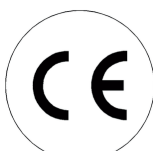


## SolarInn® roof tile



### Solar becomes invisible — yet structurally and energetically essential

Our Luxury Photovoltaic Roof System redefines architectural roofing by seamlessly integrating premium design with high-efficiency solar power generation. Available in Photovoltaic Roof Slates and Photovoltaic Roof Tiles, this solution offers a sophisticated alternative to traditional solar systems — without compromising the aesthetics of your property.



# **Where There's Light, There's Power**

Ambient Light Power Generation

# Content

|                                                |       |    |
|------------------------------------------------|-------|----|
| 01   Greater Installed Area                    | ----- | 3  |
| 02   Greater Installed Power Capacity          | ----- | 4  |
| 03   Superior Low-Light Performance            | ----- | 5  |
| 04   Higher Annual Energy Output               | ----- | 6  |
| 05   Investment & Payback/ROI Comparison       | ----- | 12 |
| 06   Architectural Aesthetics                  | ----- | 14 |
| 07   Structural Integrity & Durability         | ----- | 15 |
| 08   Why Solar Roof Tiles                      | ----- | 16 |
| 09   Products Series and Sizes                 | ----- | 17 |
| 10   Products Specification                    | ----- | 18 |
| 11   Package Materials                         | ----- | 23 |
| 12   Popular Monochrome Tile Colour Collection | ---   | 24 |
| 13   Popular Textured Slate Colour Collection  | ----- | 25 |
| 14   Installation System Node                  | ----- | 26 |
| 15   Portfolio                                 | ----- | 30 |

# 01 | Greater Installed Area

## From Fragmented Panel Zones to Full-Roof Integration

Traditional solar panels are constrained by fixed module dimensions and rigid rectangular layouts.

On real UK and European rooftops – with **chimneys, skylights, dormers and multiple roof slopes** – **this creates significant unused surface area.**

## Why Traditional Panels Leave Roof Space Unused?

### Conventional PV systems:

Require rectangular arrays

Need safety edge clearances

Require mounting rails and spacing

Cannot efficiently wrap around chimneys or roof features

Often limited to one dominant slope

### This means:

1) Traditional panels can only be installed on “regular rectangular areas”

2) A large portion of roof area remains unused

**Solar Roof Tiles fundamentally change this equation.**

### Solar Roof Tile System:

1) The roof itself becomes the power generator

2) Full roof coverage possible

3) Flexible layout around chimneys and skylights

4) No additional structural obstructions

5) Maximised usable surface area

## Real-world installation area increase: 117%–485%

(depending on roof configuration)

This is not incremental optimisation.  
It is a structural transformation of  
rooftop energy potential.

### The Results:

- More roof utilised
- More energy generated
- More value created

### More Area = More Energy

Under average UK solar conditions:  
Every additional 10 m<sup>2</sup> of usable roof  
area can generate:

- 1,200–1,800 kWh per year
- Equivalent to 4,000–6,000 miles of EV driving
- 45–60% of a typical UK household's electricity demand
- Or up to half of an air source heat pump's annual electricity use

| Roof Type                   | Typical Roof Area (m <sup>2</sup> ) | Traditional PV Usable Area (m <sup>2</sup> ) | CdTe PV Tile Usable Area (m <sup>2</sup> ) |
|-----------------------------|-------------------------------------|----------------------------------------------|--------------------------------------------|
| Terraced Pitched Roof       | 60                                  | 12                                           | 24                                         |
| Semi-Detached Pitched Roof  | 80                                  | 20                                           | 38                                         |
| Detached Large Pitched Roof | 120                                 | 33.6                                         | 62                                         |
| Victorian Complex Roof      | 85                                  | 12.75                                        | 34                                         |
| Dormer Roof                 | 90                                  | 18                                           | 40                                         |
| Hip Roof                    | 95                                  | 22.8                                         | 40                                         |
| L / T-Shaped Roof           | 110                                 | 24.2                                         | 40                                         |
| Cross-Gabled Roof           | 100                                 | 20                                           | 40                                         |
| Multi-Chimney Roof          | 85                                  | 12.75                                        | 40                                         |



## 02 | Greater Installed Power Capacity

**More Coverage, More Generation, More Beauty, More Value.**

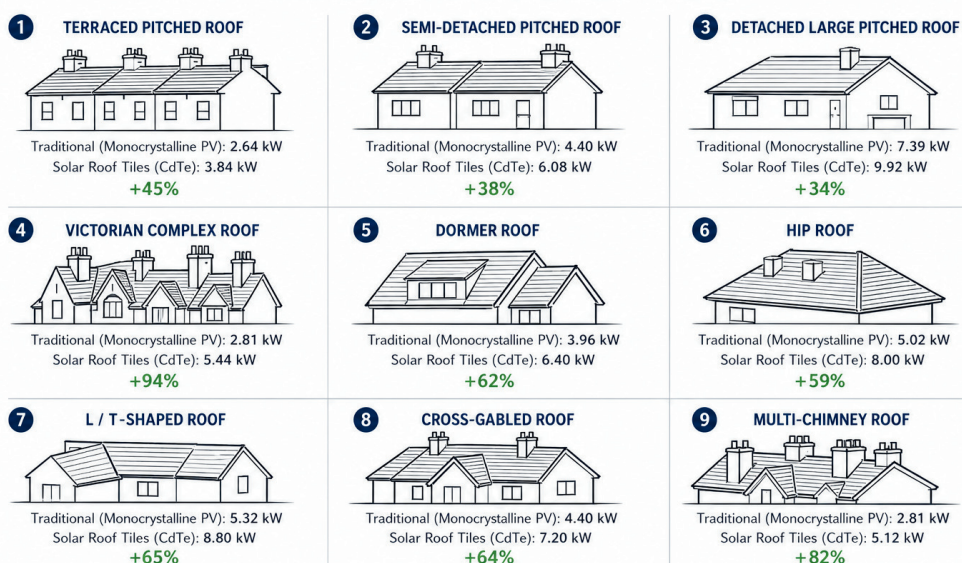
Across typical UK and European residential rooftops, traditional solar panels rely on fixed-size standard modules (e.g. 1.1m × 1.7m). On multi-slope roofs, or roofs with chimneys, skylights and irregular geometries, this leads to significant layout losses and unused space.

CdTe Solar Roof Tiles, with higher surface coverage and flexible layout capability, can typically deliver installed power capacity:

| Roof Type                   | Traditional PV Panels (kW) | Black CdTe PV Tiles (kW) | Increase | Grey CdTe PV Tile (kW) | Increase |
|-----------------------------|----------------------------|--------------------------|----------|------------------------|----------|
| Terraced Pitched Roof       | 2.64                       | 3.84                     | 45%      | 2.88                   | 9%       |
| Semi-Detached Pitched Roof  | 4.40                       | 6.08                     | 38%      | 4.56                   | 4%       |
| Detached Large Pitched Roof | 7.39                       | 9.92                     | 34%      | 7.44                   | 1%       |
| Victorian Complex Roof      | 2.81                       | 5.44                     | 94%      | 4.08                   | 45%      |
| Dormer Roof                 | 3.96                       | 6.40                     | 62%      | 4.80                   | 21%      |
| Hip Roof                    | 5.02                       | 8.00                     | 59%      | 6.00                   | 20%      |
| L / T-Shaped Roof           | 5.32                       | 8.80                     | 65%      | 6.60                   | 24%      |
| Cross-Gabled Roof           | 4.40                       | 7.20                     | 64%      | 5.40                   | 23%      |
| Multi-Chimney Roof          | 2.81                       | 5.12                     | 82%      | 3.84                   | 37%      |

### UK ROOF TYPOLOGY OVERVIEW

WHERE SOLAR ROOF TILES UNLOCK MAXIMUM POTENTIAL



Calculations assume conventional monocrystalline PV panels at 220 W/m<sup>2</sup> and CdTe solar roof tiles at 160 W/m<sup>2</sup>. Solar roof tiles can utilise east-, south- and west-facing roof slopes and more fragmented roof areas, subject to roof geometry, shading, obstructions and installation constraints.

