In-roof solar

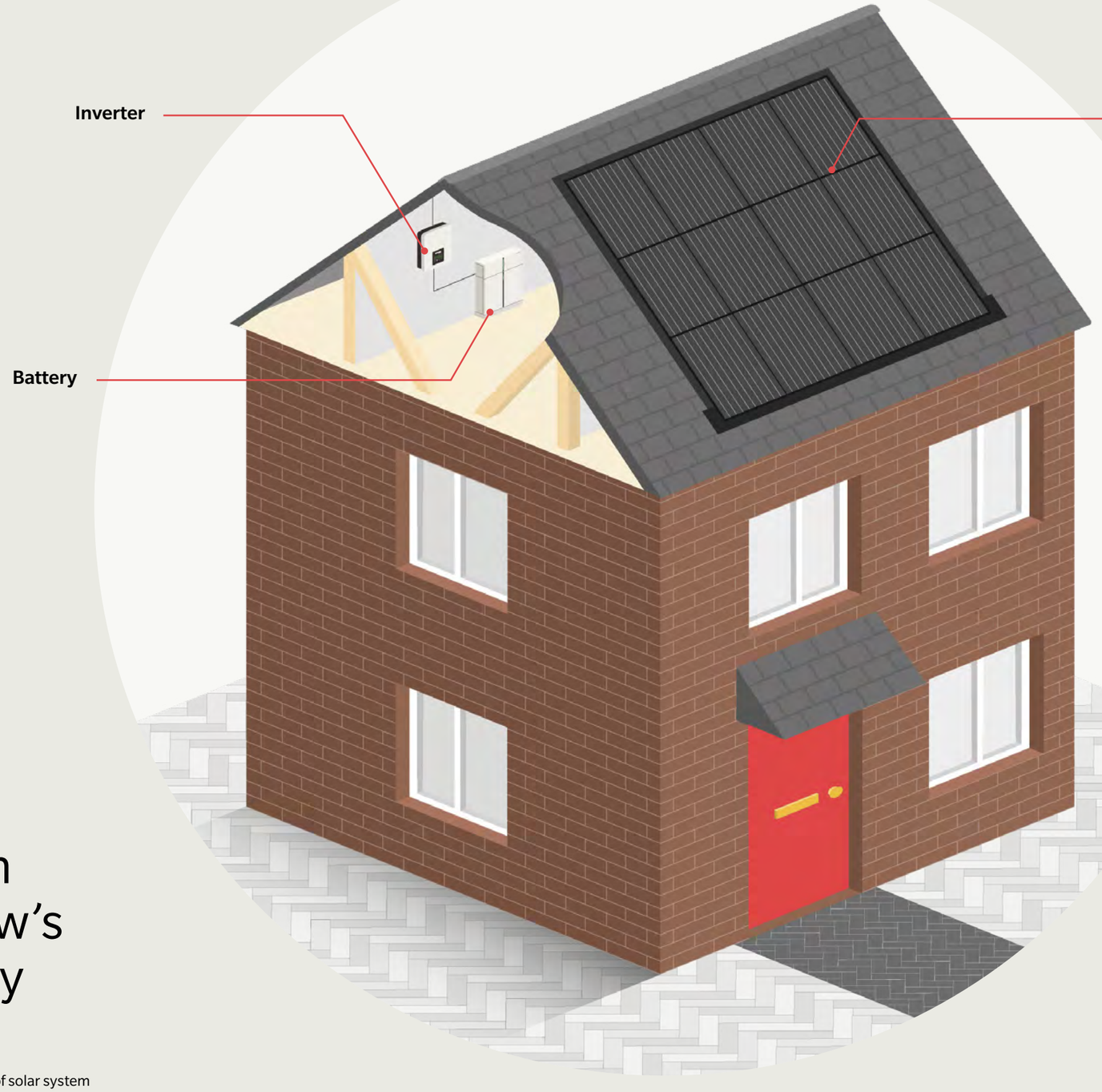
ROOF SOLUTIONS

Sandtoft

wienerberger

Contents

wienerberger is proud to share that Perlight Solar, manufacturer of our In-roof solar panels and accompanying accessories, achieved a bronze certificate from EcoVadis, the globally recognised corporate sustainability performance standard. This achievement reflects our dedication to meeting the highest standards of environmental responsibility through ethically sourced products, manufactured under fair labour practices, within safe and environmentally responsible work environments, and supported by a sustainable supply chain.



The complete solar package

A complete solar system for tomorrow’s homes today

Sleek, seamless, and speedy - our in-roof solar system combines panels, inverters and batteries into a single comprehensive package.

