FEASIBILITY STUDIES

DISCOVER DIFFERENT CONSTRUCTIVE SOLUTIONS IN POLAND

FEASIBILITY STUDY WARSAW

HIDDEN PV IN WHITE COLOR

- INTENSE GREEN 100 W/M²
- WHITE 110 W/M²
- MARBLE BROWN 115 W/M²
- **DEEP BLUE** 160 W/M²

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	110 Wp per m²
Visible light transmittance	0%

ENVIRONMENTAL BENEFITS WARSAW

Renewable energy	1.933 KWh per m²
Kg of CO_2 avoided	1.494 Kg per m²
Kilometres driven in an electric car	11.114 Km per m²
Light points fed	3,8 per m²/day

ECONOMIC BENEFITS WARSAW*

Value of the renewable energy	498 € per m²
Return on investment	13 times
Internal rate of return (IRR)	29,4 %
Payback time	2 years
Building's value increase**	206 € per m²

RESULTS IN OTHER LOCATIONS OF POLAND

Renewable energy (Krakow)	1.902 KWh per m²
Payback time (Krakow)	2 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 90°

Orientation: S

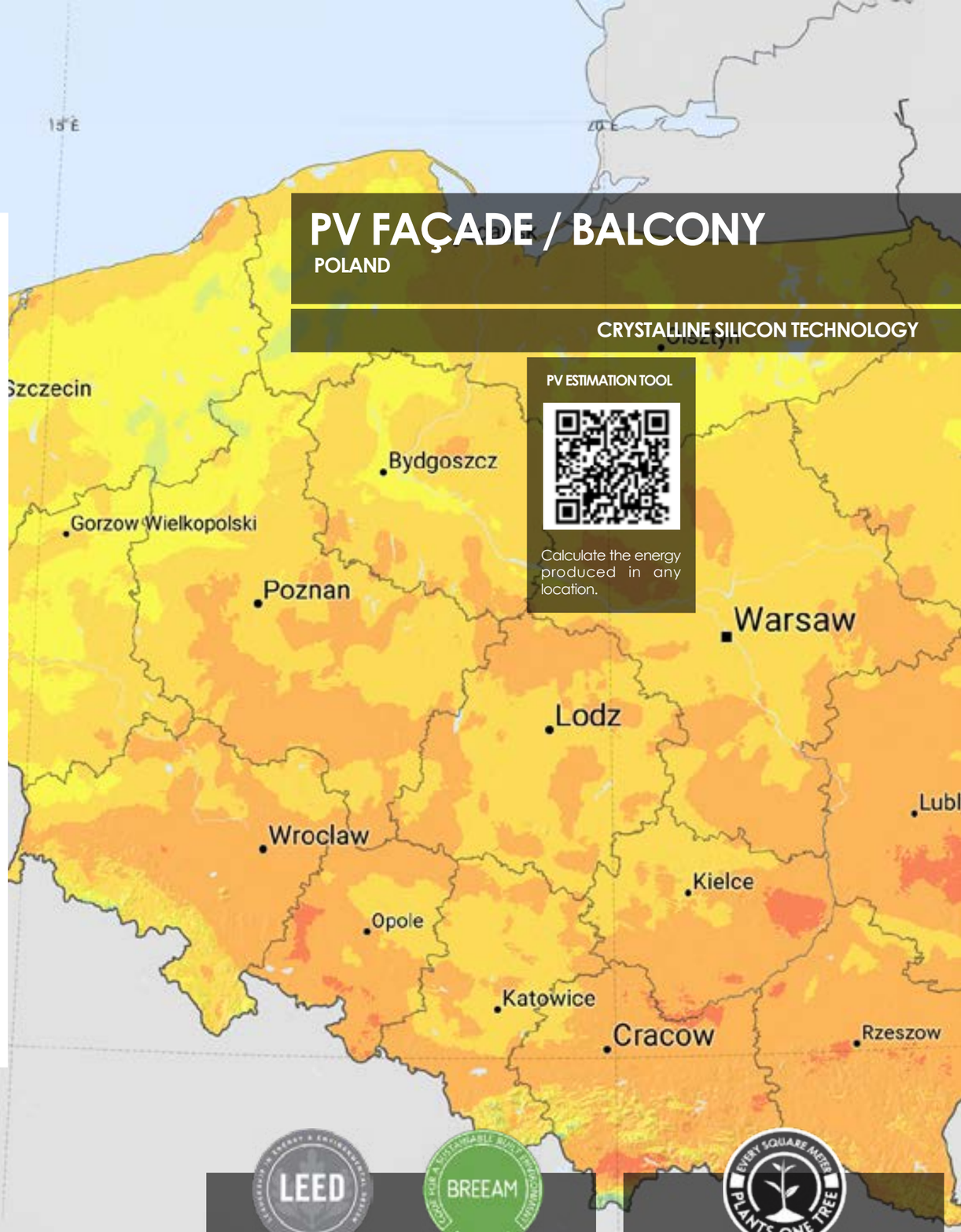
ENERGY LOSSES PER ORIENTATION

-32% -49% -9%

PV FAÇADE / BALCONY

POLAND

CRYSTALLINE SILICON TECHNOLOGY



PV ESTIMATION TOOL

Calculate the energy produced in any location.

Onyx facilitates obtaining recognized sustainability certifications for buildings like LEED or BREEAM.

We plant one tree for every m² of PV glass we produce. Each tree absorbs an average of 10 Kg of CO2 per year.

Data Calculated for a 35-year useful life.

* The prices considered are merely indicative and may vary depending on the installed glass surface. The data provided in this feasibility study in no case involves a contractual obligation.

** According to the US Department of Energy & Environment a sustainable building will obtain an increase of value between 10 and 20 USD for every USD generated by renewable energy.

FEASIBILITY STUDY WARSAW

HIDDEN PV IN WHITE COLOR

- INTENSE GREEN 100 W/M²
- WHITE 110 W/M²
- MARBLE BROWN 115 W/M²
- **DEEP BLUE** 160 W/M²

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	110 Wp per m²
Visible light transmittance	0%

ENVIRONMENTAL BENEFITS WARSAW

Renewable energy	1.512 KWh per m²