■ Traditional (Monocrystalline PV)  
 ■ Solar Roof Tiles (CdTe)

## 03 | Superior Low-Light Performance

Solar systems are often tested under ideal laboratory sunlight. But real rooftops in the UK and Northern Europe operate under very different conditions. Most of the year, solar generation occurs under:

- Overcast skies
- Diffuse light conditions
- Low winter sun angles
- Mixed East-West roof orientations
- Moderate summer temperatures

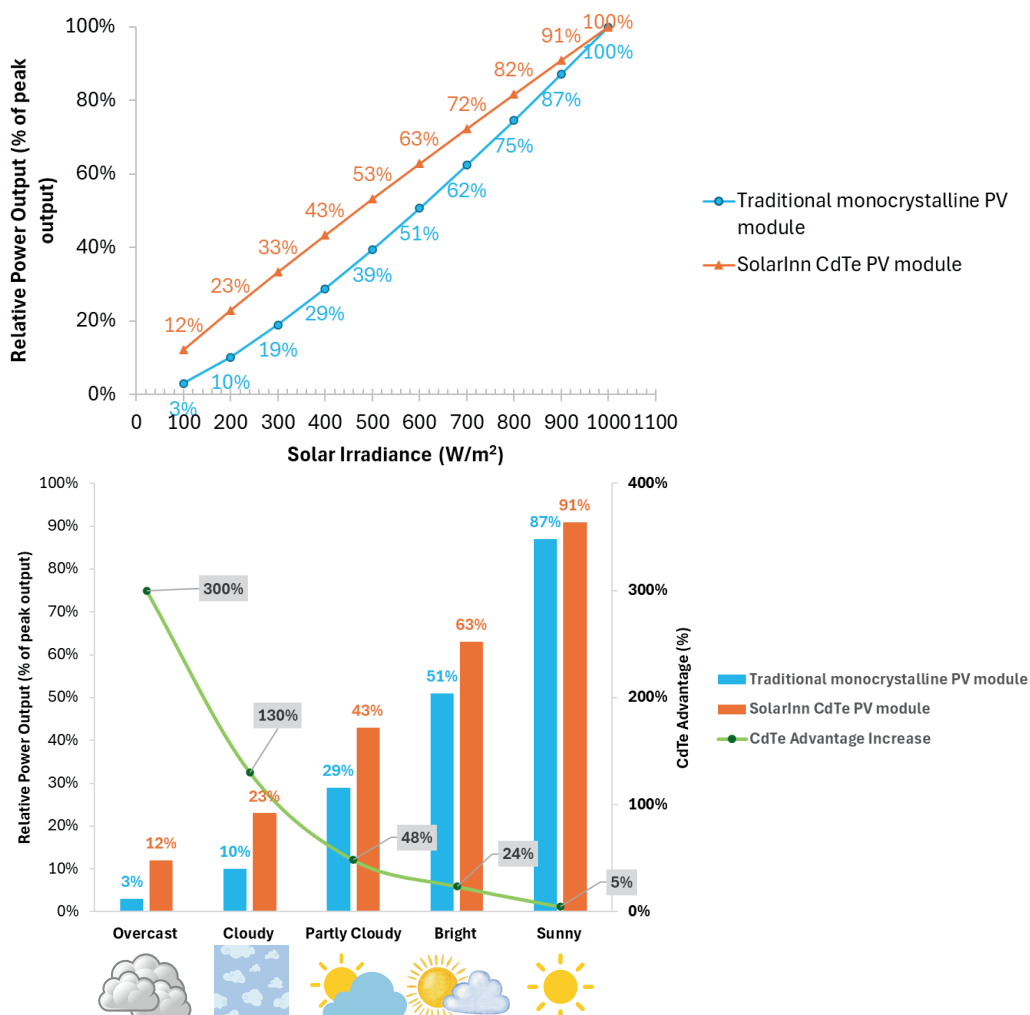
**In Europe, solar performance is not defined by perfect sunshine – it is defined by how well a system performs on cloudy days.**

**CdTe thin-film technology is inherently better suited to diffuse-light climates, it offers:**

- ✓ More stable output in cloudy and diffuse conditions
- ✓ Smoother early-morning and late-afternoon performance
- ✓ Better temperature coefficient than mono-crystalline silicon
- ✓ More balanced East-West roof generation

Instead of sharp midday peaks followed by steep drop-offs, generation is more balanced throughout the day.

### Performance Under Real Weather Conditions



## 04 | Higher Annual Energy Output

### Not About Module Wattage — About System Yield

Even if individual tiles have lower wattage:

Total installed area is greater

Better performance under cloudy conditions

No edge-shading losses from panel arrays

➔ Higher total annual system output

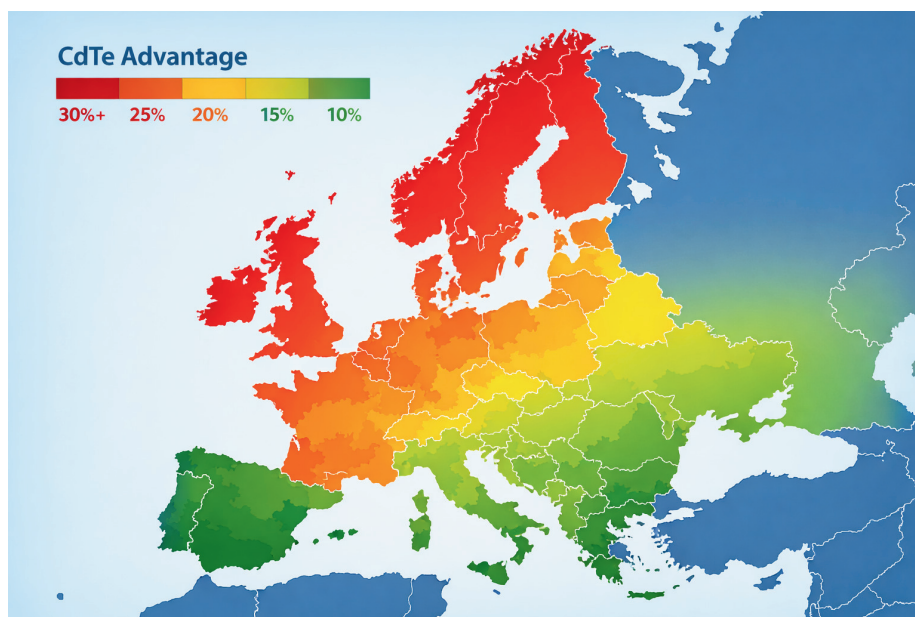
➔ Smoother generation curve

➔ Higher self-consumption ratio

In high-latitude climates,

system-level yield often outperforms conventional add-on PV systems.

### CdTe Performance Advantage Map Across Europe



Across Europe, CdTe consistently outperforms mono-crystalline silicon, delivering an average gain of +25–30% in Northern and North-Western Europe, around +20% in Central Europe, and still +6–14% in Southern regions, with its performance advantage increasing as solar irradiation decreases.

### Regional Average Performance Comparison

| Region               | Avg. Mono (kWh/kW)* | Avg. Efficiency Ratio | Avg. CdTe (kWh/kW)* | Avg. Advantage |
|----------------------|---------------------|-----------------------|---------------------|----------------|
| Northern Europe      | 850                 | 1.3                   | 1083                | 30%            |
| North-Western Europe | 938                 | 1.26                  | 1170                | 25%            |
| Central Europe       | 1069                | 1.2                   | 1291                | 20%            |
| South-Eastern Europe | 1263                | 1.14                  | 1438                | 14%            |
| Southern Europe      | 1513                | 1.08                  | 1648                | 8%             |

Note: (kWh/kW)\* represents annual energy output per kW installed.

# Annual electricity generation in the United Kingdom

Across major UK cities, **CdTe consistently delivers significantly higher annual specific yield** compared to mono-crystalline silicon systems.

In **southern cities** such as Exeter, Bristol and London, the gain ranges from **+19% to +21%**, while in the **Midlands** the advantage increases to **+23–24%**.

Moving **further north**, where diffuse irradiation dominates, the performance gap widens substantially – reaching **+30% in Edinburgh**, **+31% in Glasgow**, and **up to +33% in Aberdeen**.

The data clearly demonstrates that the lower the irradiation and the higher the proportion of diffuse light, the greater the CdTe advantage – making it particularly well suited to the UK climate.



| City       | Mono (kWh/kWp) | CdTe (kWh/kWp) | Increase |
|------------|----------------|----------------|----------|
| Exeter     | 1025           | 1220           | 19%      |
| Bristol    | 1000           | 1205           | 21%      |
| London     | 1000           | 1210           | 21%      |
| Cardiff    | 980            | 1200           | 22%      |
| Birmingham | 975            | 1198           | 23%      |
| Nottingham | 960            | 1188           | 24%      |
| Leicester  | 955            | 1185           | 24%      |
| Manchester | 925            | 1160           | 25%      |
| Liverpool  | 920            | 1155           | 26%      |
| Leeds      | 915            | 1155           | 26%      |
| Newcastle  | 900            | 1145           | 27%      |
| Edinburgh  | 875            | 1135           | 30%      |
| Glasgow    | 850            | 1110           | 31%      |
| Aberdeen   | 825            | 1095           | 33%      |

Note: (kWh/kW)\* represents annual energy output per kW installed.

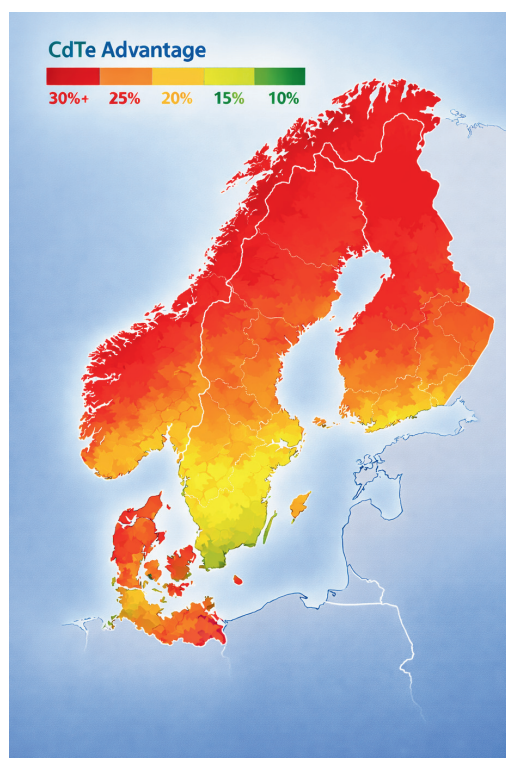


# Annual electricity generation in Nodic Countries

Across major Nordic cities, CdTe demonstrates a consistently strong performance advantage under low-irradiation and high-diffuse light conditions.

