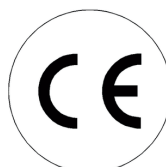


SolarInn[®] Window Glass



Discover Modernité Solar Glass, where clarity meets power, turning every window and door into an elegant powerhouse of clean energy. This isn't merely glass—it's your gateway to a sustainable future, blending seamlessly with your architecture and lifestyle.

Imagine windows, doors, and skylights not just as elements of design, but as dynamic generators of renewable energy. Modernite transforms your building surfaces into efficient photovoltaic systems without compromising transparency, aesthetics, or natural illumination.



The background image shows a bright, modern interior. On the left, a grey sofa with patterned cushions sits against a light-colored brick wall. A large, round, ornate clock is mounted on the wall. In the center, a white dining table with a wooden base is surrounded by teal upholstered chairs with copper-colored metal legs. Large windows in the background offer a view of a green garden. Two modern pendant lights with metal mesh shades hang from the ceiling.

*Dissatisfaction and anxiety often
begin with windows and doors—
but so does true comfort.*

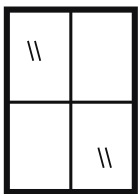
**The heating doesn't work, yet energy bills keep climbing.
Homes overheat in summer and feel freezing in winter.
Every morning, windows drip with condensation.
Earthquakes, typhoons, outside noise, noisy neighbors—
daily worries that create frustration indoors.**

But how can we truly solve these problems?

**The answer often lies in one place:
your windows and doors.**

Learning from windows complaints

English Housing Survey (EHS) and public health reports that the condition and performance of windows and doors directly affect energy efficiency, residential comfort, and occupants' health.



Poor Condition of Windows and External Doors

Windows in poor condition: ~1.8 million homes (7%)

External doors in poor condition: ~1.1 million homes (4%)

Issues: broken glass, rotting frames, failing seals.



Draughts and Poor Insulation

6–8% of homes suffer from significant draughts.

Cold air infiltration reduces heating efficiency and increases energy waste.



Condensation and Damp

More than 2.5 million homes (10%) experience window condensation and dampness.

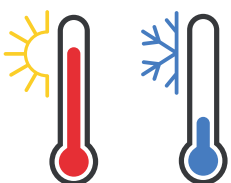
Leads to mould growth and long-term health risks.

Winter Cold and Summer Overheating

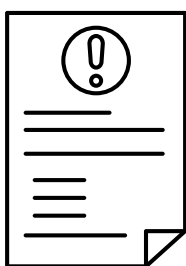
Windows account for 15–20% of household heat loss.

Winter cold: linked to respiratory disease, cardiovascular illness, and excess winter deaths.

Summer overheating: ~20% of UK homes are at risk. During the 2019 heatwave, ~900 excess deaths were attributed to overheated housing.



Learning from windows complaints



Repair Delays and Complaints

Particularly acute in social housing: windows left leaking or broken for years.

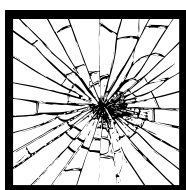
Poor maintenance leads to inadequate ventilation and mould growth.



Security and Noise Issues

Insecure doors/windows raise burglary risks and resident anxiety.

Poor acoustic insulation contributes to sleep disturbance, stress, and cardiovascular problems.



Breakage Hazards

Old single glazing is prone to breakage under storms or seismic activity.

Poses direct injury risks.



Fire Safety Deficiencies

Some windows and doors fail to meet fire resistance standards.

Increase the risk of fire spread and obstruct safe evacuation.

Sources:

[1] English Housing Survey (EHS) 2023-24: Drivers and Impacts of Housing Quality

[2] Housing Ombudsman – “Learning from windows complaints” / “Window-related complaints”

