

# Don't Miss Out on the roofing revolution



## Solar Electric Roof Slates



solarcentury

**ROOFSHOP**

# Roofs are changing...

Legislation from Government and consumer demand is driving a change in roofing. 'Active roofs' incorporating solar energy systems are becoming increasingly popular. Roofers with the skills to install solar energy systems are in short supply, being able to install C21e presents a good business opportunity



# ...roofs can make energy.

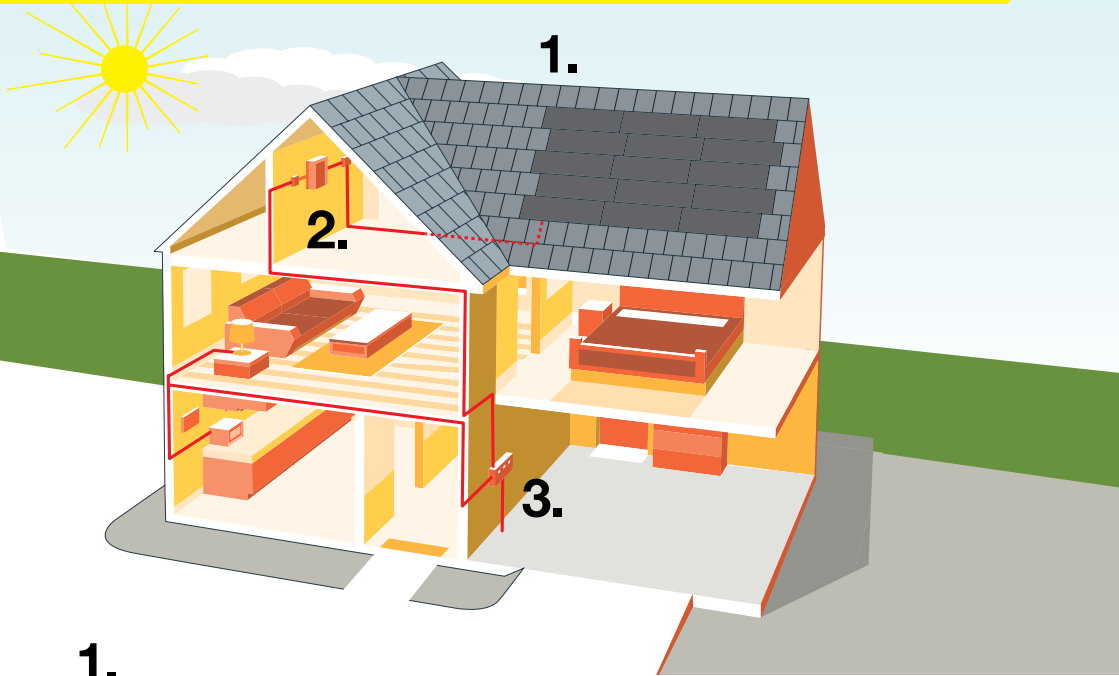
**C21e** solar electric roof slates, from Solarcentury, the UK's leading solar energy company, generate electricity using daylight. They are simple to install, fixing directly to standard roofing battens, and can add significant value to a house.

Solar energy is increasingly popular with homebuyers, self-builders and renovators. By being able to offer and install a solar energy system you will be able to win more work and add value to your business.

Solar installation training courses are available, to help you become a C21e approved installer, Call us now on 020 7 803 0253



# How C21e works



**1.**

When daylight hits the solar tiles, which contain photovoltaic cells, it is converted to clean electricity. This process relies on daylight to work, not direct sunlight, so the slates still produce electricity on cloudy days.

**2.**

The electricity produced by the slates flows along a cable in the loft to an inverter. The inverter converts the electricity from direct current (DC) to alternating current (AC), which is used in the house in exactly the same way as the electricity from the grid.

**3.**

When the solar electric roof slates are producing more power than is needed in the home, electricity is exported and sold back to the utility company. At night, when the system is not producing electricity, power is imported from the grid in the normal way.

The solar installation needs very little maintenance from the homeowner, there are no moving parts and normal rainfall should keep the slates clean.

# Case Study: **The Merrill Family**

**Walking into the Merrill's family home in Somerset, it all seems very normal.**

The only evidence that the Merrill's home is powered by C21e solar tiles is the small display unit on the kitchen table showing how much energy is being generated.