While mono-crystalline systems typically generate 830–920 kWh/kWp annually, CdTe increases annual yield to approximately **1085–1195 kWh/kWp**, delivering a stable gain of **+28% to +31%** across **Norway, Sweden, Finland and Denmark**.

The data confirms that in high-latitude climates with long winters and frequent cloud cover, CdTe's diffuse-light response and temperature stability translate directly into higher real-world energy output, making it particularly well suited to the Nordic market.



| City       | Mono (kWh/kWp) | CdTe (kWh/kWp) | Increase |
|------------|----------------|----------------|----------|
| Oslo       | 900            | 1170           | 30%      |
| Bergen     | 850            | 1110           | 31%      |
| Trondheim  | 830            | 1085           | 31%      |
| Stockholm  | 900            | 1170           | 30%      |
| Gothenburg | 880            | 1145           | 30%      |
| Malmö      | 920            | 1195           | 30%      |
| Helsinki   | 850            | 1110           | 31%      |
| Tampere    | 830            | 1090           | 31%      |
| Copenhagen | 900            | 1150           | 28%      |
| Aarhus     | 880            | 1125           | 28%      |

Note: (kWh/kW)\* represents annual energy output per kW installed.

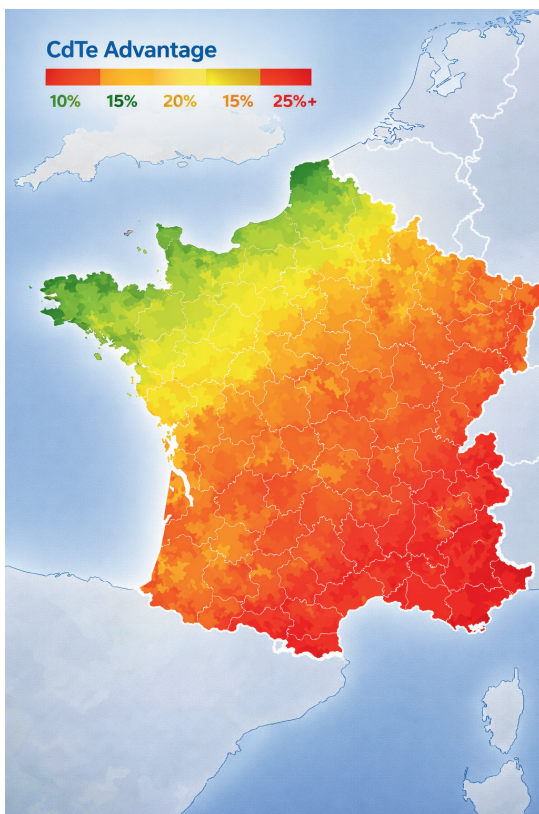
# Annual electricity generation in France

Across France, CdTe demonstrates a clear and climate-responsive performance advantage over mono-crystalline silicon systems.

With mono systems typically delivering around 1100 kWh/kWp annually, CdTe increases annual yield to approximately **1310 kWh/kWp**, representing an average gain of **+19% nationwide**.

While southern France benefits from higher direct irradiation, central and northern regions experience more diffuse light conditions – where CdTe’s spectral response and temperature stability provide measurable real-world gains.

This makes CdTe not only competitive in high-irradiance zones, but particularly effective across France’s mixed climate profile.



| City      | Mono (kWh/kWp) | CdTe (kWh/kWp) | Increase |
|-----------|----------------|----------------|----------|
| Lille     | 1000           | 1210           | 21%      |
| Paris     | 1050           | 1250           | 19%      |
| Nantes    | 1080           | 1280           | 19%      |
| Lyon      | 1150           | 1360           | 18%      |
| Bordeaux  | 1200           | 1400           | 17%      |
| Toulouse  | 1300           | 1500           | 15%      |
| Marseille | 1450           | 1650           | 14%      |
| Nice      | 1500           | 1700           | 13%      |

Note: (kWh/kW)\* represents annual energy output per kW installed.

# Annual electricity generation in German

Germany's climate is highly favourable for CdTe photovoltaic technology.

Mono-crystalline systems typically generate 950–1100 kWh/kWp per year, while CdTe systems achieve approximately **1175–1330 kWh/kWp**, delivering a consistent advantage of **17%–24%**. The advantage is strongest in northern cities due to higher diffuse light levels, while southern regions still maintain a clear performance gain.

Overall, CdTe offers higher real-world energy yield across Germany under typical operating conditions.



| City      | Mono<br>(kWh/kWp) | CdTe<br>(kWh/kWp) | Increase |
|-----------|-------------------|-------------------|----------|
| Hamburg   | 950               | 1175              | 24%      |
| Berlin    | 980               | 1205              | 23%      |
| Hannover  | 975               | 1200              | 23%      |
| Cologne   | 1000              | 1225              | 22%      |
| Frankfurt | 1050              | 1280              | 22%      |
| Stuttgart | 1100              | 1330              | 21%      |
| Munich    | 1100              | 1285              | 17%      |

Note: (kWh/kW)\* represents annual energy output per kW installed.

## Performance Summary of European Countries

| Country        | Mono<br>(kWh/kW) | Efficiency<br>Ratio | CdTe<br>(kWh/kW) | Increase |
|----------------|------------------|---------------------|------------------|----------|
| Finland        | 800              | 1.32                | 1050             | 32%      |
| Norway         | 850              | 1.3                 | 1100             | 30%      |
| Sweden         | 850              | 1.3                 | 1100             | 30%      |
| Ireland        | 900              | 1.28                | 1150             | 28%      |
| Denmark        | 900              | 1.27                | 1140             | 27%      |
| UK             | 950              | 1.26                | 1200             | 26%      |
| Netherlands    | 950              | 1.24                | 1180             | 24%      |
| Belgium        | 950              | 1.24                | 1180             | 24%      |
| Poland         | 1000             | 1.24                | 1240             | 24%      |
| Germany        | 1000             | 1.23                | 1230             | 23%      |
| Czech Republic | 1050             | 1.21                | 1270             | 21%      |
| Switzerland    | 1100             | 1.2                 | 1320             | 20%      |
| France         | 1100             | 1.19                | 1310             | 19%      |
| Austria        | 1150             | 1.18                | 1360             | 18%      |
| Slovakia       | 1100             | 1.18                | 1300             | 18%      |
| Hungary        | 1250             | 1.16                | 1450             | 16%      |
| Romania        | 1200             | 1.15                | 1380             | 15%      |
| Slovenia       | 1200             | 1.15                | 1380             | 15%      |
| Bulgaria       | 1300             | 1.14                | 1480             | 14%      |
| Croatia        | 1350             | 1.12                | 1510             | 12%      |
| Italy          | 1450             | 1.11                | 1610             | 11%      |
| Spain          | 1500             | 1.08                | 1620             | 8%       |
| Portugal       | 1550             | 1.07                | 1660             | 7%       |
| Greece         | 1600             | 1.06                | 1700             | 6%       |

Note: (kWh/kW)\* represents annual energy output per kW installed.

## 05 | Investment & Payback Comparison

### Solar Roof Tiles vs Conventional Roof Tiles + PV Panels.

Modern UK homes are becoming more electricity-intensive. With electric vehicles, heat pumps, home batteries and higher daytime electricity use, a conventional 4–5 kW PV system may not be enough to cover a meaningful share of annual demand.

This comparison uses a typical semi-detached home with three occupants and one EV, with annual electricity demand of approximately 6,800–8,500 kWh. In this high-use scenario, CdTe solar roof tiles show their advantage by using a larger active roof area and increasing annual generation from 4,070 kWh to 7,053 kWh.

For new builds, re-roofing projects and premium retrofit homes, CdTe solar roof tiles can turn the roof from a passive building element into an integrated long-term energy asset.