Ethically manufactured to SA8000 standard and BRE-certified, our in-roof solar system is compatible with all wienerberger UK roof tiles and fitted directly onto the roof battens. Zero-fuss installation takes less than a minute per panel, resulting in a contemporary aesthetic that performs as well as it looks.

This integrated solar energy source is designed to help projects meet Part L building regulations and future-proof new homes ready for the Future Homes Standard 2025. Thanks to intelligent power management, households can enjoy a more sustainable and economical home with information on how much energy they generate, store and consume.

Our in-roof solar package sets a new standard for modern roofing which will support housebuilders, contractors, asset owners and homeowners in facing the industry challenges of today and tomorrow.

Unsure of where to start when it comes to specifying or installing solar panels?

Get maximum efficiency out of your in-roof solar solution by speaking to our team of in-house experts about which products are best suited to your project. You can be confident in making the right selection of compatible products, with technical support and installation guidance available should you need a helping hand.

Get in touch: **wbukmarketing@wienerberger.com**

What is in-roof solar?

In-roof solar is more than just a solar panel, it is a solar roof. No trays or complicated and unsightly mounting systems, in-roof solar is a seamless integrated roof panel that is easy to install and applied directly to the roof battens. In-roof solar sets a new standard for the modern roof that embraces the traditional aesthetic of an overlapping tile, whilst providing a seamlessly integrated sustainable energy source.

- MCS certified minimum roof pitch of 15 degrees.
- Independently wind-driven rain tested at the BRE.
- 15-year product warranty* and 25-year performance guarantee.
- Seamlessly smart integrated solar panels with no mess, compatible with all our roof tiles and roof membranes.
- Mounts directly on battens; no trays needed.
- Fast, easy install with one-minute panel-to-panel connection.

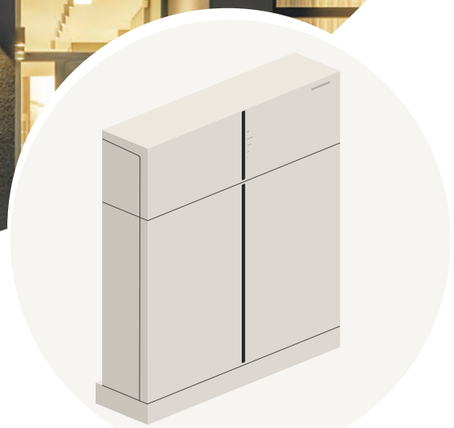
*Sandtoft 15 year Roofspec offering incorporates both tiles and in-roof solar installation as a complete roof structure.

Everything you need for a solar roof

The integration of solar panels with inverters and batteries creates an energy efficient power generation system. Find out how each of these elements work and the benefits it brings to the household.

What is an inverter?

An inverter is one of the most important pieces of equipment in a solar energy system. It converts Direct Current (DC) electricity, generated from the solar panel, to Alternating Current (AC) electricity, that can be used to power electrical appliances and feed into the electrical grid.

