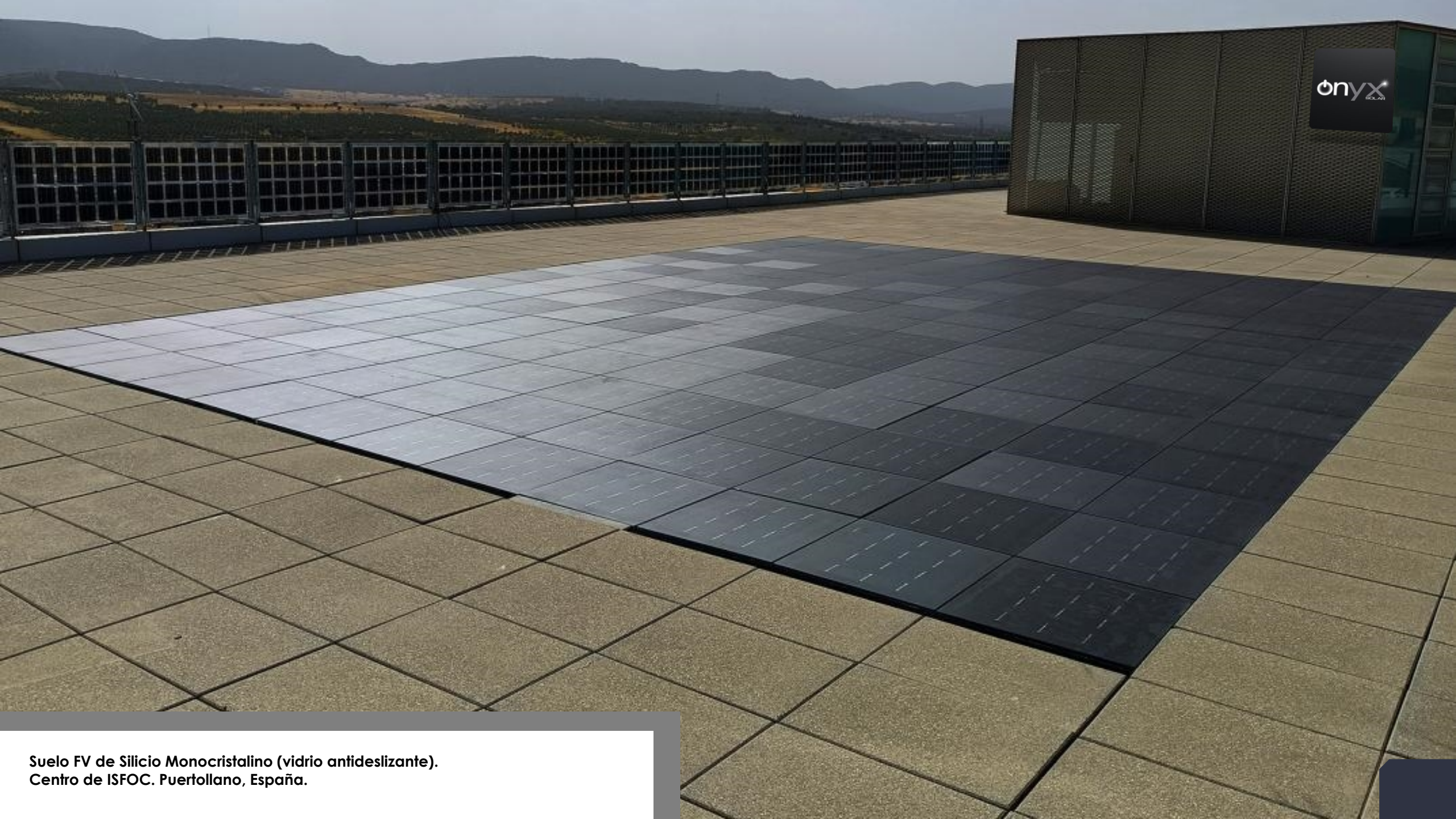
Suelo de Silicio Monocristalino.
Sede de Kirk Kapital, Dinamarca



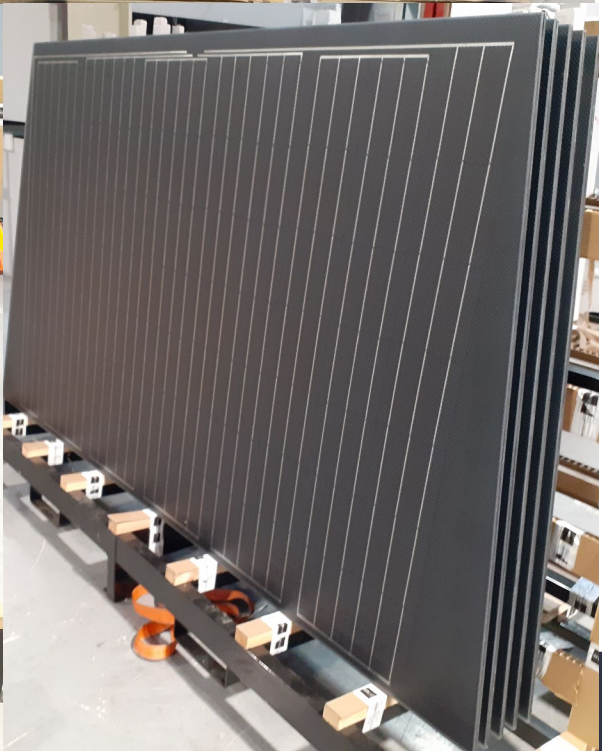
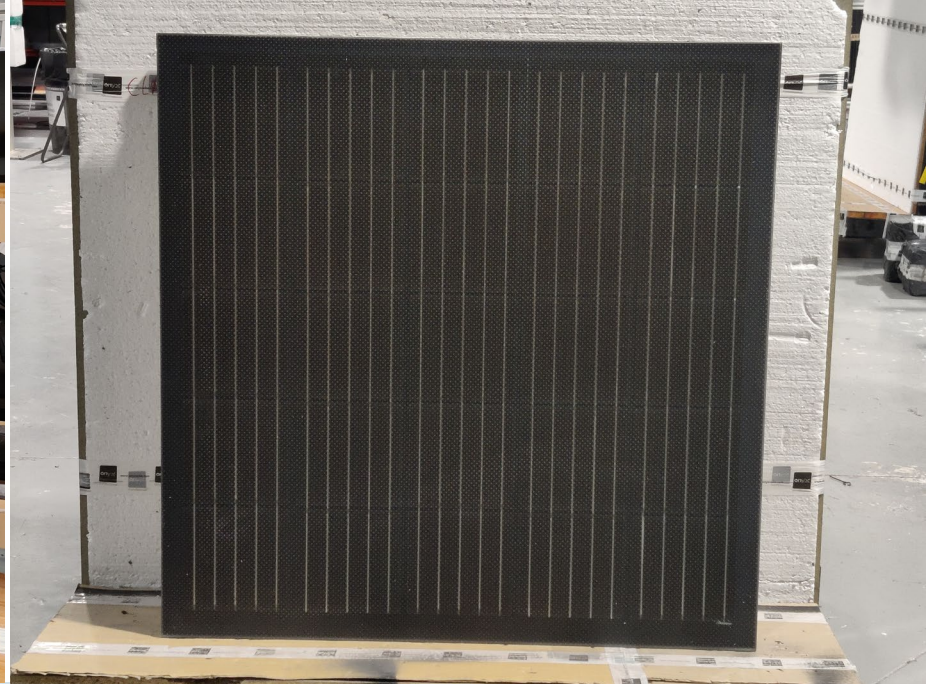
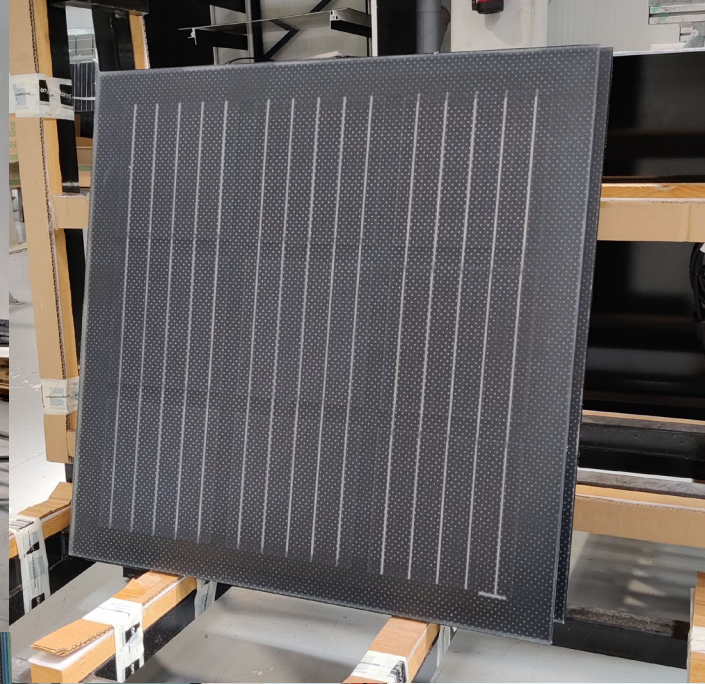