[3] IFS Report: Housing quality and affordability for lower-income households

TOPIC 1

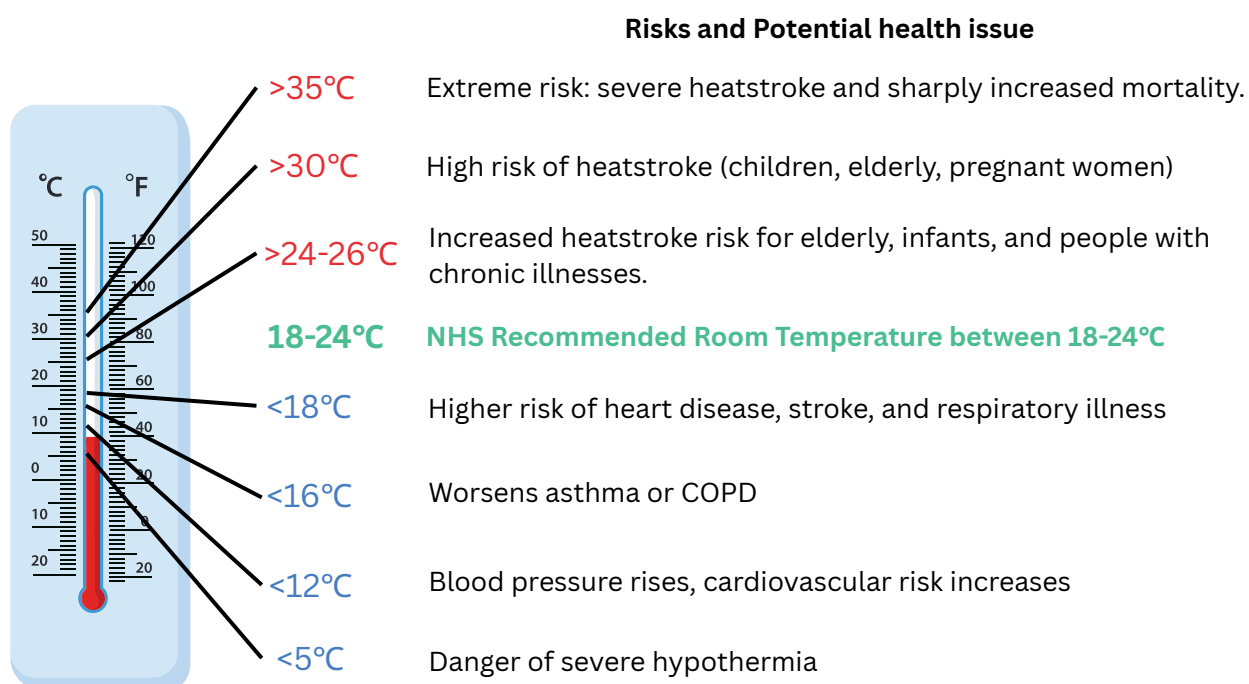
TOO COLD OR TOO HOT? YOUR HOME COULD BE HARMING YOUR HEALTH

NHS Guidance on Indoor Temperature and Health

The National Health Service (NHS) in the UK provides clear research-based advice on safe indoor temperatures:

- **General healthy adults:** A minimum of 18 °C (around 64 °F) is considered safe and comfortable.
- **Older adults, infants, and people with limited mobility:** It is advised to maintain a temperature between 18 °C and 21 °C (64–70 °F) to reduce health risks related to cold.
- **Bedrooms:** The NHS recommends keeping bedroom temperatures at or above 18 °C during the night to avoid cardiovascular strain and respiratory risks.

Health Risks of Indoor Temperatures That Are Too Low or Too High



National Institute for Health and Care Excellence (NICE) Guidance (2015) in the UK claims:

Even heating matters: Homes with uneven heating are more likely to cause Respiratory and cardiovascular problems

- Cold bedrooms in older adults → higher risk of night-time stroke, heart attack, and respiratory illness
- Moving between warm and cold rooms → blood pressure swings and added strain on the heart

👉 A warm, evenly heated home helps prevent illness, hospital admissions, and excess winter deaths.

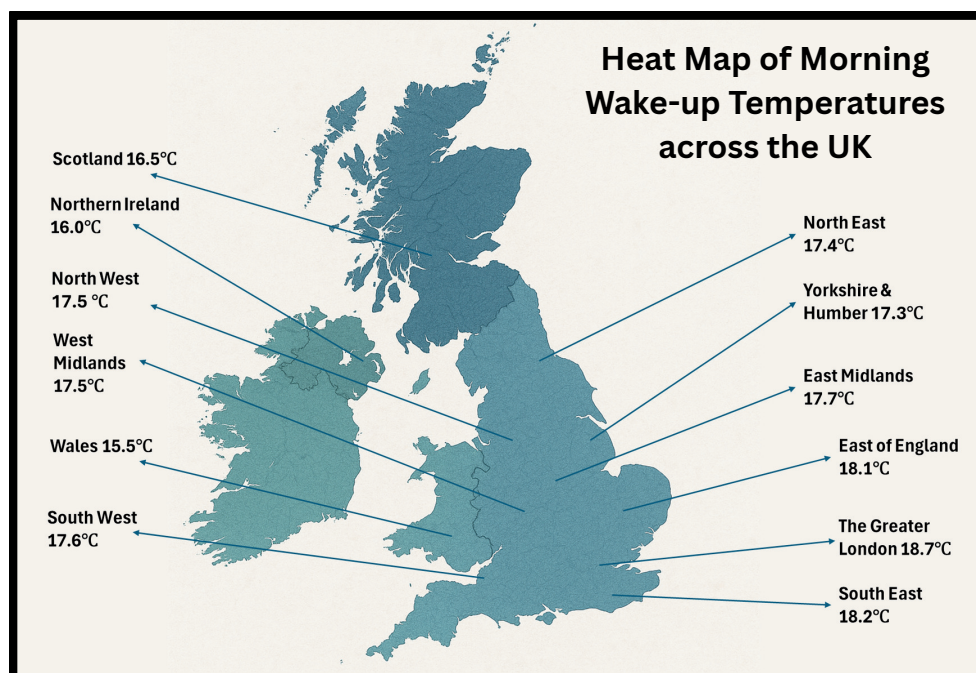
❄️ Cold Mornings? Your Windows May Be the Reason!