Kg of CO_2 avoided	764 Kg per m²
Kilometres driven in an electric car	8.700 Km per m²
Light points fed	2.96 per m²/day

ECONOMIC BENEFITS WARSAW*

Value of the renewable energy	370.8 € per m²
Return on investment	3.76 times
Internal rate of return (IRR)	8.58 %
Payback time	8 years
Building's value increase**	153 € per m²

RESULTS IN OTHER LOCATIONS OF POLAND

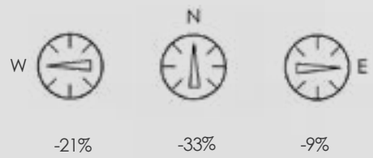
Renewable energy (Krakow)	2.756 KWh per m²
Payback time (Krakow)	3 years

DATA CONSIDERED FOR CALCULATIONS:

Tilt: 30°

Orientation: S

ENERGY LOSSES PER ORIENTATION



HIDDEN PV ROOF

POLAND

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

Onyx facilitates obtaining recognized sustainability certifications for buildings like LEED or BREEAM.

We plant one tree for every m² of PV glass we produce. Each tree absorbs an average of 10 Kg of CO2 per year.

Data Calculated for a 35-year useful life.

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FEASIBILITY STUDY WARSAW

OPAQUE PV GLASS

CELL DENSITY

LOW	111 W/M²	43%
MEDIUM	141 W/M²	28%
HIGH	173 W/M²	11%
OPAQUE	180 W/M²	0%

VISIBLE LIGHT TRANSMITTANCE

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	180 Wp per m²
Visible light transmittance	0%

ENVIRONMENTAL BENEFITS WARSAW

Renewable energy	3.163 KWh per m²
Kg of CO_2 avoided	3.163 Kg per m²
Kilometres driven in an electric car	18.188 Km per m²
Light points fed	6,21 per m²/day

ECONOMIC BENEFITS WARSAW*

Value of the renewable energy	816 € per m²
Return on investment	8 times
Internal rate of return (IRR)	18,44 %
Payback time	6 years
Building's value increase**	337 € per m²

RESULTS IN OTHER LOCATIONS OF POLAND

Renewable energy (Krakow)	3.111 KWh per m²
Payback time (Krakow)	6 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 90°

Orientation: S

PV DOUBLE SKIN / SPANDREL

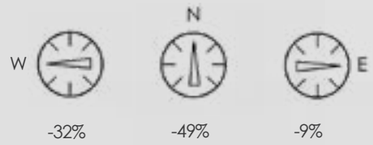
POLAND

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

ENERGY LOSSES PER ORIENTATION



Onyx facilitates obtaining recognized sustainability certifications for buildings like LEED or BREEAM.