Suelo de Silicio Monocristalino.
Sede de Kirk Kapital, Dinamarca

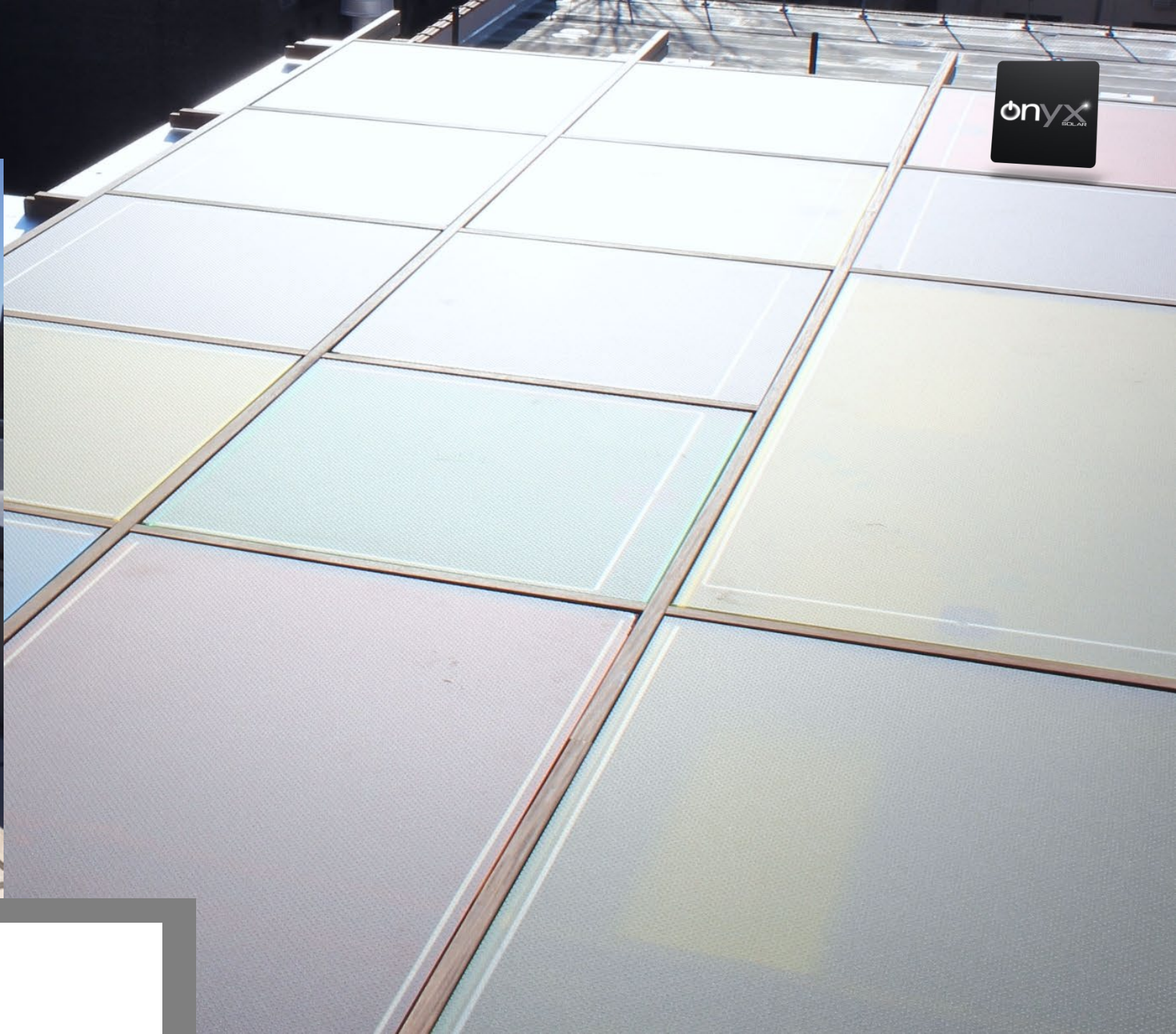




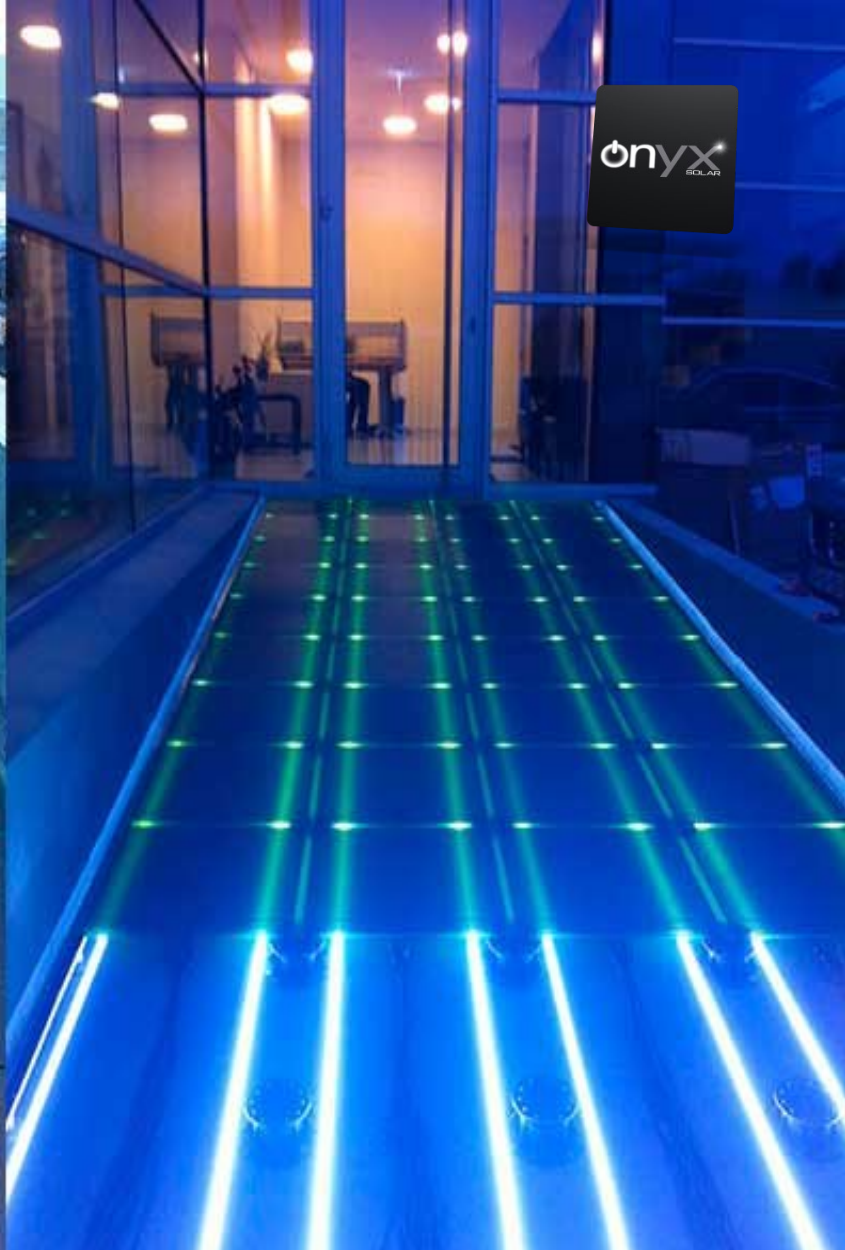
Suelo FV de Silicio Monocristalino (vidrio antideslizante).
Centro de ISFOC. Puertollano, España.



Ejemplos de vidrios para Suelo FV de Silicio Monocristalino (vidrio antideslizante). Proyectos recientemente fabricados para estadio de futbol de Perth (Australia); viviendas en Malta, Navodari (Rumanía), España y USA (Timber Cove).

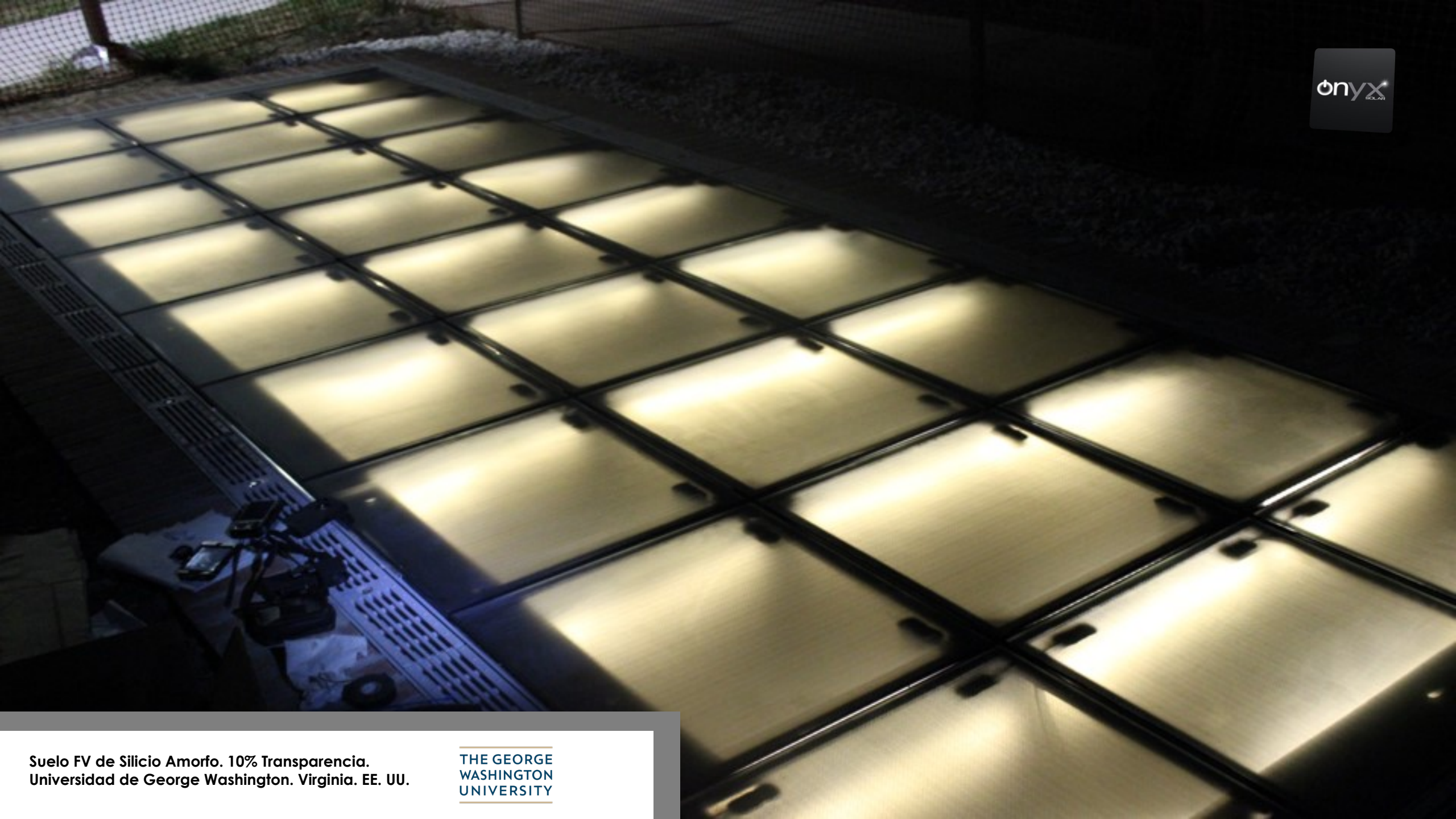


Suelo FV de Silicio Amorphous. 10% Transparencia.
Ático privado. Nueva York, EE. UU.



Suelo FV de Color de Silicio Amorfo. 20% Transparencia.
Edificio de Mendes Gonçalves. Portugal





Suelo FV de Silicio Amorfo. 10% Transparencia.
Universidad de George Washington. Virginia. EE. UU.