Why does your bedroom feel cold in the morning?

- 1) Heating turned down at night → temperatures drop
- 2) Old windows or single glazing → heat escapes
- 3) Windows account for 25–30% of winter heat loss

Health risks of low morning temperatures:

- ❤️ Heart & circulation → higher blood pressure, risk of stroke/heart attack
- 🧠 Breathing → asthma & COPD flare-ups
- 😴 Sleep & immunity → poor rest, lower resistance to illness



Night-time underheating + poor glazing = colder mornings, higher health risks.

👉 **Better windows = better health.**

TOPIC 2

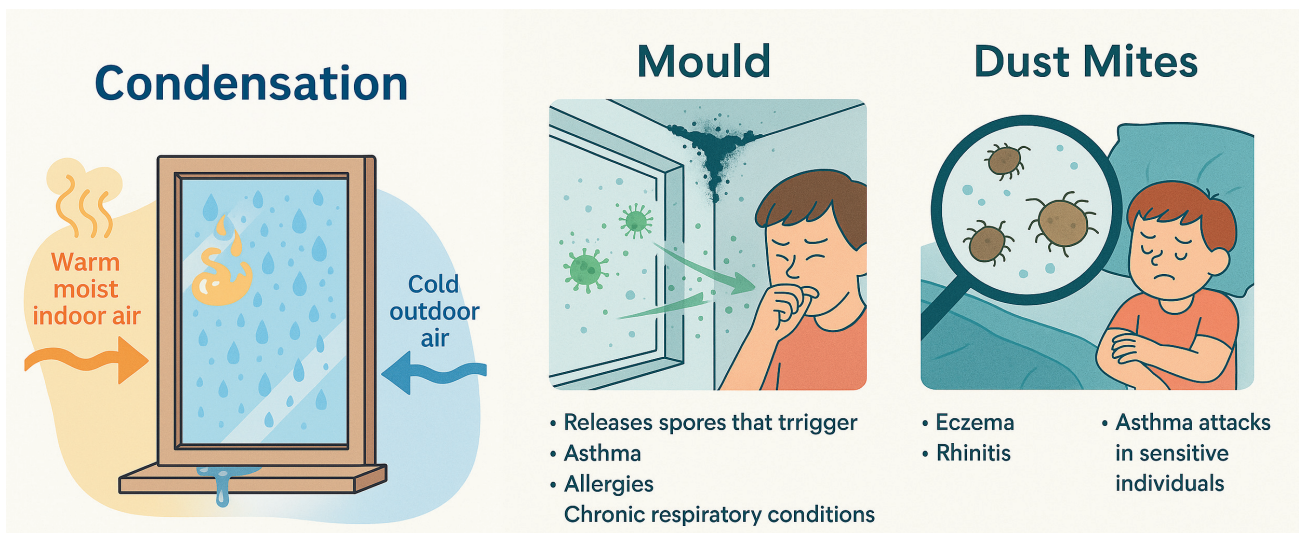
WINDOW CONDENSATION MOULD & DUST MITES: A HIDDEN HEALTH HAZARD

! Why It Matters

When you see condensation on windows, it's more than a foggy nuisance — it may signal excess indoor humidity, poor ventilation, and thermal bridging, creating ideal conditions for mould growth and dust mites. These are not just aesthetic or comfort issues — they are linked to serious health problems.

■ Condensation

- 1) Occurs when warm moist air contacts a cold surface (like single or poorly insulated glazing).
- 2) Most common during early mornings, especially in bedrooms with low overnight temperatures and limited airflow.