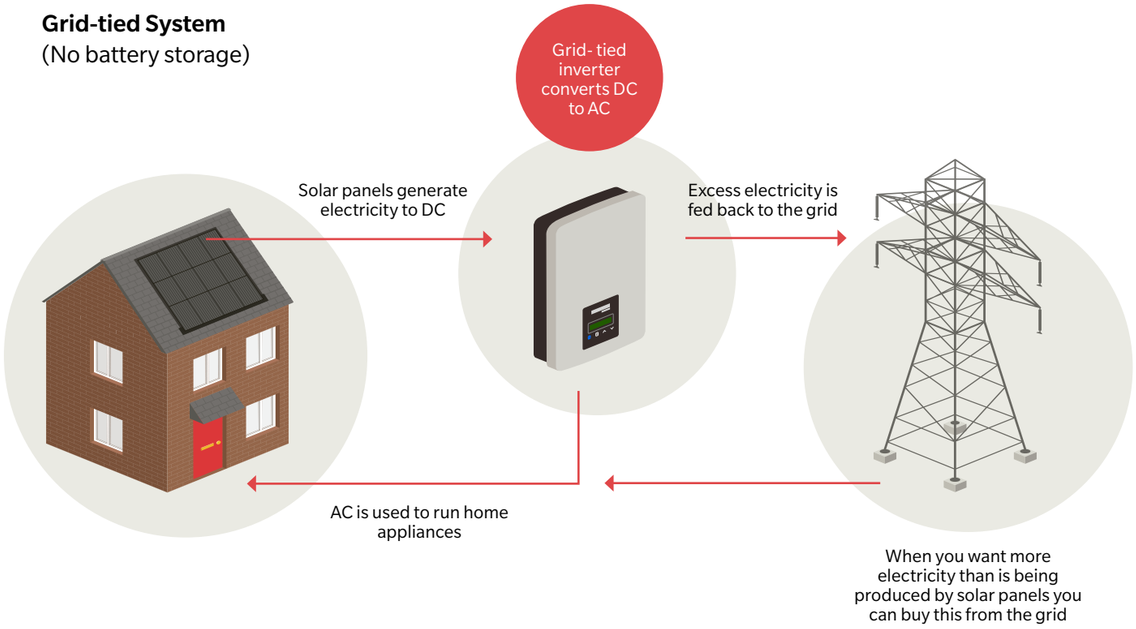


What is a battery?

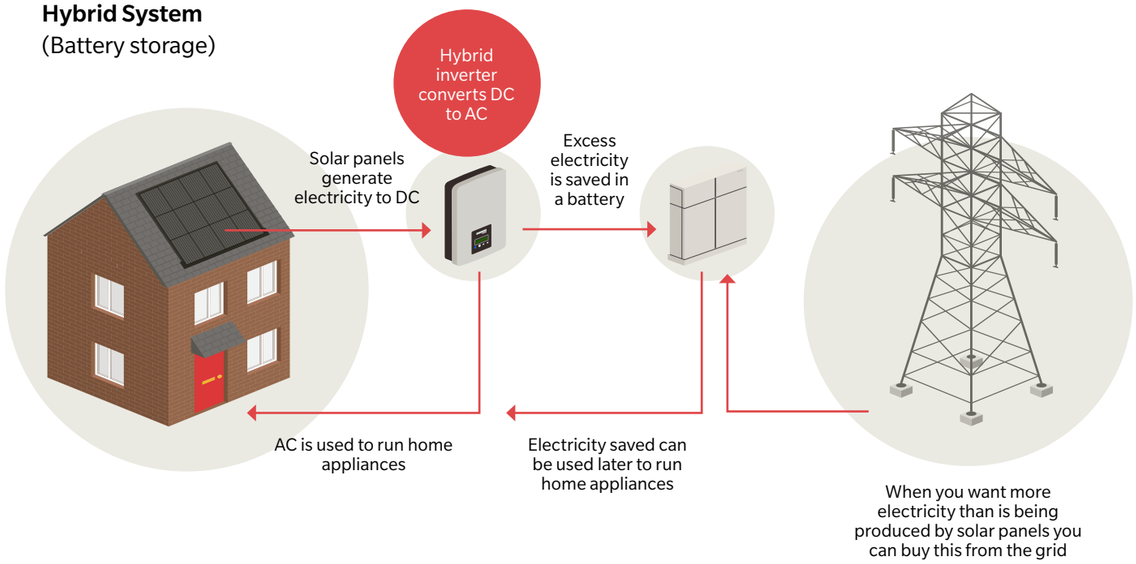
A battery can store the excess electricity generated from solar panels or it can store electricity it's able to take directly from the grid. This stored energy can be used to power the property at times when solar panels don't generate enough electricity, including nights, cloudy days, or during power outages, or even when the energy demand is high by taking advantage of cheaper rates provided by the property's electricity provider.

The system options available

Grid-tied System
(No battery storage)



Hybrid System
(Battery storage)



Why choose in-roof solar?

MCS certified roof pitch at 15 degrees

In-roof solar is independently tested for wind resistance, weatherproofing & fire safety.

- We have gone above and beyond requirements by conducting independent wind driven rain tests at the BRE. MCS 012 - in-roof solar is a system you can trust in all conditions.
- Fire rated to BROOF (t4) standard, the highest possible UK fire rating for roof-mounted systems.
- Wind resistance exceeds all major roof mounting systems.

Simple to Install

Easier to install than other conventional on-roof and in-roof systems.

- Panel to panel connection is less than 1 minute.
- Simple panel to panel connection guides the installer in to the correct position by simply pushing the panels together.
- No specialist equipment is required.

Small Number of Parts

Thanks to its interlocking design, the in-roof solar solution provides an easy and fast installation.

- Minimal number of parts in comparison to other systems on the market.
- Single lapped design, which mimics roof tiles. The timeless character of the traditional tiled roof is maintained and futureproofed.
- No individual panel flashing is required due to interlocking design.