We plant one tree for every m² of PV glass we produce. Each tree absorbs an average of 10 Kg of CO2 per year.

Data Calculated for a 35-year useful life.

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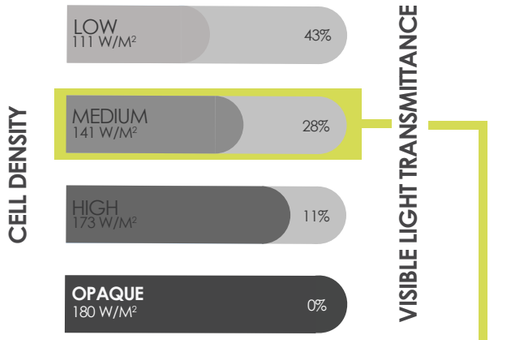
FEASIBILITY STUDY WARSAW

MEDIUM CELL DENSITY PV GLASS



CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	141 Wp per m²
Visible light transmittance	28%

ENVIRONMENTAL BENEFITS WARSAW

Renewable energy	2.477 KWh per m²
Kg of CO_2 avoided	1.915 Kg per m²
Kilometres driven in an electric car	14.247 Km per m²
Light points fed	4,87 per m²/day

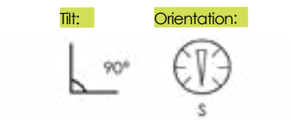
ECONOMIC BENEFITS WARSAW*

Value of the renewable energy	639 € per m²
Return on investment	4,11 times
Internal rate of return (IRR)	9,78 %
Payback time	11years
Building's value increase**	264 € per m²

RESULTS IN OTHER LOCATIONS OF POLAND

Renewable energy (Krakow)	2.436 KWh per m²
Payback time (Krakow)	11 years

DATA CONSIDERED FOR CALCULATIONS



PV CURTAIN WALL

POLAND

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

ENERGY LOSSES PER ORIENTATION

Onyx facilitates obtaining recognized sustainability certifications for buildings like LEED or BREEAM.

We plant one tree for every m² of PV glass we produce. Each tree absorbs an average of 10 Kg of CO2 per year.

Data Calculated for a 35-year useful life.

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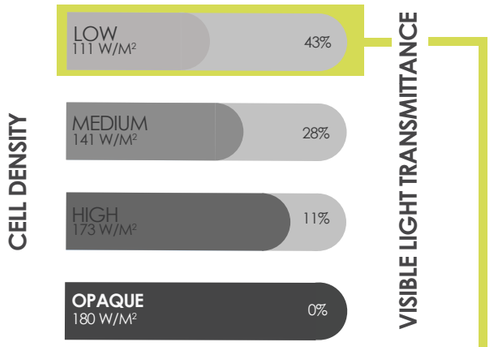
FEASIBILITY STUDY WARSAW

LOW CELL DENSITY PV GLASS



CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	111 Wp per m²
Visible light transmittance	43%

ENVIRONMENTAL BENEFITS WARSAW

Renewable energy	1.950 KWh per m²
Kg of CO_2 avoided	1.507 Kg per m²
Kilometres driven in an electric car	11.215 Km per m²
Light points fed	3,83 per m²/day

ECONOMIC BENEFITS WARSAW*

Value of the renewable energy	503 € per m²
Return on investment	3,7 times
Internal rate of return (IRR)	8,74 %
Payback time	12 years
Building's value increase**	208 € per m²

RESULTS IN OTHER LOCATIONS OF POLAND

Renewable energy (Krakow)	1.918 KWh per m²
Payback time (Krakow)	12 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 90°

Orientation: S

ENERGY LOSSES PER ORIENTATION

PV BALUSTRADE / BALCONY

POLAND

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

Onyx facilitates obtaining recognized sustainability certifications for buildings like LEED or BREEAM.