Mould

Thrives on damp surfaces like window seals, corners, and walls. Releases spores that can trigger:

- Asthma
- Allergies
- Chronic respiratory conditions



Dust Mites

Microscopic pests that multiply in humid environments. Feed on human skin cells and thrive in: Bedding, Upholstery, Carpets. Can cause: Eczema, Rhinitis, Asthma attacks in sensitive individuals

TOPIC 3

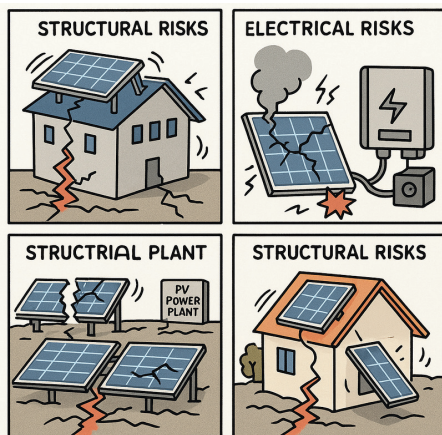
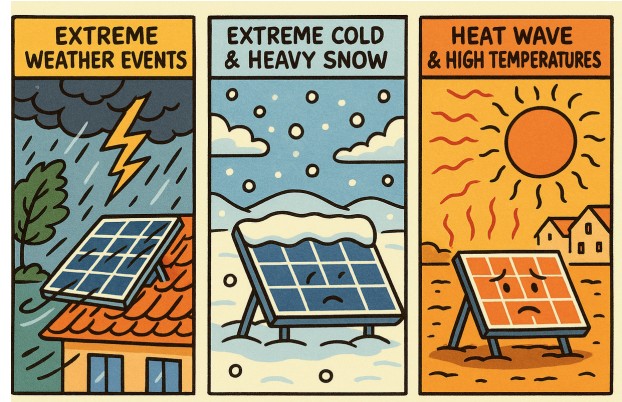
POWER SUPPLY DISRUPTIONS TRIGGERED BY EXTREME WEATHER EVENTS AND SEISMIC ACTIVITY

1. Extreme Weather

⚡ **Storms / Hurricanes:** Panels blown off, shattered → blackout

❄️ **Snow / Freezing Cold:** Snow cover → zero generation

☀️ **Heatwaves:** Efficiency drops (-0.3–0.5% per °C) → power gap during peak demand



2. Seismic Risk

Structural: Panel breakage, rack collapse

Electrical: Cable/junction box damage → short-circuit, fire

Systemic: Large plants may fail entirely; rooftop PV may fall and cause secondary hazards

3. Impact on Reliability

High Uncertainty: Disasters unpredictable → sudden outages

Concentrated Vulnerability: Once structures/electrics fail → hard to repair quickly

Slow Recovery: Damaged panels must be replaced, unlike fast-restart power sources

Conventional PV is fragile under storms, floods, snow, heatwaves, and earthquakes due to structural vulnerability & electrical fragility.

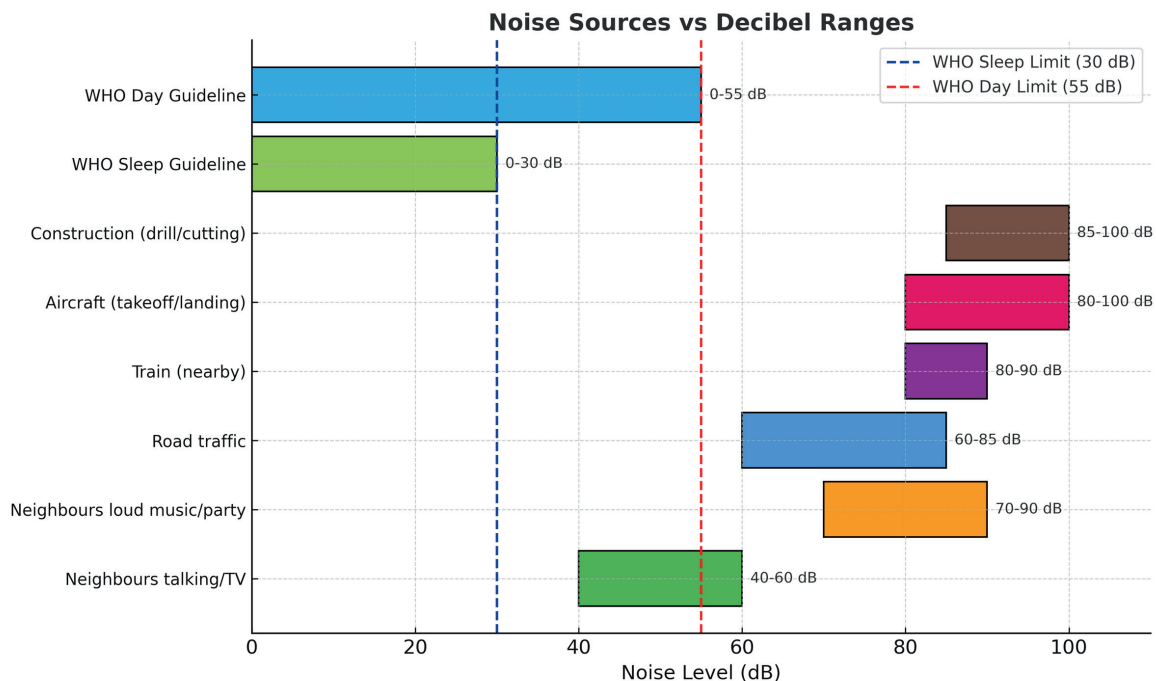
TOPIC 4

NOISE INTRUSION FROM NEIGHBOURS, ROADS, AIRCRAFT, AND TRAFFIC

Why does it happen?