THE GEORGE
WASHINGTON
UNIVERSITY



Suelo de Silicio Amorfo. 10% Transparencia.
Avignon Torre 6. Residencial. Hong Kong

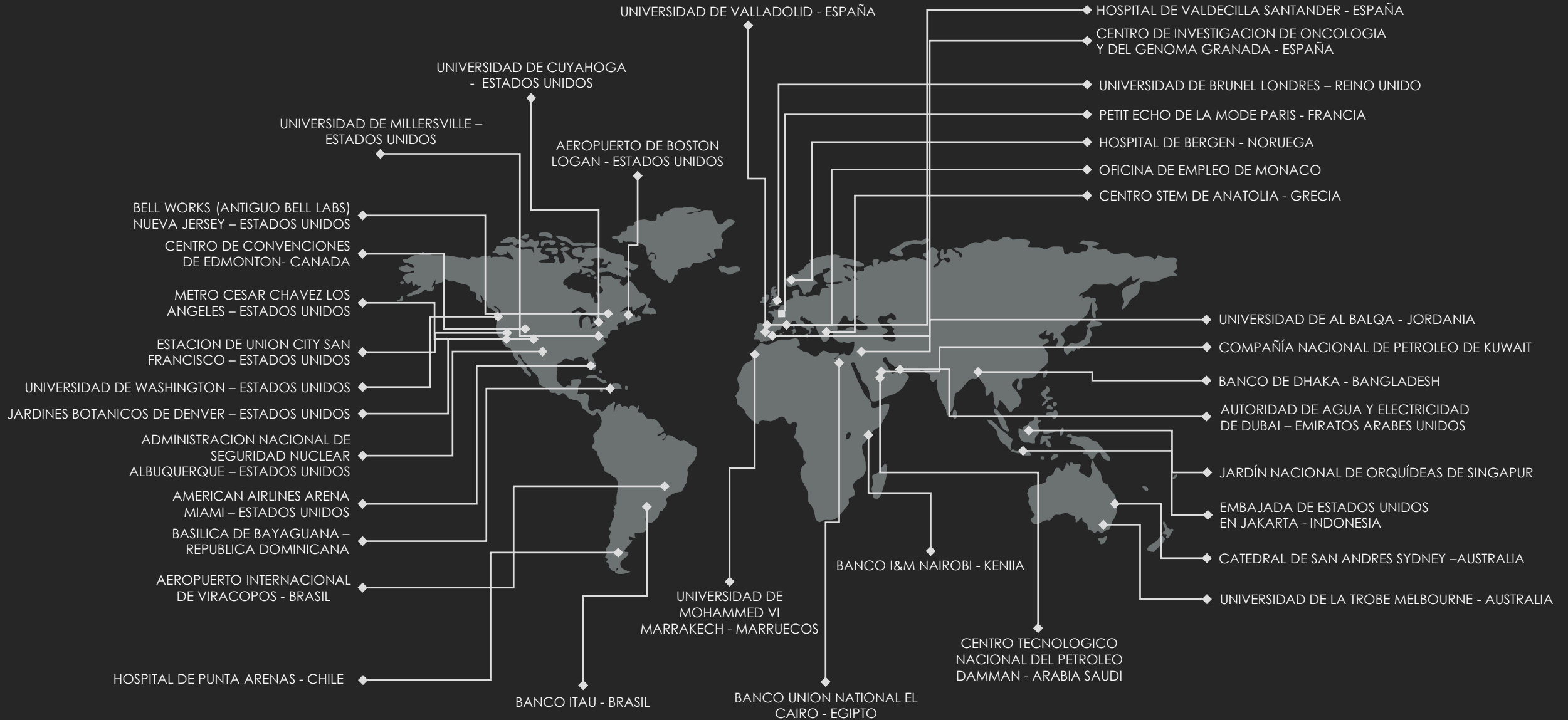


Suelo de Silicio Amorfo. 10% Transparencia y color verde.
Fondazione Terina, Lamezia Terme. Italia



MINGHANG ECO BUILDING, SHANGHAI, CHINA.
Barandilla de silicio amorfo. Transparencia 30%

INSTITUCIONES QUE DISFRUTAN DE NUESTROS PRODUCTOS





SUSTAINABLE DEVELOPMENT GOALS

LA INSTALACIÓN DE NUESTRO VIDRIO FOTOVOLTAICO AYUDA A LAS EMPRESAS A CUMPLIR CON 11 DE LOS 17 OBJETIVOS DE DESARROLLO SOSTENIBLE



HAGA CLICK [AQUÍ](#) PARA RECIBIR MÁS INFORMACIÓN SOBRE LOS OBJETIVOS DE DESARROLLO SOSTENIBLE CON ONYX SOLAR

CERTIFICACIONES DEL VIDRIO FV Y DE LA EMPRESA

- CERTIFICACIONES DE PRODUCTO:

- UL 1703 VIDRIO FV INTEGRADO EN EDIFICIOS

Vidrio de Silicio Amorfo
Vidrio de Silicio Cristalino

- UL BUILDING INTEGRATED PV GLASS

Vidrio de Silicio Amorfo
Vidrio de Silicio Cristalino

- IEC 61646 (ESTÁNDAR EUROPEO)

Vidrio de Silicio Amorfo

- IEC 61215 (ESTÁNDAR EUROPEO)

Vidrio de Silicio Cristalino

- IEC 61730 (ESTÁNDAR EUROPEO)

Vidrio de Silicio Amorfo
Vidrio de Silicio Cristalino

- IEC 61701 (RESISTENCIA A LA CORROSIÓN – ENTORNOS SALADOS)

Vidrio de Silicio Amorfo
Vidrio de Silicio Cristalino

- MCS 005, MCS 010, MCS 011 (REINO UNIDO)

Vidrio de Silicio Amorfo
Vidrio de Silicio Cristalino

- ESTÁNDARES DE SEGURIDAD COMO VIDRIO ARQUITECTÓNICO:

Vidrio de Silicio Amorfo
Vidrio de Silicio Cristalino

- UNE-EN 14449:2006 Vidrio Laminado de Seguridad

- UNE-EN 12600:2003 Resistencia a Impactos

- UNE-EN 356:2001 Resistencia a un Ataque Manual (Ratio P4A)

- UNE-EN-ISO 12543-4:2011 Resistencia a Condiciones Climáticas Extremas

- ANSI Z97.1-2015 TEST DE IMPACTO SEGÚN ESTÁNDARES DE EE.UU.

Vidrio con Doble y Triple Laminado

- CERTIFICACIONES DE LA EMPRESA:

- ISO 9001 · ISO 14001 AENOR - IQNET



Underwriters
Laboratories



tecnalia
Inspiring
Business



International
Organization for
Standardization



ISFOC DEMO

Product 1: Glass-glass bifacial modules

- Implementation: **Balustrades**
- Orientation: East, West, South
- Surface: 125.58 m²
- Installed power: ≈ 12.80 kW

Product 2: Glass-glass back contact modules from automated tabber

- Implementation: **Walkable floor**
- Orientation: South
- Surface: 69.12 m²
- Installed power: ≈ 9.22 kW

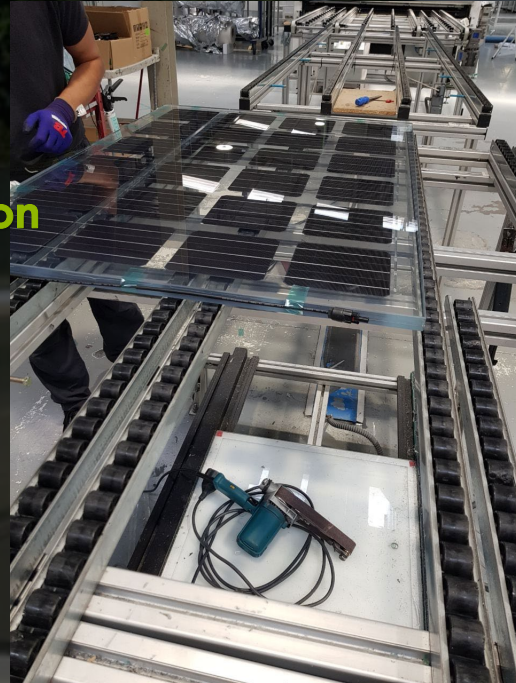
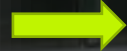
Balustrades: Glass-glass bifacial modules