**Table 1. System Snapshot**

| Item                        | Conventional Roof + PV Panels       | CdTe Solar Roof Tiles                  |
|-----------------------------|-------------------------------------|----------------------------------------|
| Case study                  | Semi-detached pitched roof          | Semi-detached pitched roof             |
| Household profile           | 3 occupants + 1 EV                  | 3 occupants + 1 EV                     |
| Annual electricity demand   | 6,800–8,500 kWh/year                | 6,800–8,500 kWh/year                   |
| Total roof area             | 80 m <sup>2</sup>                   | 80 m <sup>2</sup>                      |
| Active solar area           | 20 m <sup>2</sup>                   | 38 m <sup>2</sup>                      |
| PV power density            | 220 W/m <sup>2</sup>                | 160 W/m <sup>2</sup>                   |
| Installed PV capacity       | 4.40 kW                             | <b>6.08 kW</b>                         |
| Annual yield factor         | 925 kWh/kW/year                     | 1,160 kWh/kW/year                      |
| Estimated annual generation | 4,070 kWh/year                      | <b>7,053 kWh/year</b>                  |
| Battery storage             | 20 kWh                              | 20 kWh                                 |
| Annual demand coverage      | 48–60%                              | <b>83–104%</b>                         |
| Installation approach       | Two-stage roofing + PV installation | One integrated solar roof installation |



**Table 2. Estimated Initial Investment**

| Cost Item                                                 | Conventional Roof + PV Panels | CdTe Solar Roof Tiles               |
|-----------------------------------------------------------|-------------------------------|-------------------------------------|
| Roof covering + roof labour                               | £13,000–£18,000 inc. VAT      | Included in integrated system       |
| PV / solar roof system supply & install                   | £6,800                        | £8,500–£10,500                      |
| Integrated solar roof installation labour                 | —                             | £8,000–£12,000                      |
| Electrical testing & commissioning                        | Included in PV system         | £1,900                              |
| Scaffolding + waste removal                               | £2,700–£5,400                 | £1,700–£3,400                       |
| Additional PV contractor attendance / access coordination | £800–£1,500                   | Included in integrated installation |
| Inverter + 20 kWh battery                                 | £10,000–£15,000               | £10,500–£15,500                     |
| <b>Estimated initial investment</b>                       | <b>£33,300–£46,700</b>        | <b>£30,600–£43,300</b>              |

**Table 3. Annual Saving & Payback**

| Financial Indicator                                                 | Conventional Roof + PV Panels | CdTe Solar Roof Tiles       |
|---------------------------------------------------------------------|-------------------------------|-----------------------------|
| Annual generation                                                   | 4,070 kWh/year                | <b>7,053 kWh/year</b>       |
| Solar electricity used on-site                                      | 3,599–3,939 kWh/year          | <b>5,592–5,932 kWh/year</b> |
| Exported surplus electricity                                        | 132–472 kWh/year              | <b>1,121–1,461 kWh/year</b> |
| On-site solar saving                                                | £1,080–£1,182/year            | <b>£1,678–£1,780/year</b>   |
| Export income at 15p/kWh                                            | £20–£71/year                  | <b>£168–£219/year</b>       |
| Off-peak battery tariff optimisation                                | £628–£722/year                | <b>£190–£638/year</b>       |
| <b>Annual saving + export income</b>                                | <b>£1,728–£1,975/year</b>     | <b>£2,036–£2,637/year</b>   |
| <b>Full project payback</b>                                         | <b>16.9–27.0 years</b>        | <b>11.6–21.3 years</b>      |
| <b>Full project annual ROI</b>                                      | <b>3.7%–5.9%</b>              | <b>4.7%–8.6%</b>            |
| <b>Adjusted solar payback after deducting standard roof cost</b>    | <b>10.3–16.6 years</b>        | <b>6.7–12.4 years</b>       |
| <b>Adjusted annual solar ROI after deducting standard roof cost</b> | <b>6.0%–9.7%</b>              | <b>8.0%–15.0%</b>           |

Calculations are based on a typical UK semi-detached pitched roof with three occupants and one electric vehicle. Annual savings include on-site solar use, summer surplus export income at 15p/kWh, and off-peak battery tariff optimisation. Seasonal generation variation is included using a simplified UK seasonal output profile. Standing charges are excluded. Actual results depend on roof geometry, shading, installation conditions, household demand profile, electricity tariff, battery control strategy, export arrangements and contractor quotations.

## 06 | Architectural Aesthetics

### Solar – without looking solar.

This is not a solar installation, is architecture with intelligence built in.

From the street, it reads as **natural slate** – refined, timeless, quietly confident.

**No visible rails.**

**No exposed brackets.**

**No compromise to the roofline.**

Only a seamless surface that preserves the integrity of the building.

This is not an addition, it is integration.

Only a refined roofscape that enhances – rather than interrupts – your home's design.

### For Architect-Led and High-End Developments

- ✓ Planning-sensitive and conservation-friendly
- ✓ Ideal for premium new builds and luxury renovations
- ✓ Suitable for listed-adjacent and design-controlled areas
- ✓ Built to satisfy both energy targets and architectural vision

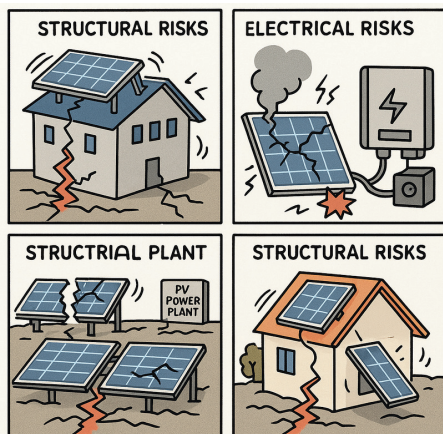
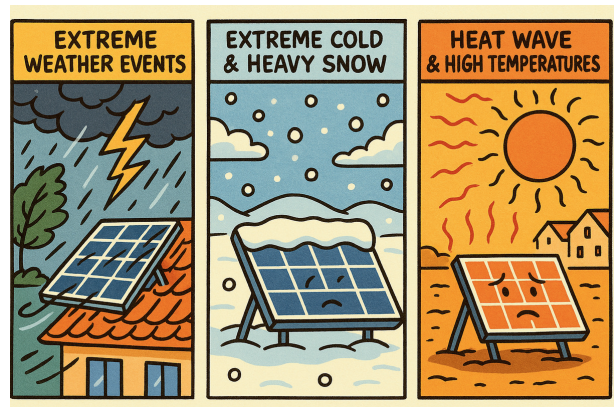


## 07 | Structural Integrity & Durability

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

### 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

**SolarInn PV tiles** Engineered for long-term reliability under diverse European climate conditions.

**Laminated safety glass** construction ensures **structural strength**, **impact resistance**, and **enhanced safety in the event of breakage**. The system is designed to withstand **high wind loads**, **heavy snow loads**, and **temperature fluctuations** commonly experienced across Europe, from coastal regions to alpine environments.

The fully integrated roof-grade **waterproofing design** provides long-term protection against rain, snow, and moisture ingress, ensuring stable performance in humid, cold, and variable climates.

With a **25-year performance warranty**, the system meets European structural and durability expectations, making it suitable for applications across the UK, Germany, France, Nordic countries, and other regions with demanding environmental conditions.

# Why Solar Roof Tiles Outperform Traditional Panels

| Comparison             | Traditional Panels        | SolarInn Roof Tiles            |
|------------------------|---------------------------|--------------------------------|
| Installation           | Partial add-on            | Full roof integration          |
| Usable Area            | Restricted                | Maximised                      |
| Appearance             | External equipment        | Architectural integration      |
| Annual Yield Potential | Moderate                  | Higher                         |
| Wind Risk              | Increased due to mounting | Integrated into roof structure |
| Property Value         | Standard                  | Significantly enhanced         |

## Turning the Roof into a Power Asset

Solar roof tiles do not sit on top of the roof – they replace conventional roofing materials.

- ✓ Fully replace traditional tiles
- ✓ Flexible layout around chimneys and skylights
- ✓ Not limited by rigid panel arrays
- ✓ No external mounting system

The entire roof becomes a power station.

## More Than an Energy System

It is a property upgrade.

- ✓ Improved EPC rating
- ✓ Reduced long-term energy costs
- ✓ Enhanced resale attractiveness
- ✓ Future-proofed for net-zero regulations

Your home is no longer just an energy consumer.

It becomes a generating asset.

## Preserving Heritage While Enabling Energy Transition

For Victorian and heritage properties:

- ✓ No intrusive panels
- ✓ Preserves original architectural character
- ✓ Maintains traditional roof appearance
- ✓ Enables modern energy independence

This is how historical architecture enters the net-zero era.