Lightweight & Easy to Handle

In-roof solar panels are lightweight and easy to carry.

- A combination of strength and simplicity - each panel weighs only 8.95kg.
- In-roof solar can be installed or removed in under one minute per panel.
- Interlocking design provides superior strength and wind rating.

Fixes Directly to Roof Battens

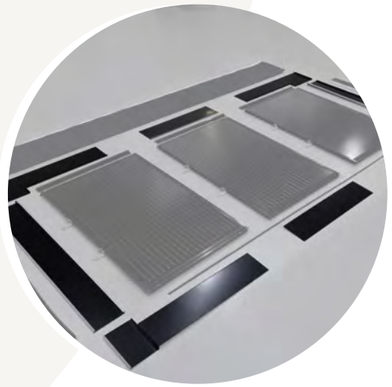
In-roof solar panels are mounted directly to the roof battens, reducing mounting costs.

- Independently tested at the BRE using standard 25mm thick battens nailed to the rafters with 65mm aluminium nails. Giving confidence the system will withstand wind uplift pressures throughout the majority of the UK.*
- Smaller number of parts when compared against other systems on the market.
- No trays required.
- Solar panels fit seamlessly inline with roof profile.

Aluminium Flashing

The flashing used is aluminium and interlocks together - no adhesive is required.

- Universal system is compatible with all Sandtoft & Keymer roof tiles and roof membranes.
- No plastic which can suffer from degradation over time.
- Panels and flashing have an interlocking system designed with a product warranty of 15 years.*

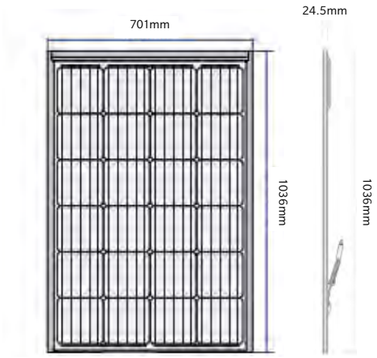


*Subject to the building location, height and design. Please contact us for support with your design load calculations.

*Sandtoft 15 year Roofspec offering incorporates both tiles and in-roof solar installation as a complete roof structure.

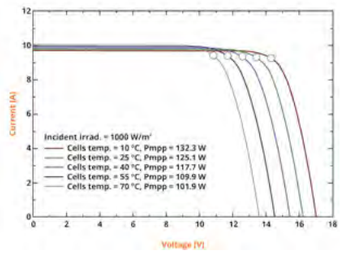
The in-roof solar solution

Front and side profile



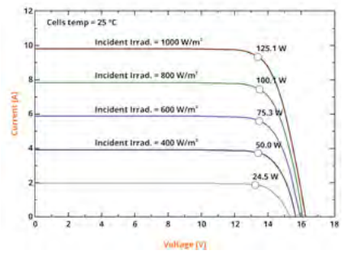
Cell Temperature I-V Curve

Showing how the voltage is affected by cell temperature.

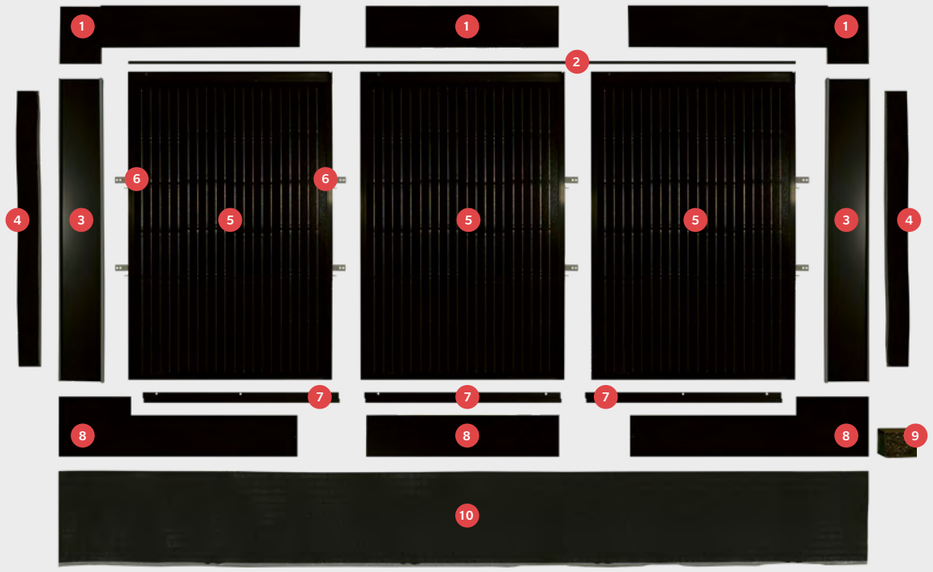


Irradiance I-V Curve

Showing how the current, power and voltage is affected by different light.