MANUFACTURING PROCESS

onyx
SOLAR



Lamination



Junction box assembly



Transportation of BIPV modules to solar simulator for flash test and Flash testing

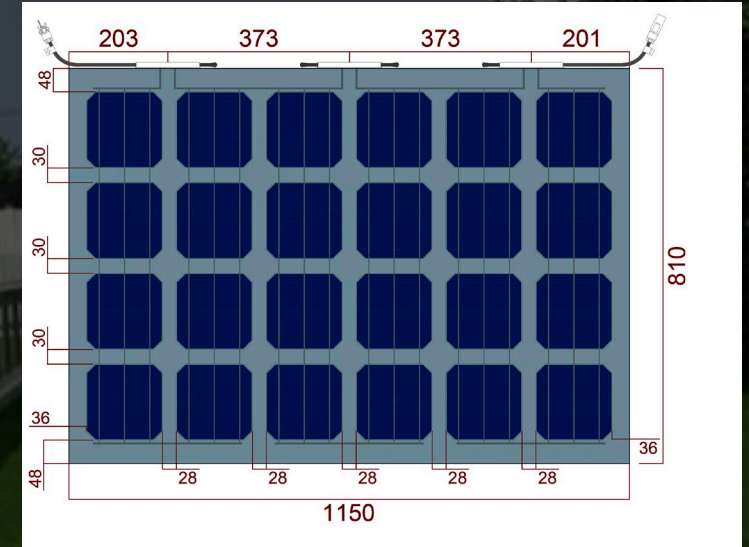
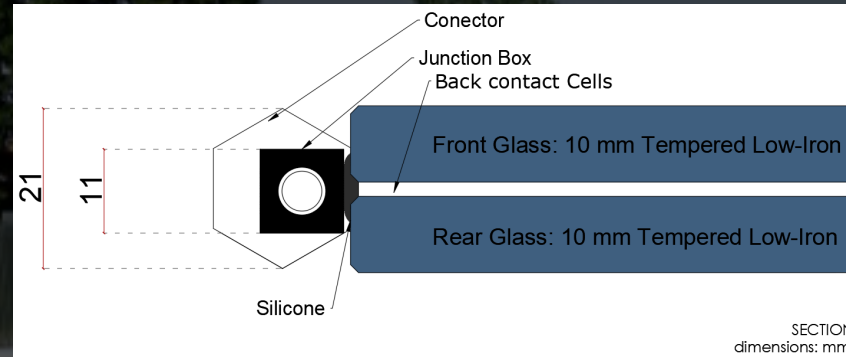
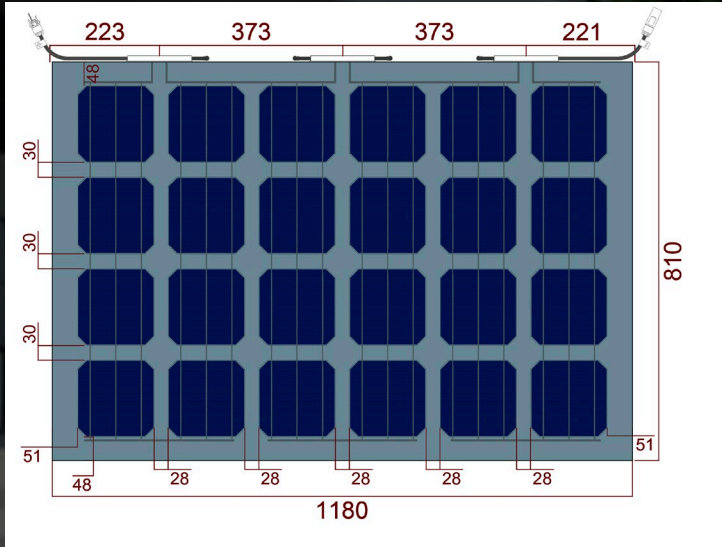


Soldering process of the string

BIPV
boost

Balustrades: Glass-glass bifacial modules

MODULES DESIGNS AND TECHNICAL DATA SHEETS



BIPV glass-glass bifacial modules for south balustrade

BIPV glass-glass bifacial modules for east and west balustrade

PHOTOVOLTAIC GLASS	1.180 x 810	
FRONT SIDE	6" Mono	Crystalline Bifacial
Electrical data test conditions (STC)		
Nominal peak power	97,2	P_{mpp} (Wp)
Open-circuit voltage	15,94	V_{oc} (V)
Short-circuit current	8,07	I_{sc} (A)
Voltage at nominal power	12,59	V_{mpp} (V)
Current at nominal power	7,72	I_{mpp} (A)
Power tolerance not to exceed	±10	%

STC: 1000 w/m², AM 1.5 and a cell temperature of 25°C, stabilized module state.



PHOTOVOLTAIC GLASS	1.150 x 810	
FRONT SIDE	6" Mono	Crystalline Bifacial
Electrical data test conditions (STC)		
Nominal peak power	97,2	P_{mpp} (Wp)
Open-circuit voltage	15,94	V_{oc} (V)
Short-circuit current	8,07	I_{sc} (A)
Voltage at nominal power	12,59	V_{mpp} (V)
Current at nominal power	7,72	I_{mpp} (A)
Power tolerance not to exceed	±10	%

STC: 1000 w/m², AM 1.5 and a cell temperature of 25°C, stabilized module state.

Balustrades: Glass-glass bifacial modules



<p>Photovoltaic glass - General view</p> <p>FRONT VIEW</p>		<p>Front & Rear Glass</p> <p>FRONT VIEW</p>		<p>Signed by Customer:</p>	
<p>REAR VIEW</p>		<p>REAR VIEW</p>		<p>DETAIL 1: Junction Box</p>	
<p>Photovoltaic Glass specifications:</p> <p>Module Glass-Glass: 1180x810x21.8mm Glass dimension (mm): 1180x810x10mm. Cell Technology: Mono-Crystalline silicon Bifacial (3 Bus bar) Cell dimension (mm): 156 x 156mm (6" x 6") Number of cells: 24 (4 strings / 6 cells per string) Encapsulant: EVA Junction box: TALEN TN-box (LATERAL) Length cables: 900mm Bus bar: 3 x 0,3 mm</p>		<p>Cell Type/Dimensions: bifacial Mono-Crystalline 6"</p>		<p>DETAIL 2: Junction box location</p>	
				<p>DETAIL 1: Glass configuration</p>	
<p>PROJECT: BIPVBOOST_ISFOC_</p> <p>LOCATION:</p>		<p>CUSTOMER: BIPVBOOST</p> <p>ONYX DEPARTMENT: I+D+i_ONYXSOLAR</p>		<p>QUANTITY: 108 units + 3 spare</p> <p>DATE: 17/01/2022</p>	
				<p>n° ISFOC_01</p>	