## Products Series and Sizes

### Windsor Broad Series

CdTe Module Size: 400mm × 600mm;  
Tile Size: 480mm × 670mm



### Cotswold Slate Series

CdTe Module Size: 300mm × 400mm; Tile  
Size: 370mm × 480mm



### Yorkshire Longspan Series

CdTe Module Size: 400mm × 1200mm;  
Tile Size: 450mm × 1250mm



### Highland Shingle Series

CdTe Module Size: 240mm × 800mm;  
Tile Size: 290mm × 840mm





# Products Specification

## 1. Windsor Broad Series



### Datasheet

|                                                                   | Black Tile                               | Colour Tile                                               |
|-------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------|
| Structure (mm)                                                    | 3.2CdTe+0.5EVA+3.2                       | 3.2+0.5EVA+3.2CdTe+0.5EVA+3.2                             |
| Colour                                                            | Marble black                             | Dusty Grey (Standard)<br>(9 Alternative options, Page 21) |
| Glass thickness (mm)                                              | 6.9                                      | 10.6                                                      |
| CdTe Module Size                                                  | 400mm length × 600mm width               |                                                           |
| Whole Tile Size                                                   | 480mm length × 670mm width               |                                                           |
| Slate thickness (mm)                                              | 33.0                                     | 33.0                                                      |
| Weight (kg)                                                       | 6.5                                      | 8.5                                                       |
| Nominal Peak Power Output (Wp)                                    | 38.1                                     | 26.7                                                      |
| Module efficiency under 1000W/m2 solar radiation (25°C, AM1.5)    | 16.6%                                    | 11.6%                                                     |
| Conversion efficiency under 200W/m2 solar radiation (25°C, AM1.5) | 21.3%                                    | 14.9%                                                     |
| Glass Type                                                        | Laminated Glass                          |                                                           |
| Power generation performance guarantee                            | 85% performance remaining after 25 years |                                                           |
| Lifespan                                                          | 50 years +                               |                                                           |

# Products Specification

## 2. Cotswold Slate Series



### Datasheet

|                                                                   | Black Tile                               | Colour Tile                                               |
|-------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------|
| Structure (mm)                                                    | 3.2CdTe+0.5EVA+3.2                       | 3.2+0.5EVA+3.2CdTe+0.5EVA+3.2                             |
| Colour                                                            | Marble black                             | Dusty Grey (Standard)<br>(9 Alternative options, Page 21) |
| Glass thickness (mm)                                              | 6.9                                      | 10.6                                                      |
| CdTe Module Size                                                  | 300mm length × 400mm width               |                                                           |
| Whole Tile Size                                                   | 370mm length × 480mm width               |                                                           |
| Slate thickness (mm)                                              | 33.0                                     | 33.0                                                      |
| Weight (kg)                                                       | 3.5                                      | 4.5                                                       |
| Nominal Peak Power Output (Wp)                                    | 18.7                                     | 13.1                                                      |
| Module efficiency under 1000W/m2 solar radiation (25°C, AM1.5)    | 16.6%                                    | 11.6%                                                     |
| Conversion efficiency under 200W/m2 solar radiation (25°C, AM1.5) | 21.3%                                    | 14.9%                                                     |
| Glass Type                                                        | Laminated Glass                          |                                                           |
| Power generation performance guarantee                            | 85% performance remaining after 25 years |                                                           |
| Lifespan                                                          | 50 years +                               |                                                           |

# Products Specification

## 3. Yorkshire Longspan Series



## Datasheet

|                                                                               | Black Tile                               | Colour Tile                                               |
|-------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------|
| Structure (mm)                                                                | 3.2CdTe+0.5EVA+3.2                       | 3.2+0.5EVA+3.2CdTe+0.5EVA+3.2                             |
| Colour                                                                        | Marble black                             | Dusty Grey (Standard)<br>(9 Alternative options, Page 21) |
| Glass thickness (mm)                                                          | 6.9                                      | 10.6                                                      |
| CdTe Module Size                                                              | 1200mm length × 400mm width              |                                                           |
| Whole Tile Size                                                               | 1250mm length × 450mm width              |                                                           |
| Slate thickness (mm)                                                          | 44.0                                     | 44.0                                                      |
| Weight (kg)                                                                   | 11.5                                     | 15.4                                                      |
| Nominal Peak Power Output (Wp)                                                | 76.9                                     | 53.8                                                      |
| Module efficiency under 1000W/m <sup>2</sup> solar radiation (25°C, AM1.5)    | 16.6%                                    | 11.6%                                                     |
| Conversion efficiency under 200W/m <sup>2</sup> solar radiation (25°C, AM1.5) | 21.3%                                    | 14.9%                                                     |
| Glass Type                                                                    | Laminated Glass                          |                                                           |
| Power generation performance guarantee                                        | 85% performance remaining after 25 years |                                                           |
| Lifespan                                                                      | 50 years +                               |                                                           |

# Products Specification

## 4. Highland Shingle Series



### Datasheet

|                                                                   | Black Tile                               | Colour Tile                                               |
|-------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------|
| Structure (mm)                                                    | 3.2CdTe+0.5EVA+3.2                       | 3.2+0.5EVA+3.2CdTe+0.5EVA+3.2                             |
| Colour                                                            | Marble black                             | Dusty Grey (Standard)<br>(9 Alternative options, Page 21) |
| Glass thickness (mm)                                              | 6.9                                      | 10.6                                                      |
| CdTe Module Size                                                  | 800mm length × 240mm width               |                                                           |
| Whole Tile Size                                                   | 840mm length × 290mm width               |                                                           |
| Slate thickness (mm)                                              | 44.0                                     | 44.0                                                      |
| Weight (kg)                                                       | 4.5                                      | 6.1                                                       |
| Nominal Peak Power Output (Wp)                                    | 30.0                                     | 21.0                                                      |
| Module efficiency under 1000W/m2 solar radiation (25°C, AM1.5)    | 16.6%                                    | 11.6%                                                     |
| Conversion efficiency under 200W/m2 solar radiation (25°C, AM1.5) | 21.3%                                    | 14.9%                                                     |
| Glass Type                                                        | Laminated Glass                          |                                                           |
| Power generation performance guarantee                            | 85% performance remaining after 25 years |                                                           |
| Lifespan                                                          | 50 years +                               |                                                           |

# Electrical Specifications

Test Under Standard test conditions (STC): 1000W/m<sup>2</sup>, 25°C, AM1.5

| Model Types (Specifications Standard test conditions(STC):1000W/m <sup>2</sup> , 25°C, AM1.5) | Windsor Broad Series | Cotswold Slate Series | Yorkshire Longspan Series | Highland Shingle Series |
|-----------------------------------------------------------------------------------------------|----------------------|-----------------------|---------------------------|-------------------------|
| Power Generation Glass Size (mm)                                                              | 400 × 600            | 300 × 400             | 1200 × 400                | 800 × 240               |
| Maximum Power P <sub>m</sub> (W)                                                              | 38.1                 | 18.7                  | 76.9                      | 30.0                    |
| Open Circuit Voltage V <sub>oc</sub> (V)                                                      | 53.90                | 45.70                 | 45.70                     | 92.78                   |
| Short Circuit Current I <sub>sc</sub> (A)                                                     | 0.89                 | 0.54                  | 2.30                      | 0.46                    |
| Peak Power Voltage V <sub>mp</sub> (V)                                                        | 44.04                | 36.52                 | 36.52                     | 72.32                   |
| Peak Power Current I <sub>mp</sub> (A)                                                        | 0.78                 | 0.48                  | 2.05                      | 0.41                    |
| Maximum System Voltage V <sub>sys</sub> (V)                                                   | 1500                 |                       |                           |                         |
| Temperature Coefficients of I <sub>sc</sub> Tk <sub>α</sub> (%/°C)                            | +0.061               |                       |                           |                         |
| Temperature Coefficients of V <sub>oc</sub> Tk <sub>β</sub> (%/°C)                            | -0.396               |                       |                           |                         |
| Temperature Coefficients of P <sub>m</sub> Tk <sub>γ</sub> (%/°C)                             | -0.189               |                       |                           |                         |
| Operating Temperature Range(°C)                                                               | -40 to +85           |                       |                           |                         |
| Ingress Protection Level                                                                      | IP67                 |                       |                           |                         |

## Regulations Compliance

IEC 61215/IEC 61730 IEC 63092-1/-2:2020 ISO 9001 2PFG 2796/02.22  
MCS 005 – Solar Photovoltaic Modules  
MCS 017 – Bespoke Building Integrated Photovoltaic Products  
EN 50583-1/-2:2016 Photovoltaics in buildings - Part 1/2: BIPV modules/systems  
EN13830:2015 + A1:2020 & CWCT  
EN12600:2002

## Other Features

### Ultra-low Carbon Footprint (Embodied Carbon Intensity)

Producing 1W of CdTe solar glass generates only 0.29 kg CO<sub>2</sub>e – 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 CO<sub>2</sub>e – far cleaner than average UK power station (0.280kg CO<sub>2</sub>e) and silicon PV(0.067kg CO<sub>2</sub>e)

### 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

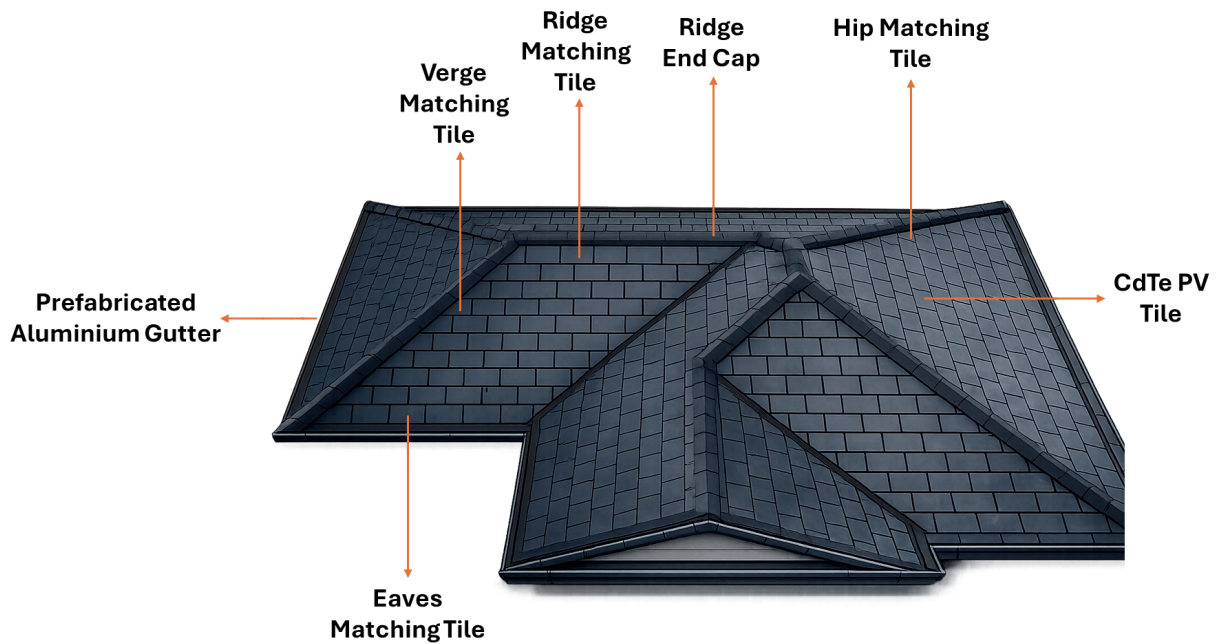
Tested under 25 mm ice ball at 23 m/s, IEC 61215 compliant