System components



1. Aluminium flashing top (left, middle, right)
2. Seal strip 01
3. Aluminium flashing side (left & right)
4. Seal strip 02
5. IRT Panels (left, middle, right)
6. Mid-clamp (right & left)
7. Bottom edge
8. Aluminium flashing bottom (left, middle, right)
9. Self tapping screws
10. Lead replacement

Technical details

Electrical Performance

Module type	PLM-125MB-24 SERIES		
Power output	Pmax	Wp	125
Voltage at Pmax	Vmpp	V	13.33
Current at Pmax	Impp	A	9.38
Open circuit voltage	Voc	V	16.22
Short-circuit current	Isc	A	9.79
Module efficiency	Eff	%	18.2

STC: 1000W/m² irradiance, 25°C cell temperature, AM 1.5g spectrum according to EN 60904-3 Power measurement uncertainty is within -/+ 3%

Thermal Characteristics

Nominal operating cell temperature	NOCT	°C	45±2
Temperature coefficient of Pmax	γ	%/ °C	-0.40
Temperature coefficient of Voc	βVoc	%/ °C	-0.30
Temperature coefficient of Isc	αIsc	%/ °C	0.06

Operating Conditions

Max. system voltage	1000VDC
Limiting reverse current	15A
Operating temperature range	-40°C to 85°C
Max. static load front (e.g., snow)	5400Pa
Max. static load back (e.g. wind)	3420Pa

Mechanical Characteristics

Front cover (material / thickness)	low-iron tempered glass/3.2mm
Backsheet (colour)	black
Cell (quantity/material/dimensions)	monocrystalline silicon/156.75x156.75mm
Frame (material/colour)	anodized aluminium alloy/black
Junction box (protection degree)	≥IP67
Cables & Plug connectors	900mm/4mm² & MC4 compatible/IP67
Module Dimensions (L/W/H)	1036mmx701mmx24.5mm
Module Weight	8.95kg

Inverters and batteries for your solar system

When it comes to harnessing the power of solar energy, it takes more than just high-quality panels to create a truly efficient and reliable system. That's why we are proud to offer inverters and batteries, in partnership with our chosen supplier Solax. All our inverters and batteries come with a 5 year product guarantee to provide you with a complete integrated solution.

Inverters

We offer a range of both grid-tied and hybrid inverters (see page 5) to cater to a wide range of project sizes and requirements. Whether you need a grid-tied or hybrid solution, we have the perfect inverter for you. From small residential installations to medium-sized commercial projects, all the way up to large-scale applications, our inverter options ensure optimum performance and seamless integration with your solar system.

Features:

- Remote Upgrade and Control
- Waterproof
- LCD Touch Display
- Online Monitoring
- Support EV Charger* (Fast Charging Mode)

Solax Grid-tied Inverters

Small systems

Available in:.
1.1kW
1.5kW
2.0kW
2.5kW

Medium systems

Available in:.
3.0kW
3.6kW
4.2kW
5.0kW
6.0kW

Large systems

Available in:.
8.0kW

Solax Hybrid Inverters (Compatible with batteries)

Small systems

Available in:.
3.0kW
3.7kW

Medium systems

Available in:.
5.0kW
6.0kW

Large systems

Available in:.
7.5kW

* Applicable only to large systems

Empower Your System with Batteries

If you're looking to take your solar system to the next level, our selection of batteries are here to provide you with enhanced energy management capabilities. By incorporating batteries into your setup (available in 3,6,9 and 12kW) you can store excess energy generated during the day and use it during peak demand or when the sun isn't shining. With our range of batteries, you have the flexibility to choose the solution that aligns perfectly with your energy needs.

Why choose a battery?

Store both electricity generated from your solar system and supplied directly from the grid.

Take advantage of cheaper rates with a battery system. It is cheaper to use stored energy than exporting it to the grid and buying it back at higher prices.

You can purchase and store energy from the grid at a cheaper price (usually at night) and use it for the rest of the day or whenever suits your lifestyle.

Help to meet Part L legislation and envisaged Future Homes Standards 2025 by reducing household carbon emissions.