Ordinary single/double-glass windows allow outside noise to pass through easily. Glass has low sound insulation, so noise from neighbors, traffic, or aircraft is only slightly reduced.

Main Sources of Noise



WHO Key Health guidance

≤30 dB: Quiet environment, ideal for sleep (e.g., countryside at night).

40–60 dB: Common indoor/outdoor noise; tolerable but may cause stress over time.

70–90 dB: Long-term exposure impacts hearing, sleep, and heart health.

>100 dB: Even short exposure can cause hearing damage.

Traditional windows do not protect you from urban noise. In a busy environment, noise can reach 40–60 dB indoors, far above the recommended 30 dB for healthy sleep (WHO guideline).

FROM PROBLEMS TO SOLUTIONS - THE SOLARINN ANSWER

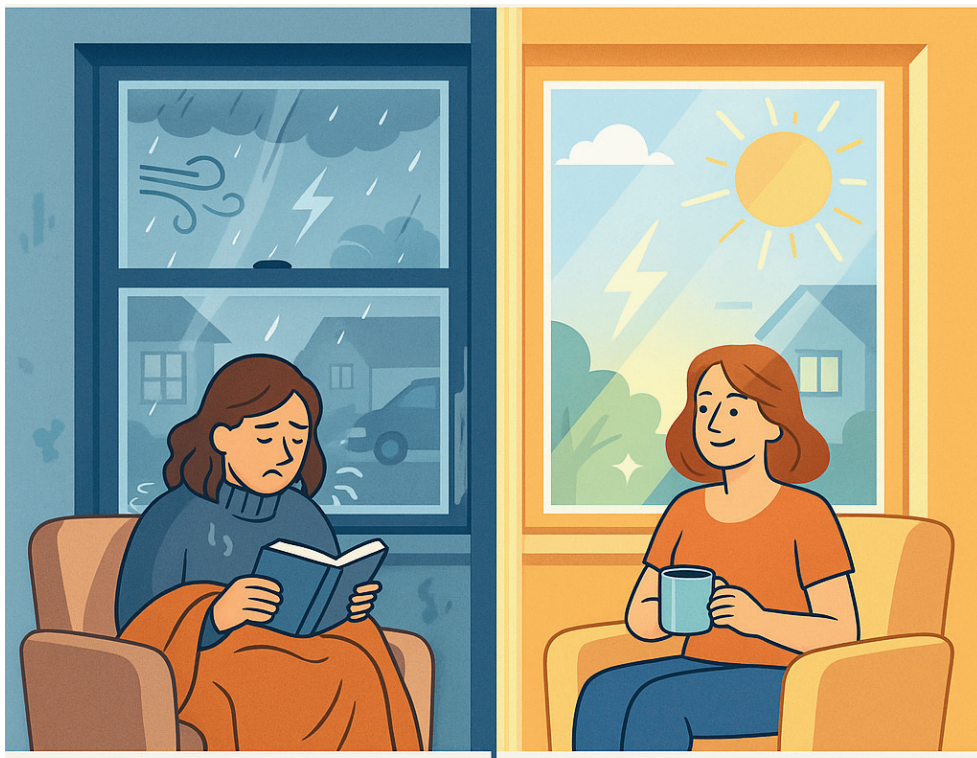
Traditional windows are not just energy “leak points” — they are systemic weak spots that compromise health, comfort, and safety.

They cause:

- Energy waste through **heat loss** and **poor insulation**
- Humidity and mould that harm **air quality** and **wellbeing**
- Noise intrusion disrupting **sleep** and **concentration**
- Dependence on **unstable power** systems
- Decline in **living quality** and **hidden health risks**

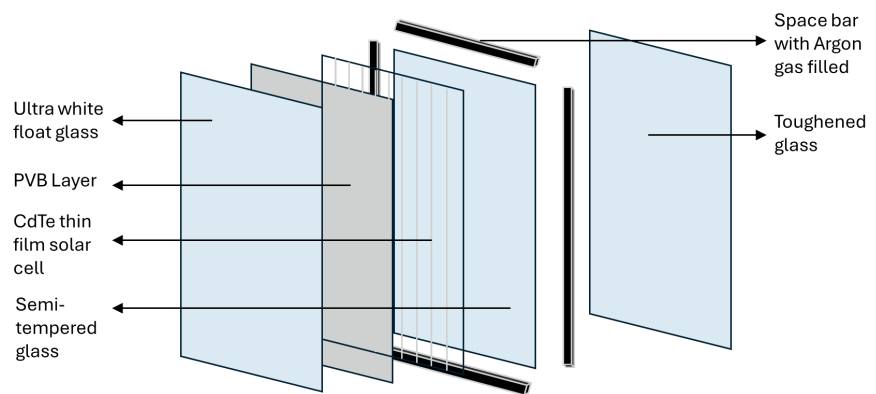
By integrating photovoltaic power generation, superior insulation, acoustic control, and safety glass technology, SolarInn redefines the window as both a **comfort barrier** and a **clean energy source**.