### Excellent wind and snow load resistance

Fully compliant with IEC -2400 Pa/+5400Pa wind load standards



## Package Materials



### CdTe PV Tile

**Verge Matching Tile:** Al-Mg-Mn Metal Rock Tile

**Eaves Matching Tile:** Al-Mg-Mn Metal Rock Tile

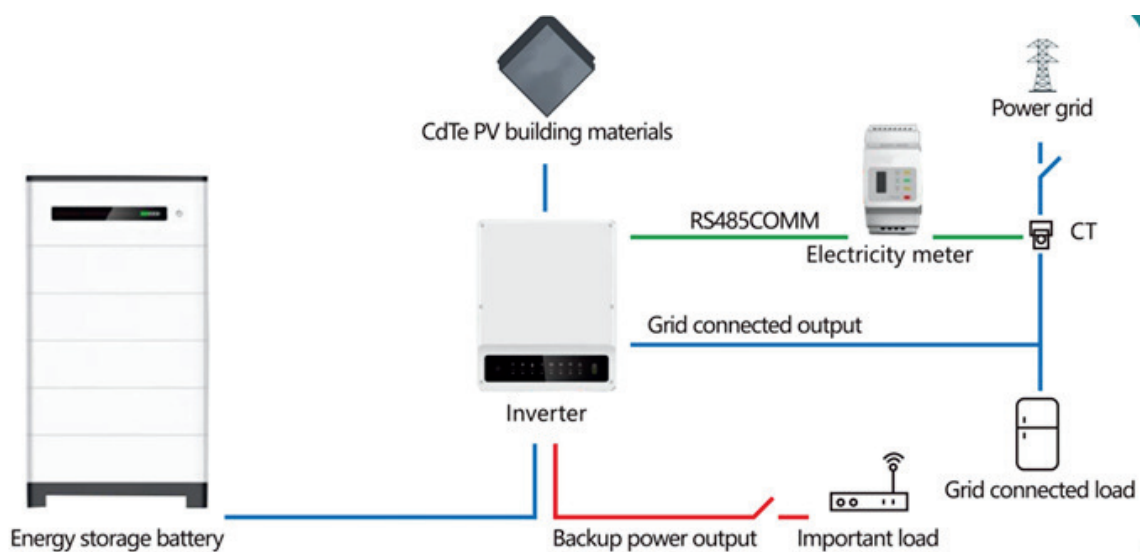
**Ridge Matching Tile:** Al-Mg-Mn Metal Rock Tile