Solax Triple Power 3.0 Battery

Net weight: 42kg

Scan the QR code for technical information

Maximise energy generation and reduce costs

We understand that navigating through the intricacies of inverters and batteries can be overwhelming. But fear not, our team of experts are here to guide you every step of the way. With their deep knowledge and experience, we'll work closely with you to understand your unique requirements and help select the most efficient and cost-effective solution for your project. Our experts are committed to ensuring that you have

a solar system that both maximise energy generation and reduces costs.

Take the next step towards a greener future today with a solar system that empowers you with clean, sustainable energy.

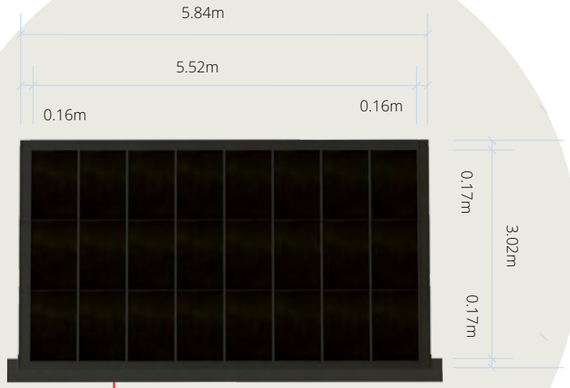
Get in touch: **wbukmarketing@wienerberger.com**

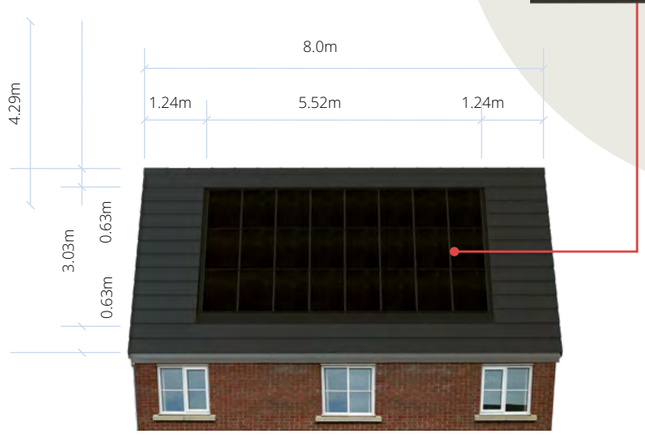
Which system size is right for my roof?

When applying in-roof solar it's useful to know what system is suitable for your roof type.

3 kW Peak System

This illustration shows a typical **3kW** system applied to an up-and-over roof style with 24 panels.





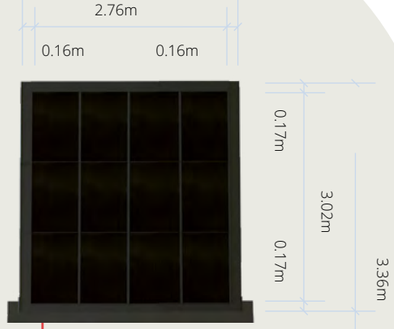
Inverter size required:

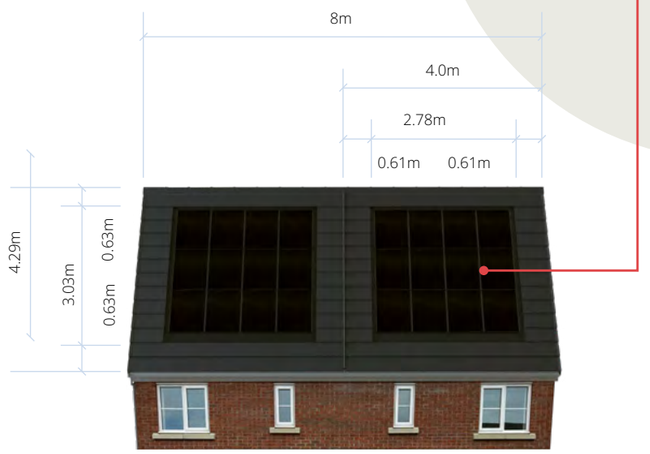
- Medium Grid-tied
- Small Hybrid

Battery sizes are dependent on users individual requirements.

1.5 kW Peak System

This illustration shows a typical **1.5kW** system on two semi-detached properties, applied to an up-and-over roof style with 12 panels on each house.





Inverter size required:

- Medium Grid-tied
- Hybrid inverter size would be available upon request.