Balustrades: Glass-glass bifacial modules



<p>Photovoltaic glass - General view</p> <p>FRONT VIEW</p> <p>REAR VIEW</p>	<p>Front & Rear Glass</p> <p>FRONT VIEW</p> <p>FRONT Glass 10 mm Tempered Low-Iron CPI</p> <p>REAR VIEW</p> <p>REAR Glass 10 mm Tempered Low-Iron CPI</p>	<p>Signed by Customer:</p> <p>SECTION dimensions: mm</p>
<p>Photovoltaic Glass specifications:</p> <p>Module Glass-Glass: 1150x810x21.8mm Glass dimension (mm): 1150x810x10mm. Cell Technology: Mono-Crystalline silicon Bifacial (3 Bus bar) Cell dimension (mm): 156 x 156mm (6" x 6") Number of cells: 24 (4 strings / 6 cells per string) Encapsulant: EVA Junction box: TALEN TN-box (LATERAL) Length cables: 900mm Bus bar: 3 x 0,3 mm</p>	<p>Cell Type/Dimensions: bifacial Mono-Crystalline 6"</p> <p>SECTION dimensions: mm</p>	<p>DETAIL : Junction Box</p> <p>SECTION dimensions: mm</p>
<p>PROJECT: BIPVBOOST_ISFOC_ LOCATION:</p>	<p>CUSTOMER: BIPVBOOST ONYX DEPARTMENT: I+D+i_ONYXSOLAR</p>	<p>DETAIL 2: Junction box location</p> <p>SECTION dimensions: mm</p>
		<p>DETAIL 1: Glass configuration</p> <p>SECTION dimensions: mm</p>



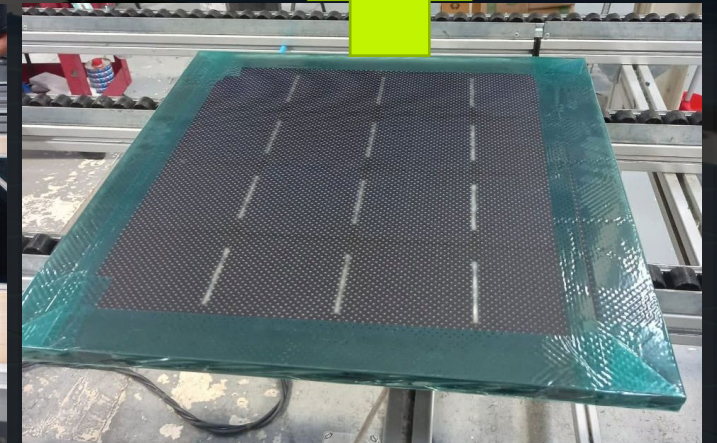
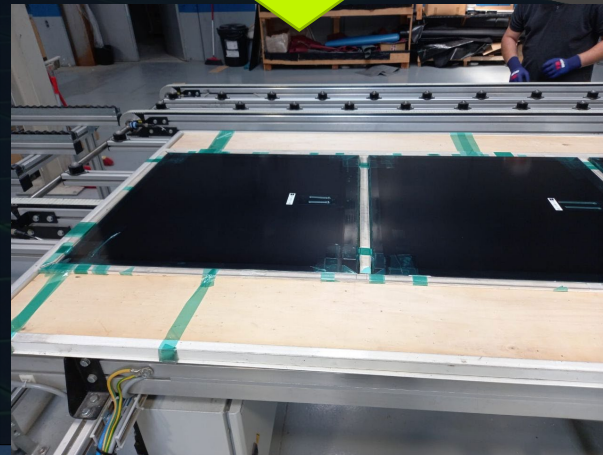
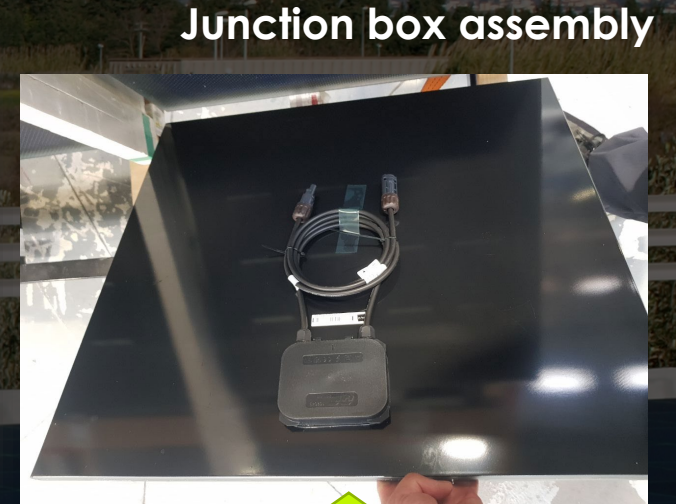
Walkable floor: Glass-glass back contact modules



MANUFACTURING PROCESS



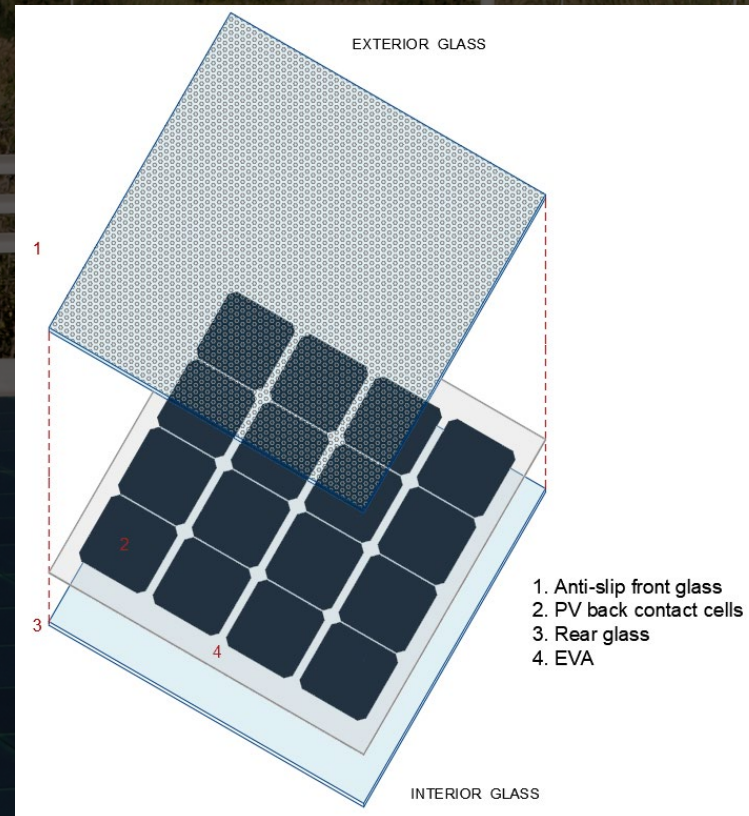
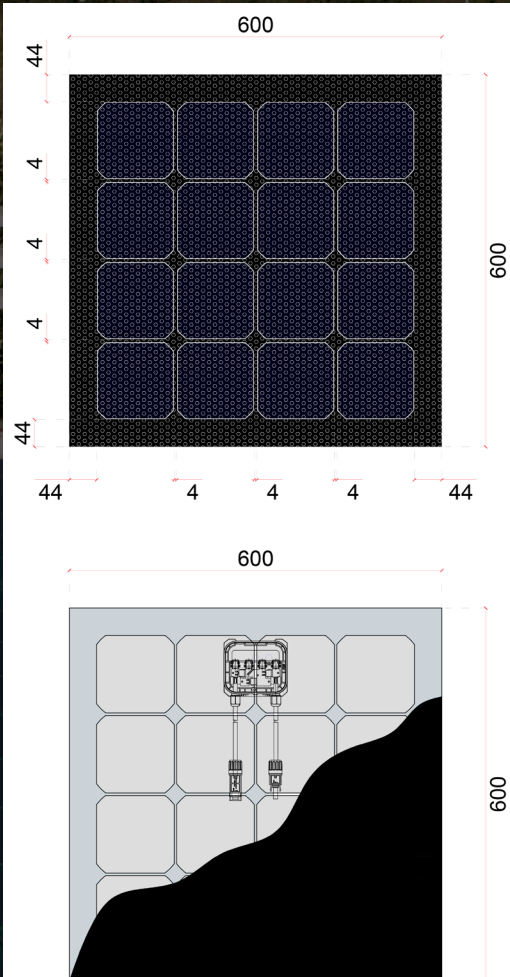
Soldering process of the Back contact cells