**Ridge End Cap**

**Hip Matching Tile:** Al-Mg-Mn Metal Rock Tile

**Tile Battens including Counter Battens:** High-Strength Galvalume Steel

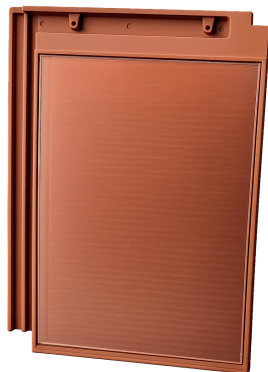
**Prefabricated Aluminium Gutter**



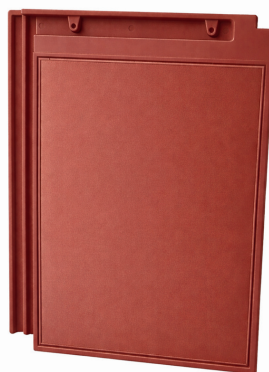


## Popular Monochrome Tile Colour Collection

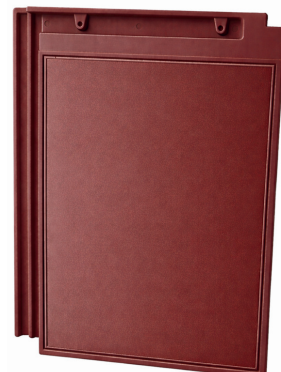
### Red Tile series



Terracotta Tile  
RAL:8004



Brick Red Tile  
RAL:3011



Burgundy Tile  
RAL:3009

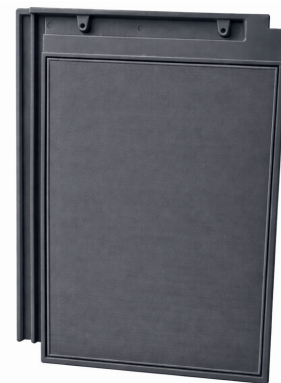
### Grey Tile series



Silver Grey Tile  
RAL:RAL 9006

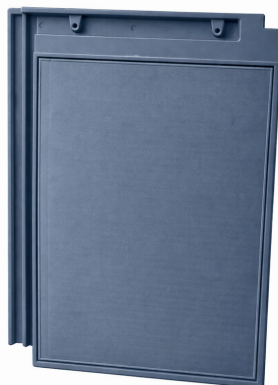


Dusty Grey Tile  
RAL:RAL 7040

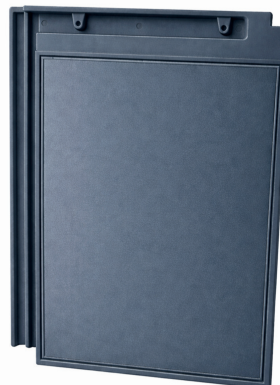


Graphite Grey Tile  
RAL:RAL 7024

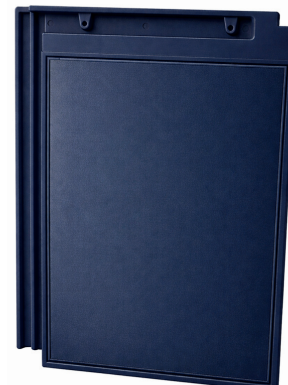
### Blue Tile series



Blue Grey Tile  
RAL:RAL 7031



Steel Blue Tile  
RAL:RAL 5011

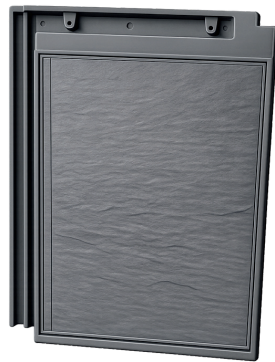


Night Blue Tile  
RAL:RAL 5022

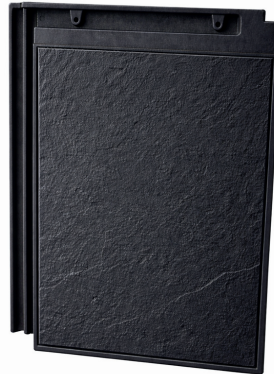


## Popular Textured Slate Colour Collection

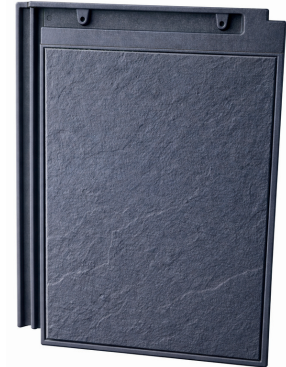
### Modern Slate Series



Graphite Slate  
RAL:7024

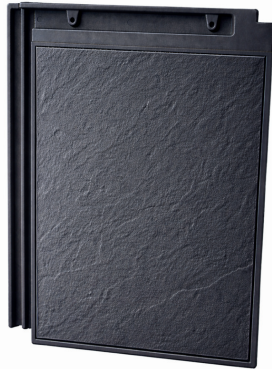


Slate Black  
RAL:9005

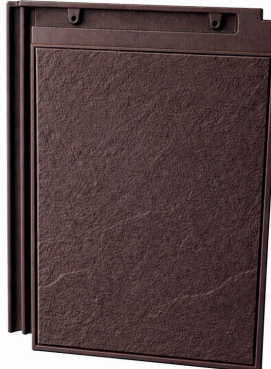


Slate Blue Grey  
RAL:5011

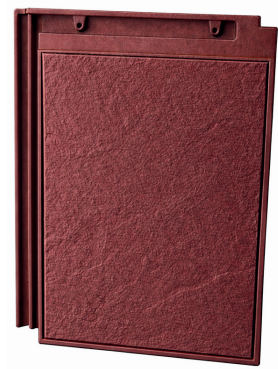
### Heritage Slate Series



Natural Slate Grey  
RAL:7031

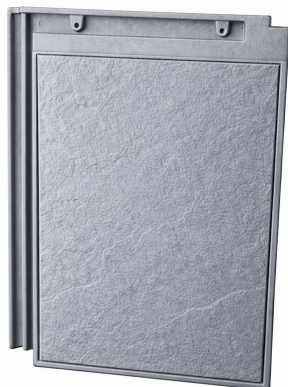


Slate Brown  
RAL:8019

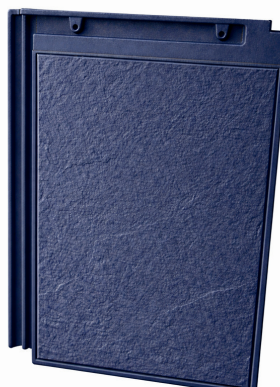


Slate Oxide Red  
RAL:3009

### Luxury Slate Series



Silver Slate  
RAL:9007



Ocean Slate Blue  
RAL:5022

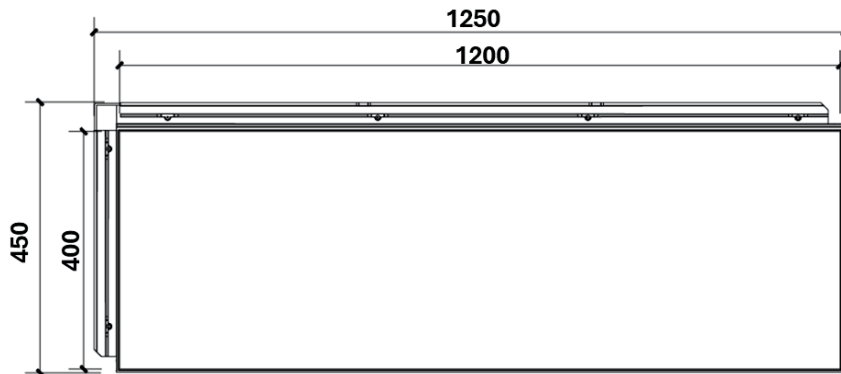


Volcanic Slate  
RAL:7021

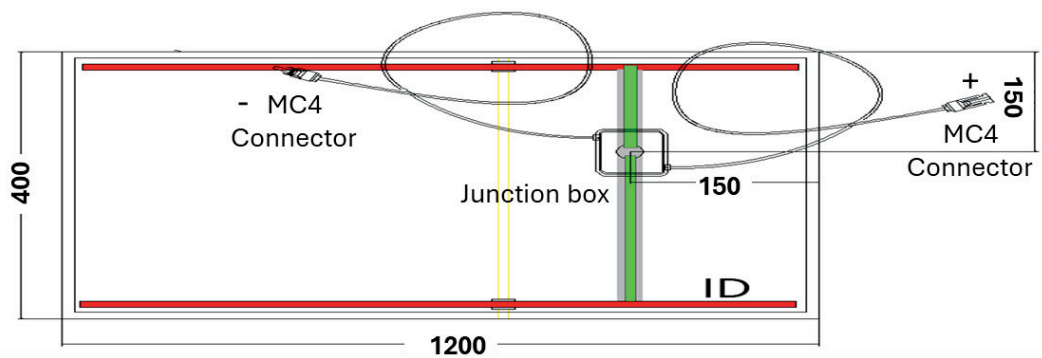


# SolarInn PV Roof Slate Installation System Node

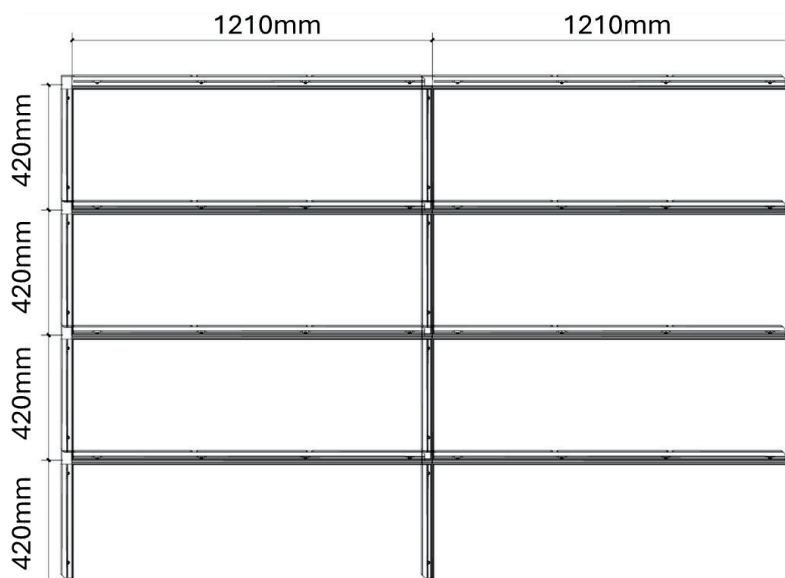
## Sun-facing surface of the Roof PV tile



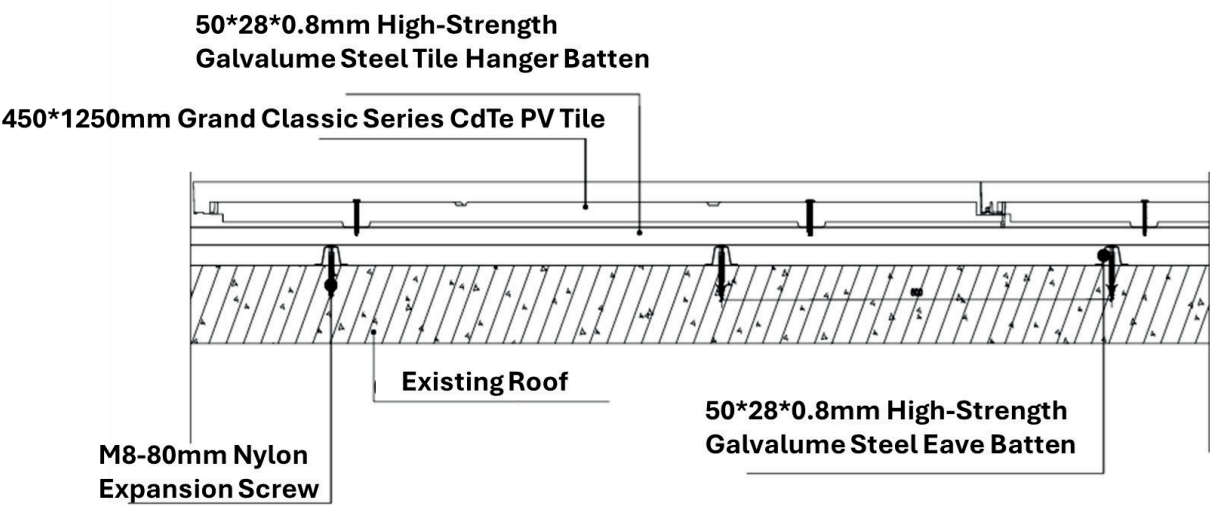
## Rear-facing surface of the Roof PV tile



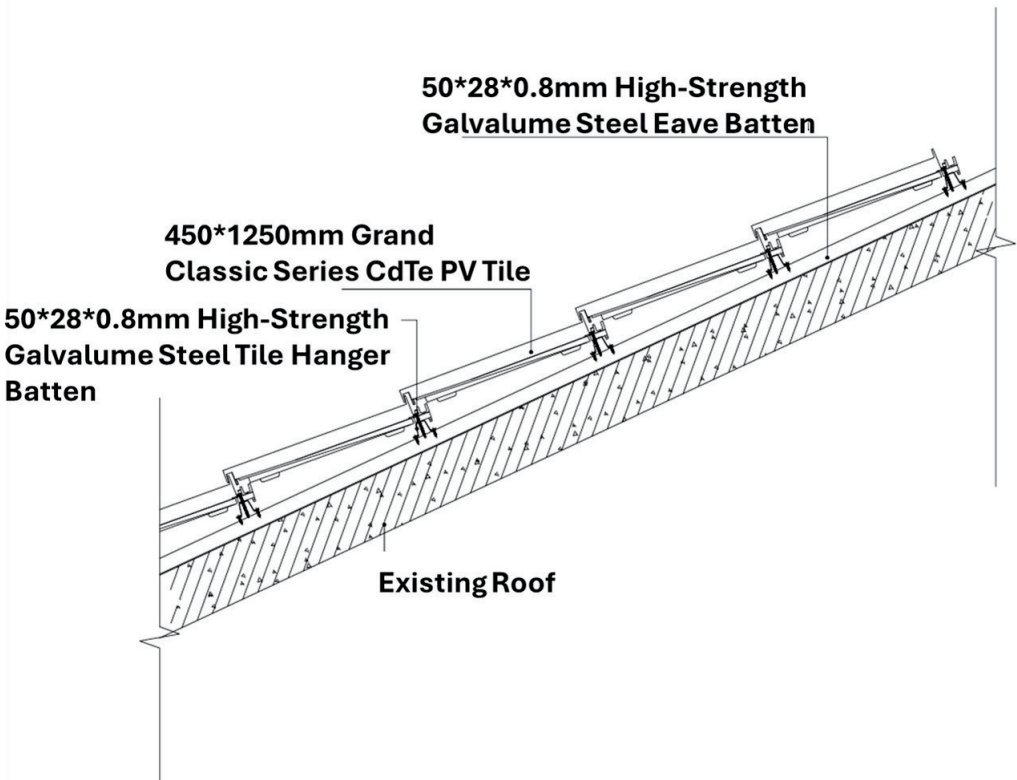
## General Arrangement (GA) Drawing – Roof PV Tile Array Layout