Below are three structure options designed to meet diverse building needs —
Standard and Edge.



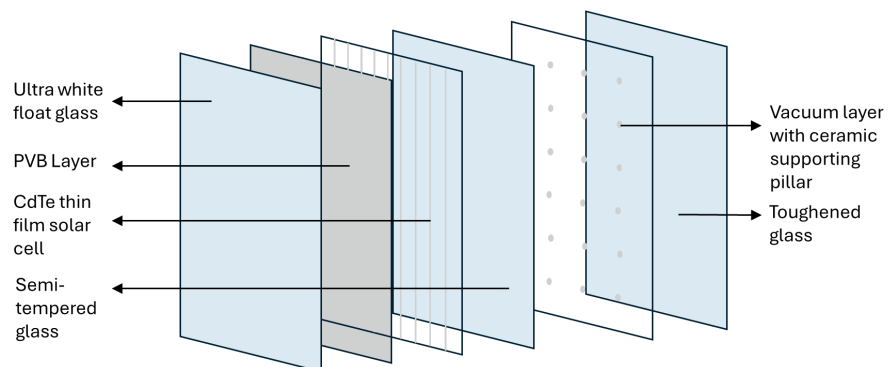
Glazing Series

SolarInn Standard Glazing



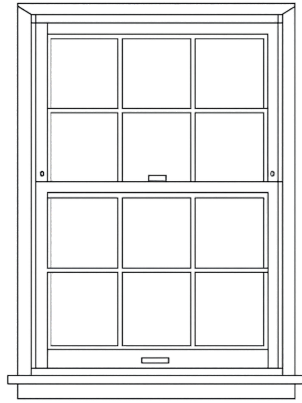
Structure

SolarInn Edge Glazing

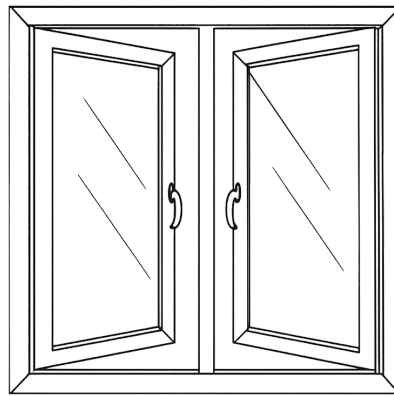


Structure

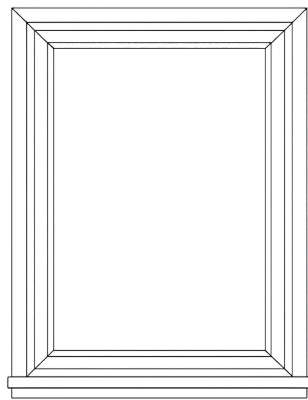
Application



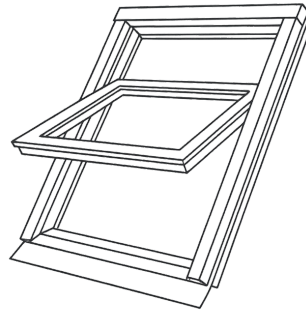
Sash Window



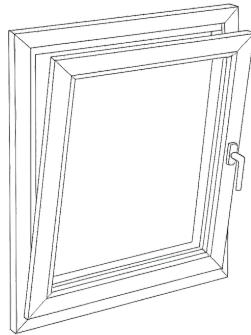
Casement Window



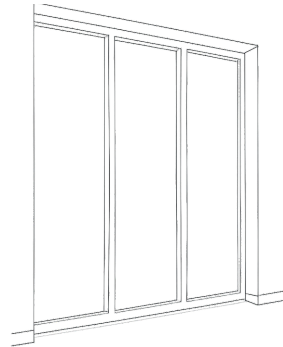
Fixed Window



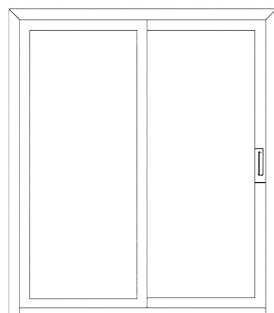
Skylight Window



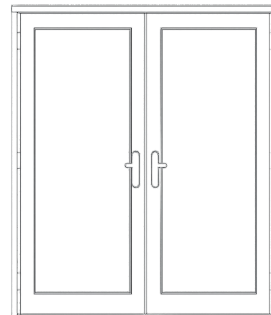
Tilt & Down Window



Floor-to-ceiling Window



Sliding door

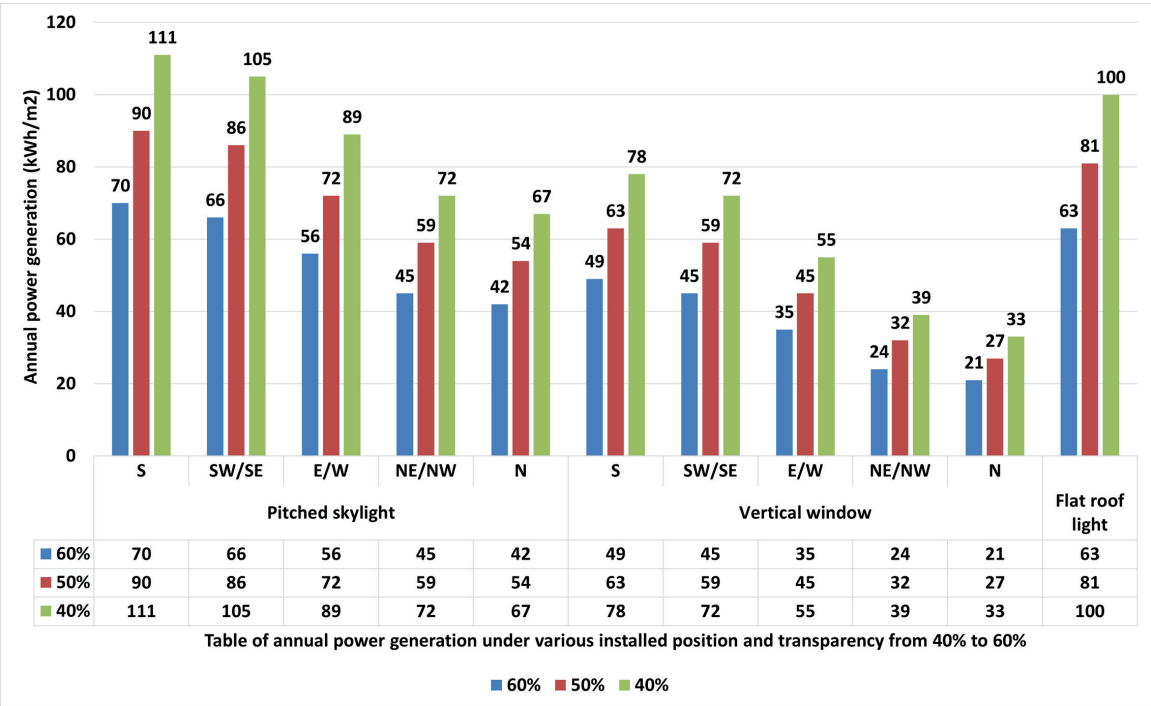


French door

Specifications

	SolarInn Standard Glass	SolarInn Plus Glass	SolarInn Edge Glass
Structure (mm)	3.2CdTe + 0.76PVB + 3.2 + 18Ar + 4T(T70)	3.2CdTe + 0.76PVB + 3.2 + 12Ar + 4T(S1.16) + 12Ar + 4T(S1.16)	3.2CdTe + 0.76PVB + 3T(S1.16) + 0.2V + 3T