We plant one tree for every m² of PV glass we produce. Each tree absorbs an average of 10 Kg of CO2 per year.

Data Calculated for a 35-year useful life.

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** According to the US Department of Energy & Environment a sustainable building will obtain an increase of value between 10 and 20 USD for every USD generated by renewable energy.

FEASIBILITY STUDY WARSAW

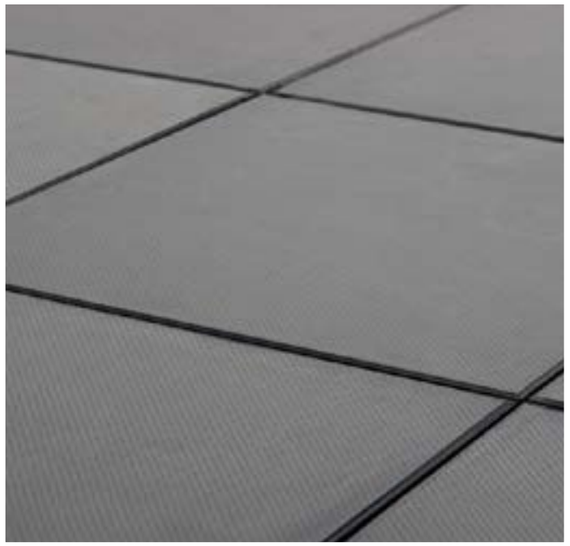
OPAQUE PV GLASS

CELL DENSITY

- LOW 111 W/M²
- MEDIUM 141 W/M²
- HIGH 173 W/M²
- **OPAQUE** 180 W/M²

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	140 Wp per m²
Visible light transmittance	0%



ENVIRONMENTAL BENEFITS WARSAW

Renewable energy	3.233 KWh per m²
Kg of CO_2 avoided	2.499 Kg per m²
Kilometres driven in an electric car	18.594 Km per m²
Light points fed	6,35 per m²/day

ECONOMIC BENEFITS WARSAW*

Value of the renewable energy	834 € per m²
Return on investment	3,56 times
Internal rate of return (IRR)	8,43 %
Payback time	13 years
Building's value increase**	345 € per m²

RESULTS IN OTHER LOCATIONS OF POLAND

Renewable energy (Krakow)	3.180 KWh per m²
Payback time (Krakow)	13 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 0°

Orientation: S

ENERGY LOSSES PER ORIENTATION

WALKABLE PV FLOOR

POLAND

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

Onyx facilitates obtaining recognized sustainability certifications for buildings like LEED or BREEAM.

We plant one tree for every m² of PV glass we produce. Each tree absorbs an average of 10 Kg of CO2 per year.

Data Calculated for a 35-year useful life.

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** According to the US Department of Energy & Environment a sustainable building will obtain an increase of value between 10 and 20 USD for every USD generated by renewable energy.

FEASIBILITY STUDY WARSAW

MEDIUM CELL DENSITY PV GLASS

CELL DENSITY

LOW	111 W/M²	43%
MEDIUM	141 W/M²	28%
HIGH	173 W/M²	11%
OPAQUE	180 W/M²	0%

VISIBLE LIGHT TRANSMITTANCE

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	141 Wp per m²
Visible light transmittance	28%

ENVIRONMENTAL BENEFITS WARSAW

Renewable energy	3.782 KWh per m²
Kg of CO_2 avoided	1.910 Kg per m²
Kilometres driven in an electric car	21.751 Km per m²
Light points fed	7,4 per m²/day

ECONOMIC BENEFITS WARSAW*

Value of the renewable energy	927 € per m²
Return on investment	9,40 times
Internal rate of return (IRR)	21,45 %
Payback time	5 years
Building's value increase**	383 € per m²

RESULTS IN OTHER LOCATIONS OF POLAND

Renewable energy (Krakow)	3.720 KWh per m²
Payback time (Krakow)	5 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 30°

Orientation: S

ENERGY LOSSES PER ORIENTATION

-21% -33% -9%

Onyx facilitates obtaining recognized sustainability certifications for buildings like LEED or BREEAM.