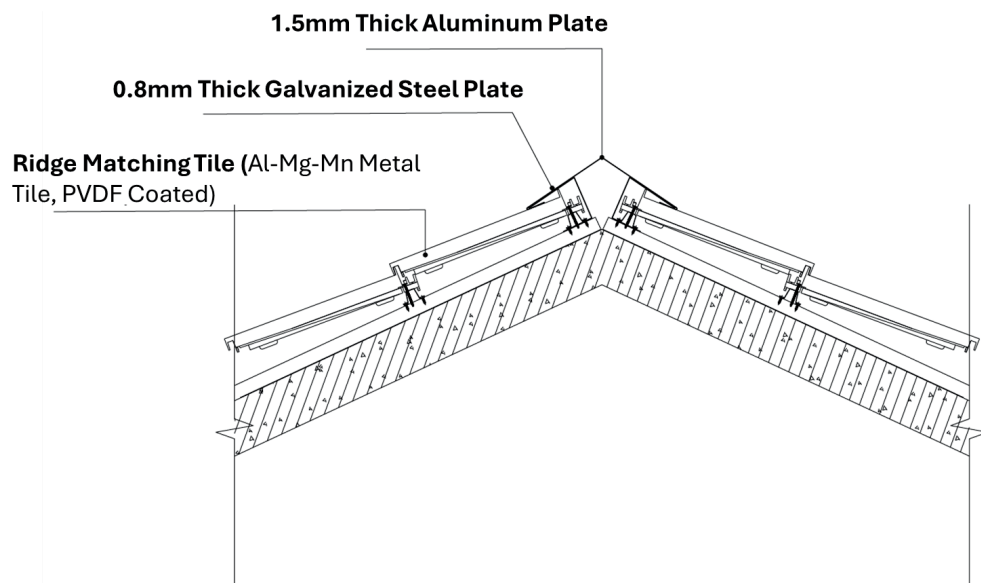
# Cross-Sectional View – CdTe PV Tile Roof System Installation Detail



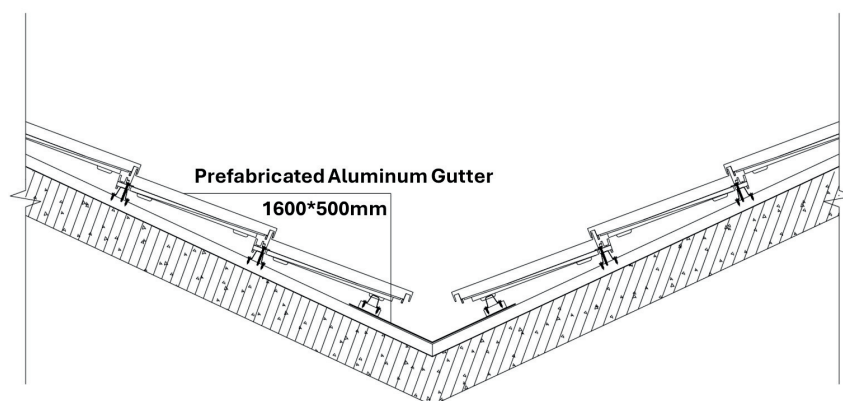
# Longitudinal-Sectional View – CdTe PV Tile Roof System Installation Detail



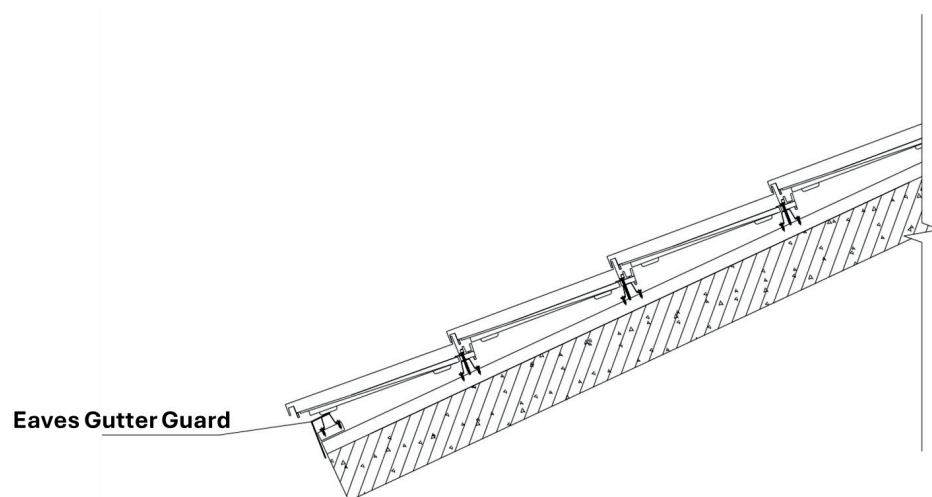
## Ridge-Sectional View – CdTe PV Tile Roof System Installation Detail



## Valley-Sectional View – CdTe PV Tile Roof System Installation Detail

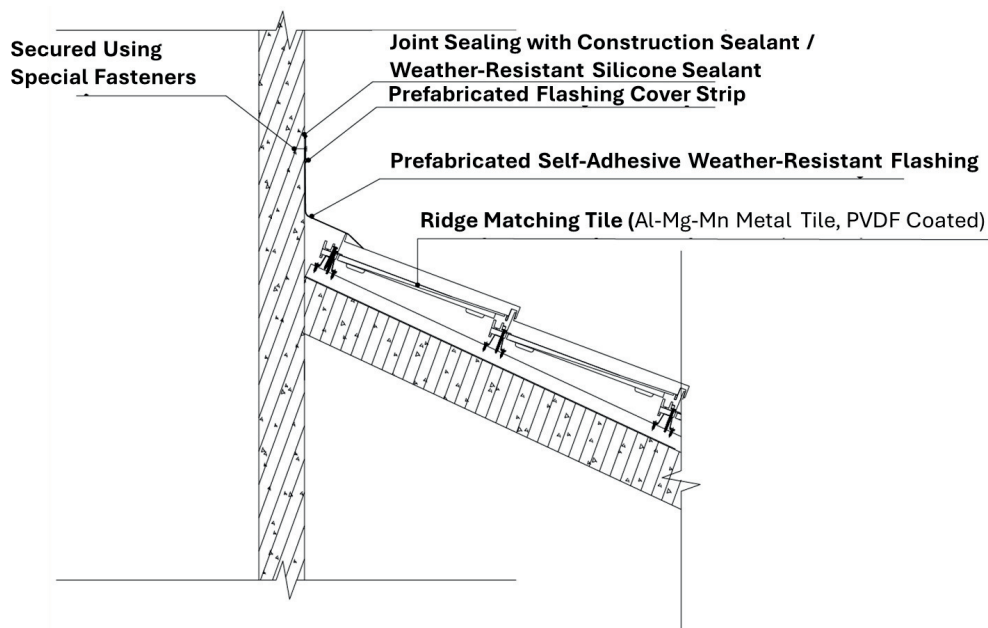


## Eave-Sectional View – CdTe PV Tile Roof System Installation Detail





## Wall Abutment Installation Detail – PV Tile System



**Designed to install like traditional slate roofing – with integrated solar performance.**

The SolarInn PV Roof Slate system follows the same installation logic as conventional natural slate or metal roof slates. PV slates and matching non-PV slates are manufactured in identical dimensions, allowing roofers to lay them using familiar methods and tools.

The system is installed onto:

- Timber roof deck (wooden roof structure)
- Breathable membrane
- Counter battens and tile battens
- Mechanical fixing in line with standard slate roofing practice

**No external mounting rails.**  
**No overlaid panel brackets.**  
**No visible solar framing systems.**

**Electrical cabling is concealed beneath the slate layer**, maintaining the appearance and detailing of a traditional pitched roof, including ridge, hip, verge and eaves integration.

### Key Advantages

- ✓ Installed using conventional slate roofing techniques
- ✓ Compatible with standard UK roof build-ups
- ✓ Reduced learning curve for roof contractors
- ✓ Faster retrofit integration
- ✓ Preserves heritage and architectural character

**SolarInn Roof PV Tile is not a panel added onto a roof – it is a roof that happens to generate electricity.**

## Portfolio



**Where There's Light, There's Power**

Ambient Light Power Generation

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# Modernité

By CarbonFutureX<sup>®</sup> Group