Thickness (mm)	29.16	39.36	10.16
Standard Dimensions	1200mm height × 1610mm width		
Nominal Peak Power Output (Wp/m ²)	63 Wp/m ² (60% transparency) 80 Wp/m ² (50% transparency) 97 Wp/m ² (40% transparency)		
Weight (kg/m ²)	32 kg/m ²	46 kg/m ²	24 kg/m ²
Conversion efficiency under 1000W/m ² solar radiation (25°C, AM1.5)	6.3% (60% transparency) 8.0% (50% transparency) 9.7% (40% transparency)		
Conversion efficiency under 200W/m ² solar radiation (25°C, AM1.5)	6.6% (60% transparency) 8.4% (50% transparency) 10.2% (40% transparency)		
U-value (W/m ² K)	1.14	0.80	0.60
g-value	0.304	0.236	0.210
Visible light transmittance	38%	34%	30%
UV light block rate	83.0%	88.7%	99.5%
Acoustic Reduction (dB)	42	44	45
Glass Type	Toughened Glass + Laminated Glass		
Power generation performance guarantee	85% performance remaining after 25 years		
Lifespan	25-30 years		

UK Average Power Generation



Note: S - South; SW - Southwest; SE - Southeast; E - East; W - West; NE - Northeast; NW - Northwest; N - North;

