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Case study **The Walled Garden**



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Mrs Beasley

The Walled Garden is an excellent domestic case study highlighting how easy it is for environmentally conscious individuals to radically reduce their carbon emissions through the use of photovoltaics.

In August 2006, the Beasley family decided to power their home with 96 of the award winning solarcentury C21e solar tiles. This photovoltaic (PV) array covers 34m² of roof space, blending seamlessly with the existing roof tiles on their south facing home.

The house is ideal for optimal solar generation. ‘It was built in a walled garden originally occupied by a green house, replacing this, our house has a perfect south face’ says Mrs Beasley. However, the owners were particularly concerned that the aesthetic of their home was not affected by a micro generation installation. Having spent many years attending to their home and garden, the Beasleys wanted a solar solution that would maintain the original roof line and general appearance of the property. They settled on solarcentury’s integrated solar tiles, which sit flush within the existing roof as a low maintenance, long-lasting, safe and silent solution. The installation took less than a week to install.

Mrs Beasley, now retired, says: *‘I have always known that the earth has to be taken care of. I knew of the concerns of environmental damage with the publication of Rachael Carson’s ‘Silent Spring’ in the 1950s; and I’m delighted that the technology is now here to provide us with a good looking solution to provide clean energy. Locally, there is substantial interest in carbon reduction and greener living. As a village we have a few houses with their own energy solutions, but we like to think that ours outshines the rest!’*

According to the Energy Savings Trust, the average household in the UK consumes 3,300 kWh of electricity. Rated at 5 kWp, this system is predicted to generate 3,750 kWh of inflation proof electricity per year. The Beasleys consume above average electricity, however the installation will provide the majority of their electricity needs. Excess energy produced by the solar tiles, for example in the day, is simply sold back to the National grid, in just 3 months they have sold over 650



kWh. When electrical demand is greater than the solar tiles are generating, for example at night, additional electricity is imported from the mains supply through the import meter in the normal way.

Their experience of living with solar power has been extremely positive, with many visitors intrigued by their self sufficiency. The Beasleys, like many people living with photovoltaics, have found their everyday electricity consumption has reduced since the installation. The presence of their own 'clean power station' is a constant reminder to be energy efficient, and the production meter a useful mechanism for recording how much the array has produced.

The solar tiles will save approximately two tonnes of carbon dioxide (CO₂) from entering the atmosphere every year. This would fill a staggering 117,713 party balloons, and is the equivalent CO₂ savings of five people if everyone reduced their CO₂ emissions by 12.5% by 2010 as recommended by Koyoto.

Mrs Beasley's advice to others is that it's well worth looking into the grants available. 'The local council has an initiative for solar water heating and the Energy Savings Trust have a number of grants, this encouragement all added up.' The project was supported by funding from the DTI through the Energy Savings Trust. Grants are available through the Low Carbon Buildings Programme for up to 50% of the cost of the technology and installation. See www.est.org.uk for further information. Mrs Beasley is keen to persuade others of the benefits of photovoltaics, and stresses that Cred (carbon reduction) at the University of East Anglia in Norwich holds regular seminars on the subject (www.cred-uk.org)



So, when will the Beasleys begin to make money from their installation? Due to the uncertainty of future fuel prices, this is very difficult to say. A rough estimate is between 15 and 25 years, depending on production and how much energy prices rise. Actual payback is likely to be a faster with such a large system, and the pay back time has already reduced as the electricity supplier increased prices again on 21 August 2006. The Beasleys realise that the primary purpose of their photovoltaics is to reduce their carbon emissions. Although they will save money in the long term and have added significant value to their home, the technology was primarily chosen to produce clean, carbon free energy.

see www.solarcentury.com/homes for information and advice on solar energy and the home.

Date commissioned	2006.08.02
Technology	Solar PV
Installation Type	Pitched roof
System size (kWp)	4.99
Forecast electricity generation / year (kWh)	3750.00
Building integrated	Yes
CO ₂ saving / year (kg)	2130.00
Energy produced (kWh)	955.00



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