*"It's hard to remember the solar tiles are there sometimes" says Dad, David Merrill. "But it's a great feeling to know that we're generating our own power."*



When David had the home re-valued he was pleased to find it had increased in value by 6% because of the tiles alone.

# Case Study: **Gleeson Homes**



**Gleeson chose to offer homebuyers the choice of Solarcentury's C21e solar electric roof tiles on two homes within their Norfolk Park development.**

Gleeson Homes analysed homebuyers' interest in the C21e homes against an otherwise identical, conventional townhouse.

The three-bed townhouses with C21e solar tiles sold at a premium of 8.6% (£140,000 compared to £128,000 for the property next door).

The results confirm the findings from the Energy Saving Trust that there is significant demand from homebuyers for homes with lower energy bills.

# Simple Installation

**Each C21e covers the width of four conventional tiles or slates, fixing to standard roof battens with stainless steel screws**

*“We tiled right to left in one morning, just as you would any regular slating product. We only needed to be shown how to do it once, and now the boys are waiting to go on the next roofs. It’s a good little product.”*

Clive Evans, Crest Roofing



## Fast to Install



C21e solar electric roof Slates are as fast and easy to install as conventional slates. Each unit can be carried onto the roof by one person and is easily maneuvered into position.

## Standard Battens



The nib of each slate hooks onto the roof batten and fixed in place with stainless steel screws, specially designed soak trays provide a weather-tight interface between each C21e and conventional slate avoiding the need for any bespoke flashing.

## Simple Connections



The solar slates are joined together with simple push-fit connectors. Each slate in the installation is connected to the next, as they are laid onto the batten.

## Seperate Trades



When all of the solar slates have been installed, the final pair of cables are passed through into the roof space, ready for the electrician to finalise the installation.

# Choosing your system

## Selecting the right system for your project depends on three things:

- The type of tiles or slates you will be using around the C21e tiles/slates
- The size of un-shaded roof area available (length and width)
- And the amount of energy required; larger systems will make more electricity.

## C21e is compatible with several types of tiles and slates, and should only be installed with one of the following:

| Roof Tile Compatibility       |                             |
|-------------------------------|-----------------------------|
| <b>Cemex (Russell)</b>        | Grampian, Highland          |
| <b>CRH/Northstone (Scott)</b> | Slernish Mk 2               |
| <b>Lafarge (Redland)</b>      | Mini Stonewold              |
| <b>Lagan</b>                  | Flat Tile                   |
| <b>Marley (Eternit)</b>       | Modern, Duo Modern          |
| <b>Quinn</b>                  | Western slate               |
| <b>Sandtoft</b>               | Calderdale, Calderdale Dual |

| Roof Slate Compatibility    |   |
|-----------------------------|---|
| <b>Natural Slate:</b>       | 600x300   |
| <b>Reconstituted Slate:</b> | 600x300   |
| <b>Fibre Cement Slate:</b>  | 600x300   |
| <b>Marley Eternit</b>       | Birkdale, Garsdale (600x300)<br>Rivendale, Thrutone (600x300) |

(A wider range of compatible slates is due for launch in the Autumn)

## C21e slates require a slightly larger roof area than C21e tiles.

Use the following table to work out which size of system will fit the roof and how much energy it will generate. Select the appropriate Product Code to order your system:

| System Size | Electricity per year* | CO <sub>2</sub> Offset per year <sup>[2]</sup> | C21e Tile format  |                 |              | C21e Slate format |                 |              |
|-------------|-----------------------|--|-------------------|-----------------|--------------|-------------------|-----------------|--------------|
|             |                       |  | Min Roof Length** | Min roof Width† | Product Code | Min Roof Length** | Min roof Width† | Product Code |
| 18          | 777                   | 441kg  | 3.6m              | 3.1m            | 10215-02     | 3.8m              | 3.9m            | 10771-02     |
| 24          | 1036                  | 588kg  | 3.3m              | 4.3m            | 10215-03     | 3.5m              | 5.1m            | 10771-03     |
| 36          | 1554                  | 883kg  | 3.6m              | 5.5m            | 10215-04     | 3.8m              | 6.3m            | 10771-04     |
| 48          | 2072                  | 1177kg   | 4.6m              | 5.5m            | 10215-05     | 4.7m              | 6.3m            | 10771-05     |
| 60          | 2590                  | 1471kg   | 4.0m              | 7.8m            | 10215-06     | 4.1m              | 8.8m            | 10771-06     |
| 72          | 3108                  | 1765kg   | 4.6m              | 7.8m            | 10215-07     | 4.7m              | 8.8m            | 10771-07     |