Transparency



Without glazing



With double glazing



With triple glazing



60% transparency
SolarInn Glazing



50% transparency
SolarInn Glazing



30% transparency
SolarInn Glazing

Electrical Specifications

Standard test conditions (STC): 1000W/m², 25°C, AM1.5

Model Types (Specifications Standard test conditions(STC):1000W/m ² , 25°C, AM1.5)	SolarInn® Standard/Plus/Edge		
Standard Size (mm)	1200 × 1600		
Standard transparency	40%	50%	60%
Maximum Power P _m (W)	192	160	128
Open Circuit Voltage V _{dc} (V)	183	183	183
Short Circuit Current I _{sc} (A)	1.41	1.17	0.92
Peak Power Voltage V _{mp} (V)	146.3	146.3	146.3
Peak Power Current I _{mp} (A)	1.28	1.05	0.83
Maximum Series Fuse Rating I _{cf} (A)	2.11	1.75	1.38
Maximum System Voltage V _{sys} (V)	1000	1000	1000
Temperature Coefficients of I _{sc} Tk _α (%/°C)	+0.061		
Temperature Coefficients of V _{oc} Tk _β (%/°C)	-0.396		
Temperature Coefficients of P _m Tk _γ (%/°C)	-0.189		
Operating Temperature Range(°C)	-40 to +85		

Regulations compliance

TÜV Rheinland Certified
cTUVus Certified
IEC 61215 · IEC 61730 · IEC 61140
MCS Certified · UKCA Marked · CE Compliant
UL 790 Class A

Other Features

- **Ultra-low Carbon Footprint (Embodied Carbon Intensity)**
Producing 1W of CdTe solar glass generates only 0.29 kg CO₂e – an ultra-low carbon footprint.
- **Ultra-low Carbon Intensity of Power Generation (Emission Factor)**
Generating 1 kWh of electricity with CdTe solar releases just 0.011 kg CO₂e – far cleaner than average UK power station (0.280kg CO₂e) and silicon PV(0.067kg CO₂e)
- **Thermal Durability**
Thermal cycling (-40°C to +85°C, 200 cycles, ≤5% power degradation)
- **Fire Safety**
Passed the A-level fire test, the highest fire rating in Europe and the USA
- **Outstanding Hail Impact Resistance**
Tested under 25 mm ice ball at 23 m/s, IEC 61215 compliant
- Excellent wind load resistance
Fully compliant with IEC 2400 Pa wind load

Portfolio



Location: Panzhihua Graphite Carbon Industrial Park
Installed capacity: 1.25MW
Application: Glass Curtain Wall



Location: Hunan Construction Engineering Sunshine Corridor
Installed capacity: 2.38kW
Application: Fixed Window



Location: Ruichang building materials sun room
Installed capacity: 7kW
Application: Skylight



Location: Wuliangye High-tech Zone Headquarters Project
Installed capacity: 346.5kW
Application: Floor-to-ceiling glass



Location: BIPV Project for People's Hospital in Xiong'an New Area
Installed capacity: 563kW
Application: Casement window



Location: State Grid Demonstration Project of New Power System
Installed capacity: 99kW
Application: Glass curtain wall

Portfolio



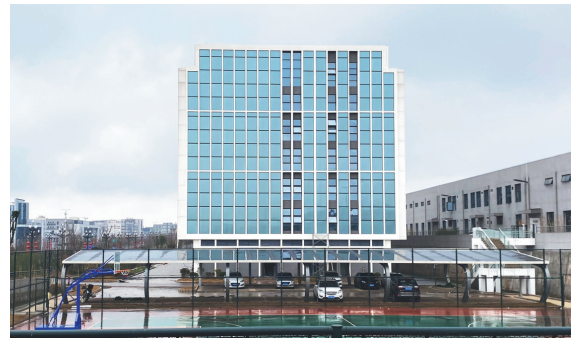
Location: BIPV Project for Western
China Science And Technology
Innovation Harbour
Installed capacity: 226kW
Application: Fixed window



Location: Laboratory Building of
Agricultural Biological Sciences,
Academy of Agricultural Sciences
Installed capacity: 78.82kW
Application: Tilt & Down Window



Location: Yancheng Comprehensive
Energy Service Center
Installed capacity: 10.44kW
Application: Glass curtain wall



Location: CdTe Power Glass of Shudao
Group Smart Track in Yibin
Installed capacity: 136kW
Application: Glass curtain wall

WHERE THERE IS LIGHT,
THERE IS POWER

Contact

Email: info@carbonfuturex.group

Tel: +44 (0) 161 8415628

Website: <https://www.modernite.co.uk/>

Head Office Address: Unit 5.04a, Boat Shed, Exchange Quay, Salford, Manchester, M5 3EQ



Modernité

By CarbonFutureX[®] Group