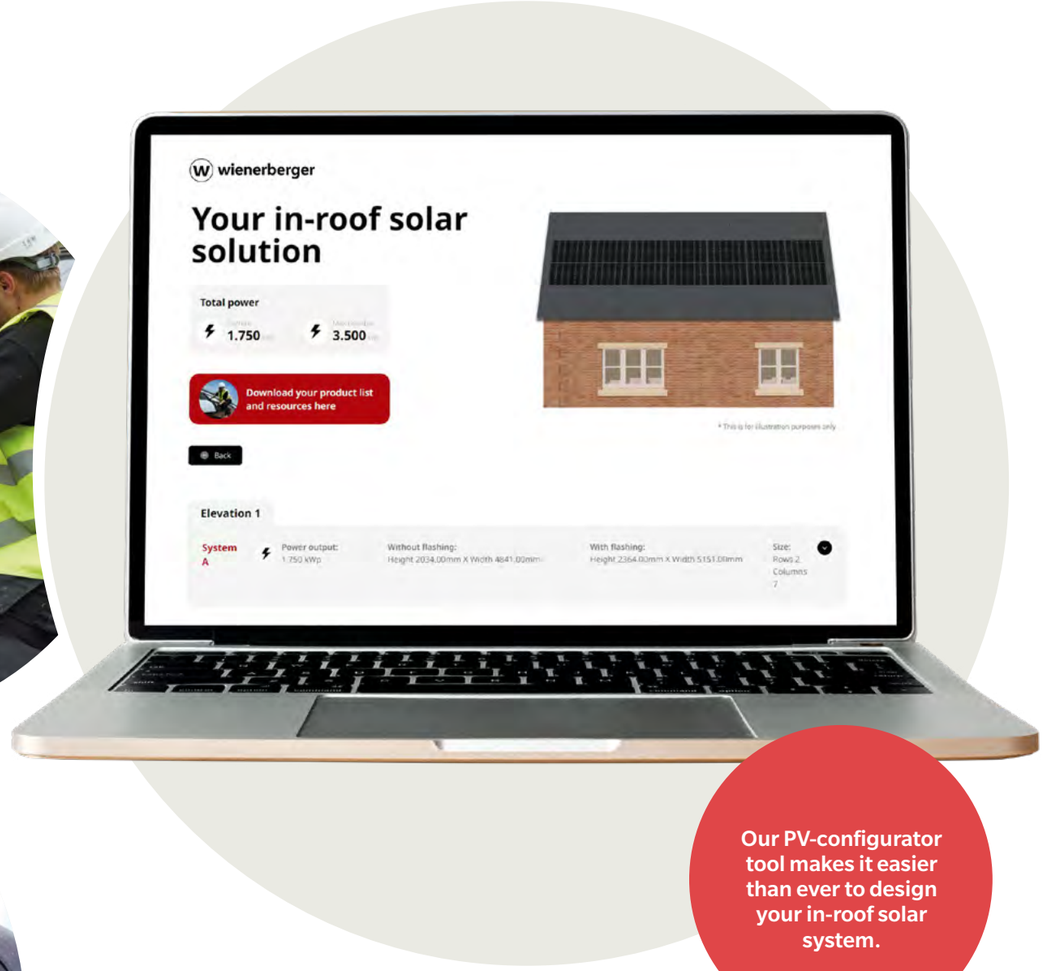
Battery sizes are dependent on users individual requirements.

Full layout service support

Our design team is on-hand, ready to provide technical support whenever you need us to help your project run smoothly. We offer a complete roof design with all relevant details provided.

We can provide:

- Tailored roof specification plans
- Panel placement (arrangement, spacing, alignment)
- Positioning/layout recommendations
- Electrical connection advice
- Safety measures and compliance regulations (Considerations document)
- Recommendation on inverter sizing



Our PV-configurator tool makes it easier than ever to design your in-roof solar system.

This user-friendly tool simplifies the process of determining the maximum kWp capacity that can fit within your roof space for in-roof solar panels. By inputting your roof dimensions, the tool calculates the maximum capacity and allows you to design your array system with minimal effort. Once you're done, you can generate a bill of materials that specifies the quantity needed to achieve your desired design.

Visit **wienerberger.co.uk/solar** to get started.

