

Buckinghamshire family home - PV and solar thermal installation

Existing or Proposed Project:	EXISTING – COMMISSIONED AUTUMN 2003
Location:	AYLESBURY, BUCKINGHAMSHIRE
Project Leader:	PRIVATE INSTALLATION
Description:	PV array & solar thermal system retrofitted onto an urban home to offset a proportion of the electric bills and to generate hot water, through a desire to do something positive for the environment



Background

The homeowners were keen to install renewable energy on their house as part of their desire to lead a 'greener' lifestyle. The gentleman of the house is a planner by profession and through his work was aware of the advantages of solar technologies and the government grant programmes that currently support them.

Initial contacts with installation companies were instigated through the RSPB's 'Going Solar' scheme, which offers loans to homeowners to install solar technologies. The installation of the solar thermal system also tied in with plans to replace the heating system in the house.

The roof of this dwelling was particularly suitable, given its southerly orientation, angle of pitch and lack of obstructions that could cause shading.

The Technology / Scope of Project

The PV installation is a typical retrofit system, consisting of twelve mono-crystalline panels. The array has a power rating of 2.28kW and is expected to produce around 2,000 units (kWhs) of electricity a year which should match approximately the homes total requirement (the owners are very energy efficient with appliance selection, use and choice of lighting). There is very little additional equipment installed in the home (see right).



When electricity use in the building is less than that being produced, the excess is exported back to the national grid. At the moment, the homeowner has been unable to secure an export agreement to pay for the electricity exported. Neither Ofgem or the RSPB have been able to offer suitable help in this area, but additional options are now being pursued (June 2004).

The cost of the installation was £13,400, of which £6,400 was funded by the DTI PV grant programme. The whole grant process was considered straight forward with the installer company, SolarCentury, filling in much of the paperwork.

The solar thermal system was provided by Filsol and installed by Solartech, who also filled in much of the Clearskies grant paperwork. The system was fitted at the same time as, and integrated with, an energy efficient condensing boiler. The hot water tank is shown (right) and is not much larger than a conventional tank. The system should provide around 60% of the annual hot water requirements.



The cost of the solar thermal system was £2,800 and a grant of £500 was provided under the government's Clearskies grant programme.

When asked about the payback, one of the homeowners replied, 'I haven't done it for the money'.

Importance to the Thames Valley

This home is one of the first in the south-east to benefit from this technology and the funding provided under the DTI PV grant programme. It is hoped many more will follow. There is clearly, however, still a problem in getting payments arranged for electricity export.

PV and solar thermal are an ideal application for both retrofit and new build incorporation into the region's homes. As more installations appear on Thames Valley

roofs, it is hoped a critical mass can be reached whereby public demand for these technologies leads to them becoming the norm rather than the exception. This home owner is a pioneer in this sense and hopefully, in years to come, we will look back on the current financial support for domestic PV and solar thermal systems and pinpoint it as the moment that solar technologies took the leap from being something for the future to becoming a common feature on our roofs.

In addition to the above, as more people install this type of product, it should hopefully stimulate a regional installation business, which in turn will create jobs. In Germany, where 50,000 solar thermal systems are installed a year, half go in when a new boiler is specified, as was the case in this instance. It is hoped that heating engineers and plumbers in this country can expand their businesses in the same way.

Finally, this installation was deemed not to need planning permission as the panels were not on the street frontage of the property. Good practice from elsewhere in the country suggests that even if the panels had faced the street, planning permission would not be required as the house is not listed or within a conservation area. This demonstrated the lack of clear regional guidance to planners of what is and isn't acceptable regarding solar technologies and planning. TV Energy is working to tackle this issue.



Other innovations

A further innovative feature installed is a number of SunPipes. The idea behind this installation is to pipe natural light from the rooftop into areas where light from windows struggles to penetrate.

'Sunpipes' were first used approximately 4000 years ago when the Egyptians used light shafts and mirrors to bring daylight down into the centre of the pyramids. The modern version was patented in 1988 by Monodraught (a High Wycombe based company - 01494 897700), who recognised the energy saving potential of applying this product to British rooftops.

The product works by reflecting and intensifying sunlight and even normal daylight down through a highly reflective silverised mirror-finish aluminium tube. A clear UV stabilised polycarbonate top dome seals the light pipe against the ingress of dust and a clear stipple finish polycarbonate dome at ceiling level evenly diffuses light into the room or space below. There is virtually no limit to the length or number of bends that a system can incorporate, making the product a highly versatile lighting option.

Pictures from the Aylesbury house are shown below and similar installations have occurred at Maidenhead & District Housing Association's Integer homes at Alpine Close, Greenfields, Maidenhead, the SOHA houses at Lydalls Road, Didcot and at Shortenills Environmental Educations Centre, Buckinghamshire (see case studies on this site).