We plant one tree for every m² of PV glass we produce. Each tree absorbs an average of 10 Kg of CO2 per year.

Data Calculated for a 35-year useful life.

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** According to the US Department of Energy & Environment a sustainable building will obtain an increase of value between 10 and 20 USD for every USD generated by renewable energy.

FEASIBILITY STUDY WARSAW

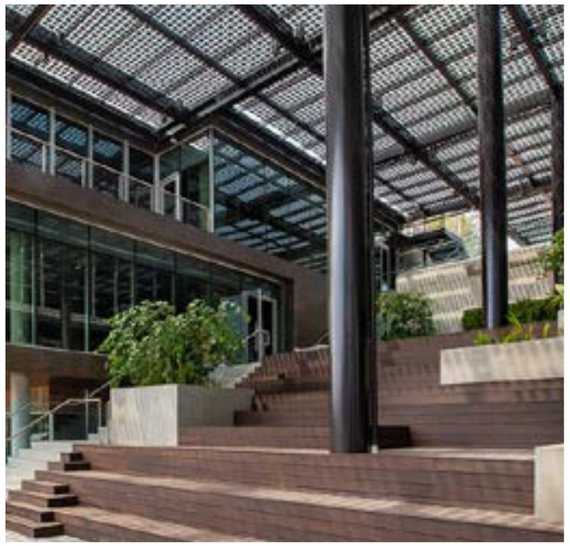
HIGH CELL DENSITY

CELL DENSITY

LOW 111 W/M²	43%	
MEDIUM 141 W/M²	28%	
HIGH 173 W/M²	11%	← VISIBLE LIGHT TRANSMITTANCE
OPAQUE 180 W/M²	0%	

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	173 Wp per m²
Visible light transmittance	11%



ENVIRONMENTAL BENEFITS WARSAW

Renewable energy	3.967 KWh per m²
Kg of CO_2 avoided	3.067 Kg per m²
Kilometres driven in an electric car	22.814 Km per m²
Light points fed	7,80 per m²/day

ECONOMIC BENEFITS WARSAW*

Value of the renewable energy	1.023 € per m²
Return on investment	10,26 times
Internal rate of return (IRR)	23,27%
Payback time	6 years
Building's value increase**	423 € per m²

RESULTS IN OTHER LOCATIONS OF POLAND

Renewable energy (Krakow)	3.902 KWh per m²
Payback time (Krakow)	6 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 0°

Orientation: S

ENERGY LOSSES PER ORIENTATION

PV CANOPY

POLAND

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

LEED BREEAM

Onyx facilitates obtaining recognized sustainability certifications for buildings like LEED or BREEAM.

EVERY SQUARE METER PLANTS ONE TREE

We plant one tree for every m² of PV glass we produce. Each tree absorbs an average of 10 Kg of CO2 per year.

Data Calculated for a 35-year useful life.

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** According to the US Department of Energy & Environment a sustainable building will obtain an increase of value between 10 and 20 USD for every USD generated by renewable energy.

FEASIBILITY STUDY WARSAW

HIGH CELL DENSITY PV GLASS

CELL DENSITY

LOW 111 W/M²	43%	
MEDIUM 141 W/M²	28%	
HIGH 173 W/M²	11%	← VISIBLE LIGHT TRANSMITTANCE
OPAQUE 180 W/M²	0%	

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	173 Wp per m²
Visible light transmittance	11%

ENVIRONMENTAL BENEFITS WARSAW

Renewable energy	4.408 KWh per m²
Kg of CO_2 avoided	3.407 Kg per m²
Kilometres driven in an electric car	25.347 Km per m²
Light points fed	8,66 per m²/day

ECONOMIC BENEFITS WARSAW*

Value of the renewable energy	1.137 € per m²
Return on investment	11,4 times
Internal rate of return (IRR)	25,66%
Payback time	5 years
Building's value increase**	470 € per m²

RESULTS IN OTHER LOCATIONS OF POLAND

Renewable energy (Krakow)	4.336 KWh per m²
Payback time (Krakow)	5 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 40°

Orientation: S

PV BRISE SOLEIL

POLAND

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

ENERGY LOSSES PER ORIENTATION

W	N	E
-21%	-33%	-9%

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We plant one tree for every m² of PV glass we produce. Each tree absorbs an average of 10 Kg of CO2 per year.