Front and rear sides BIPV modules after lamination

Walkable floor: Glass-glass back contact modules

MODULES DESIGNS AND TECHNICAL DATA SHEETS



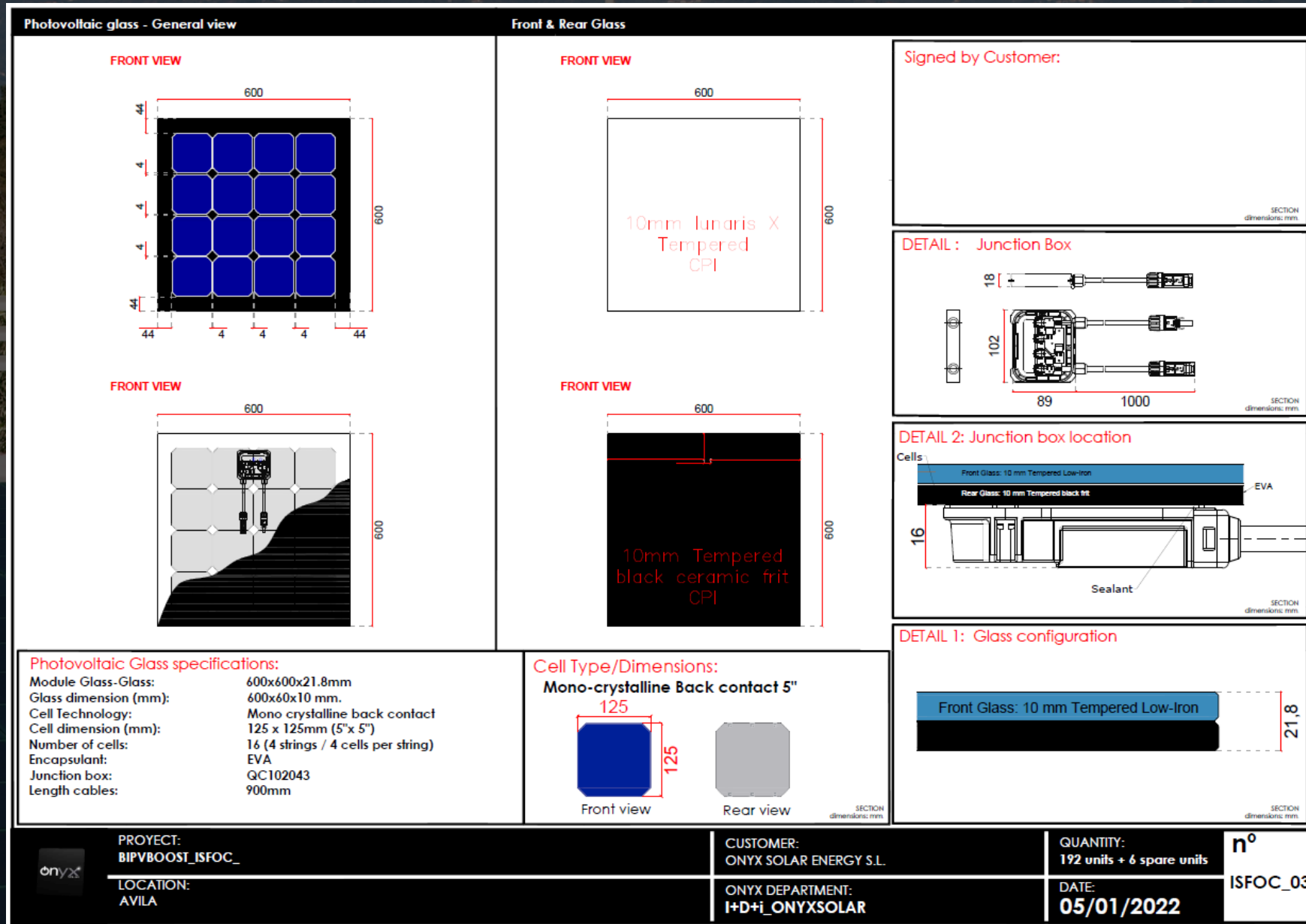
PHOTOVOLTAIC GLASS		600 x 600 5" Mono Crystalline	
Electrical data test conditions (STC)			
Nominal peak power	48	P_{mpp} (Wp)	
Open-circuit voltage	11	V_{oc} (V)	
Short-circuit current	5,71	I_{sc} (A)	
Voltage at nominal power	9	V_{mpp} (V)	
Current at nominal power	5,28	I_{mpp} (A)	
Power tolerance not to exceed	±10	%	

STC: 1000 w/m², AM 1.5 and a cell temperature of 25°C, stabilized module state.

NOTE: Anti-slippery glass induce a 5% of power loss. It has been considered in the technical sheet.