[1] For a south facing roof, generating 830 units (kilowatt hours - kWh) per kWp

[2] Using SAP calculation method for grid displaced electricity - 0.568kg per kilowatt hour  
\* kWh (kiloWatt hour)

\*\* Measured Eaves to Ridge

† Measured Verge to Verge

# C21e specifications



## Dimensions

## Tile format

## Slate format

|                                       |   |   |
|---------------------------------------|---|---|
| <b>Size</b>                           | 1220mm x 420mm overall<br>1180mm x 330mm exposed (at 90mm headlap)                                    | 1210mm x 406mm overall<br>1210mm x 285mm exposed  |
| <b>Covering width</b>                 | 1180mm  | 1210mm  |
| <b>Minimum pitch</b>                  | 22.5° (90mm headlap)  | 30°   |
| <b>Gauge (batten spacing)</b>         | 345mm (maximum)<br>320mm (minimum)  | 285mm for C21e Slate Format Courses   |
| <b>Headlap</b>                        | 75mm (minimum)<br>100mm (maximum)   | 121mm for C21e Slate Format Courses   |
| <b>Covering capacity (net.)</b>       | 3 PV tiles/m <sup>2</sup>   | 3 PV tiles/m <sup>2</sup>   |
| <b>Weight</b>                         | 8kg   | 5.1kg   |
| <b>Weight of tiling</b>               | 24kg/m <sup>2</sup> (90mm headlap)  | 15.1kg/m <sup>2</sup>   |
| <b>Batten size (fixed to BS 5534)</b> | Up to 600mm rafter centres - 50mm x 25mm  | Up to 600mm rafter centres - 50mm x 25mm  |
| <b>Screws and fixings</b>             | 4 No. 4.5mm x 40mm self tapping stainless screws (supplied with tile) edge clips may also be required | 4 No. 4mm x 20mm self tapping stainless steel screws with EPDM washer, slate hooks and soak trays (all supplied). |

Please refer to the C21e design guide for details on headlap and batten spacing.

Solarcentury C21e systems must be laid and fixed to comply with BS 5534: the British Standard Code of practice for slating and tiling, and BS 8000: Part 6: the British Standard Code of practice for workmanship on building sites.

## C21e is designed to be installed in standard layout configuration.

The following should be used as guide but other layouts are possible, please contact us for more information.

| System size | Number of rows | Number of columns |
|-------------|----------------|-------------------|
| 18          | 9              | 2                 |
| 24          | 8              | 3                 |
| 36          | 9              | 4                 |
| 48          | 12             | 4                 |
| 60          | 10             | 6                 |
| 72          | 12             | 6                 |



# Frequently Asked Questions

## **Does it work in the UK?**

Yes. The photovoltaic cells used in C21e do not need to be in direct sunlight to work, and will generate electricity even on cloudy days. The brighter the day the greater the energy generated.

## **Don't the tiles require lots of energy to manufacture?**

The energy generated by one tile will 'pay back' the energy required to make it in roughly four years in the UK.

## **Is C21e compatible with the tiles/slates that I want to use?"**

C21e has been designed to integrate with a range of tiles from leading roof tile manufacturers. (Please refer to previous page)

## **Does the system need batteries?**

No local battery storage is required, as the C21e system connects to the local electricity supply, and any excess power can be sold back to the electricity company.

## **Does C21e require planning permission?**

The benefit of C21e's building integrated design is that no additional planning consent should be required for standard new-build developments. Solar tiles can sometimes help get planning permission when Local Authorities set carbon reduction targets, or builders need to meet the Code for Sustainable Homes.

## **Do the C21e tiles need maintenance?**

C21e tiles and slates are silent in operation and have no moving parts, so no maintenance is required. The design of the tiles means that any dust or dirt that accumulates on the tiles should be washed off during normal rainfall.

## **How long do they last?**

The tiles & slates have a power warranty of 25 years and are expected to provide generation for fifty.

## **How can I find out more?**

Call our roofing support team on 020 7803 0258, or email [roofing@solarcentury.com](mailto:roofing@solarcentury.com)

## **Where can I buy C21e?**

C21e systems are available at any Roofshop branch. To find your local branch please visit [www.roofshop.co.uk](http://www.roofshop.co.uk) or call 0845 863 0834



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