Data Calculated for a 35-year useful life.

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FEASIBILITY STUDY WARSAW

OPAQUE PV GLASS

CELL DENSITY

LOW	111 W/M²	43%
MEDIUM	141 W/M²	28%
HIGH	173 W/M²	11%
OPAQUE	180 W/M²	0%

VISIBLE LIGHT TRANSMITTANCE

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	180 Wp per m²
Visible light transmittance	0%

ENVIRONMENTAL BENEFITS WARSAW

Renewable energy	3.163 KWh per m²
Kg of CO_2 avoided	2.445 Kg per m²
Kilometres driven in an electric car	18.188 Km per m²
Light points fed	6,21 per m²/day

ECONOMIC BENEFITS WARSAW*

Value of the renewable energy	816 € per m²
Return on investment	6,86 times
Internal rate of return (IRR)	16 %
Payback time	8 years
Building's value increase**	337 € per m²

RESULTS IN OTHER LOCATIONS OF POLAND

Renewable energy (Krakow)	3.111 KWh per m²
Payback time (Krakow)	8 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 90°

Orientation: S

PV NOISE BARRIER

POLAND

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

ENERGY LOSSES PER ORIENTATION

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Data Calculated for a 35-year useful life.

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GLOBAL EPD

SCAN THE QR TO DOWNLOAD OUR EPD

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

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).


» ISRAEL


» ESPAÑA


» EEUU


» DUBAI


» FRANCIA


» ESLOVAQUIA


» ESPAÑA


» ESPAÑA


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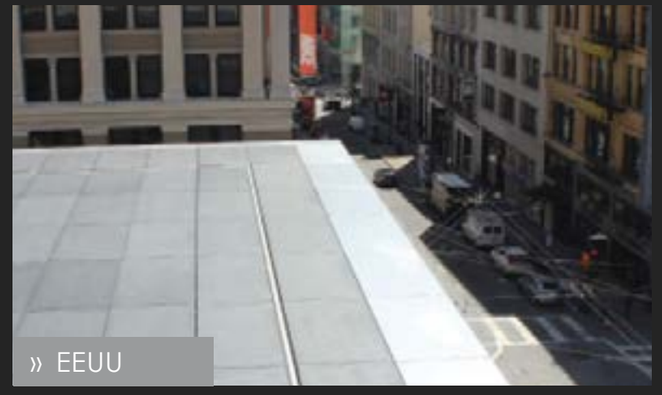

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UNLOCKING THE POWER OF PHOTOVOLTAIC GLASS:

Are you curious about the potential of photovoltaic (PV) glass for your project? Our team at Onyx Solar is here to guide you through the process and help you harness the benefits of this innovative technology.

WHAT DOES PV GLASS BRING TO YOUR PROJECT?

✓ **Energy Generation:** PV glass generates clean electricity from sunlight, reducing your reliance on traditional power sources.

✓ **Aesthetic Integration:** Say goodbye to bulky solar panels! PV glass blends seamlessly with architectural designs, enhancing the visual appeal of your building.

✓ **Environmental Impact:** By using PV glass, you contribute to reducing carbon emissions. Imagine the positive impact on our planet!

HOW ONYX SOLAR CAN ASSIST YOU

Our technical team offers free feasibility studies tailored to your project. Here's what we provide:

·**Product Datasheets:** Detailed information about our PV glass products, including technical specifications.

·**Shop Drawings:** Visual representations to aid in your design process.

·**Energy Estimates:** Understand the potential energy output based on your installation.

·**CO_2 Emissions Prevented:** Quantify the environmental benefits of using PV glass.

·**Cost Analysis:** Get a clear picture of the investment required.

·**Payback and ROI:** Evaluate the financial returns over time.

·**Tax Credits and Incentives:** Explore available incentives to make an informed decision.

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