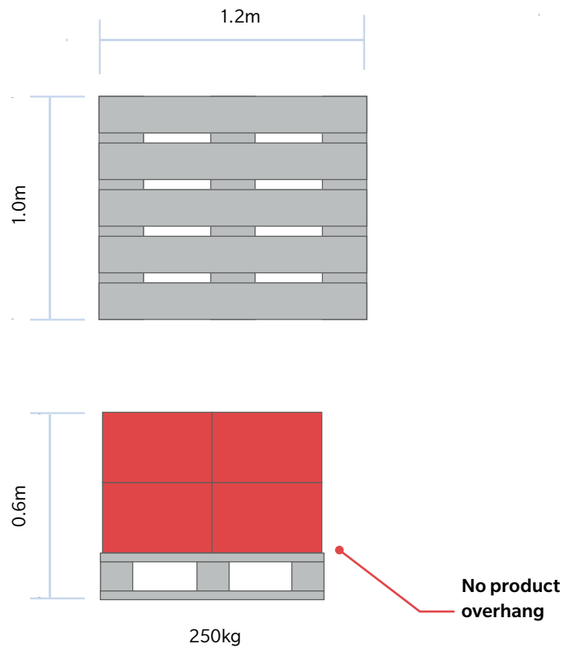
Delivered at your convenience

Experience hassle-free handling and effortless on-site logistics with our in-roof solar panels

Delivered on compact Euro Pallets, our products are designed for easy transportation, especially in challenging locations or when working at height.

Our inverters and batteries are delivered through a trusted logistics and transport network ensuring they will arrive safely and efficiently.

What you get from us
(3kW system)



What to consider before installing a solar panel system

If you're thinking about installing a solar system it is important to be aware of the following considerations that will affect the quote provided by a solar panel installer:

1. DNO Approval

If the inverter of your system is larger than 3.68kW, your installer will need to obtain approval from the local Distribution Network Operator (DNO) before connecting your solar panel system to the grid. This process can take some time and may require additional fees. Installing in the region of 4kW of solar on a 3.6kW inverter is standard practice in the UK. This does not need prior approval, but the DNO should be notified within 28 days of installation.

Where multiple systems are being installed on a site such as a housing development, the site will require DNO approval prior to installation, even if the individual plots are under the 3.68kW limit.

The Different Types of DNO Applications for Solar Panels:

- DNO G98

A small-scale system, i.e. the system size must be under 16A per phase, which is the equivalent of 3.68kWp for a single-phase supply or 11.04kWp for a three-phase supply. A certified solar PV installer, will check to see if the existing electricity supply is adequate for the additional load by completing an Adequacy of Supply (AoS) check. If the electricity supply is adequate, the chosen installer can install the solar panels without any prior permission from the DNO.

- DNO G99

A large-scale solar system greater than 16A per phase will need to apply for DNO approval prior to installation.

2. Shading Considerations

The amount of shade your roof receives can affect the performance of your solar panel system. Shaded parts of the roof should be avoided. Where intermittent shading is present, your installer may need to use power optimisers to maximise the energy output of your system.

3. Battery or On-Grid System

You'll need to decide whether you want to install a battery storage system or only connect your solar panels to the grid. A battery system will allow you to store excess energy generated by your solar panels for use during times when the sun isn't shining. On the other hand, an on-grid system will allow you to sell any excess energy back to the grid providing it is MCS Certified (see point 7).

4. Orientation Considerations

The direction your roof faces can also affect the performance of your solar panel system. Ideally, your roof should face South and have a slope between 15 and 40 degrees. East and West are still okay but North should be avoided as energy production will be significantly reduced.

5. Single or 3-Phase

The type of electrical supply at your property, whether it is single-phase or three-phase, will affect the design of your solar panel system. The best way to tell if a property has a single phase or three phase supply is by looking at the electrical fuse (sometimes called electricity supply, service head, cut out). Typically, a single phase will have one fuse & a three phase will have three 100amp fuses.

6. Planning Permission Listed Buildings and Areas of Outstanding Natural Beauty

Generally, solar panels are considered a permitted development and do not require planning permission. However, if your property falls under the categories of Listed Buildings, Areas of Outstanding Natural Beauty (AONB), Conservation Areas or World Heritage Sites, there may be further limitations on solar panel installation. It is recommended to consult with your local planning officer to ensure compliance with any additional restrictions.

7. MCS Certification of the Installation

While it may not be mandatory to have an MCS-certified contractor for installing Sandtoft in-roof solar, it is still essential to involve one in the project from the start to oversee the final connection and provide approval. If you operate a roofing business, you have the option of obtaining MCS accreditation or partnering with an electrical contractor to offer integrated services to your clients. By doing so, you can ensure that your clients receive the highest standard of quality and professionalism in their solar installation, as well as peace of mind knowing that the work has been certified by an approved body.

Case study

Re-roof

3.75kWp

Case study

New Build (front and back elevation)

3.75kWp

Case study

Re-roof (tiles used - Sandtoft 2020 Antique Slate)

7.75kWp

Case study

Commercial
24kWp

Date issued: January 2025

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