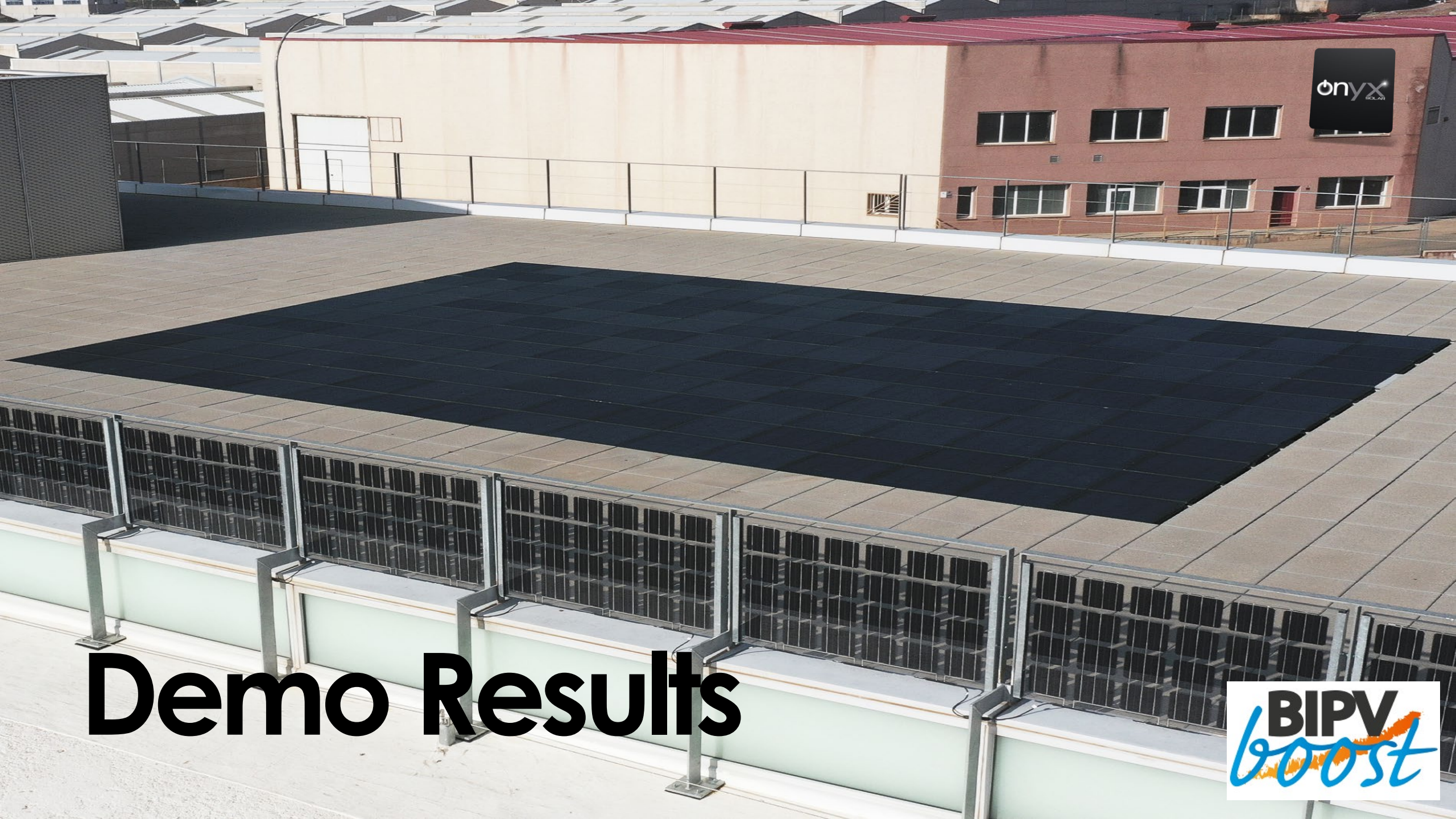
Walkable floor: Glass-glass back contact modules





Demo Results





onyx
SOLAR

Demo Results

BIPV
boost



LA EMPRESA DEL SECTOR FOTOVOLTAICO
MAS PREMIADA
A NIVEL GLOBAL

RESIDENTIAL DEVELOPMENT AUSTRALIA 2019-2020 · ARCHITECTURE MULTIPLE RESIDENCE AUSTRALIA 2019-2020 · BEST GLOBAL PHOTOVOLTAIC GLASS PROVIDER 2019 · TECHNOLOGY INNOVATOR 2019 · BUILDING OF THE YEAR: THE LIFE SCIENCE BUILDING, UNIVERSITY OF WASHINGTON 2019 · BEST PERFORMANCE IN RENEWABLE ENERGY 2019 · INTERNATIONAL COMPANY OF THE YEAR 2019 · INTERIOR DESIGN AWARD 2019 · MECHANICAL DESIGN AWARD 2019 · MAINTENANCE OR REFURBISHMENT AWARD 2019 · MISSION INNOVATION AWARD 2019 · PROJECT OF THE EUROPEAN COMMISSION 2019 · SUSTAINABILITY AWARD 2019 · WINNERS INNOVATION PARTNER AWARD 2019 · OUTSTANDING GLOBAL PV GLASS MANUFACTURER 2018 · MOST IMPRESSIVE NEW INDUSTRY INNOVATION AWARD 2018 · BUILDING PHOTOVOLTAIC GLASS PROVIDER 2018 · PHOTOVOLTAIC GLASS MANUFACTURER OF THE YEAR 2018 · INTERNATIONAL SOLAR ENERGY COMPANY OF THE YEAR 2018 · ADVANCED RENEWABLE ENERGY COMPANY OF THE YEAR 2018 · MOST INNOVATIVE CURTAIN WALL PROJECT 2018 · 51 MOST INFLUENTIAL SOLAR LEADERS 2018 · BEST MULTI-FUNCTIONAL CURTAIN WALL PROJECT 2018 · BEST SOLAR PV GLASS MANUFACTURER OF THE YEAR 2018 · HONOURABLE MENTION TO THE MOST INNOVATIVE PHOTOVOLTAIC GLASS MANUFACTURER OF THE YEAR 2018 · INTERNATIONAL SOLAR ENERGY COMPANY OF THE YEAR 2018 · MOST REPUTABLE SOLAR ENERGY SOLUTIONS PROVIDER OF THE YEAR 2018 · MOST REPUTABLE SOLAR ENERGY SOLUTIONS MANUFACTURER 2017 · BEST GLOBAL PHOTOVOLTAIC GLASS SUPPLIER 2017 · INTERNATIONAL SOLAR ENERGY COMPANY OF THE YEAR 2017 · INTERNATIONAL COMPANY OF THE YEAR 2017 · MOST ADVANCED RENEWABLE ENERGY COMPANY 2017 · SOLAR PROJECT OF THE YEAR 2017 · BEST PHOTOVOLTAIC GLASS SUPPLIER 2016 · BEST MANUFACTURER OF PHOTOVOLTAIC GLASS 2016 · BEST PHOTOVOLTAIC GLASS PROJECT 2016 · THE MOST SUSTAINABLE MATERIAL 2016 · BEST COLORADO PROJECT 2015 · BEST INNOVATIVE PROJECT 2015 · BEST OF WHAT'S NEW 2015 · BEST OUTDOOR PRODUCT 2015 · BEST TURNKEY PROJECT 2015 · INNOVATIVE COMPANY 2015 · MOST INNOVATIVE GLASS 2015 · THE MOST INNOVATIVE SUSTAINABLE TECHNOLOGY 2015 · BEST PROJECT OF THE NEW YORK REGION 2014 · MOST INNOVATIVE PRODUCT 2014 · BEST ENTREPRENEURIAL PROJECT 2013 · BEST CONSTRUCTION MATERIAL 2013 · MOST INNOVATIVE PROJECT 2013 · 1ST RED EMPRENDE 2012 · BEST REVELATION COMPANY OF CASTILE & LEON 2011 · SAPERE AUDE 2010 · BEST START-UP OF THE YEAR 2010 · COMPANY WITH THE GREATEST GROWTH POTENTIAL IN EUROPE 2010 · INNOVATION EUROPEAN VENTURE CONTEST 2010 · COMMITMENT TO INNOVATION 2010 · MARKET VIABILITY 2010 · OFFICIAL PARTNER OF THE EUROPEAN COMMISSION 2010 · XI YOUNG ENTREPRENEUR 2010 ·



ALGUNAS COMPAÑIAS QUE DISFRUTAN DE NUESTROS PRODUCTOS:



SAN FRANCISCO



SINGAPORE



NAIROBI



BARCELONA



GRANADA



NEW JERSEY



MADRID



MEXICO DF



MONTERREY



ORLANDO



MEOQUI



MIAMI



MIAMI



SAN DIEGO



"Onyx Solar is a **no-brainer**"

Ralph Zucker
President Bell-Works