

# CASE STUDY

## 001 Solar Energy Monitoring Study New Build Housing

With support from housing association partners Hastoe Housing Association and Places for People Group, Viridian Solar is piloting an innovative, building-integrated solar water heating system, the Clearline.

An important element of the pilot is the measurement of the energy and carbon dioxide emissions saved by the solar hot water system. Six houses, split across two locations have been fitted with energy monitoring and data logging equipment to capture this information.

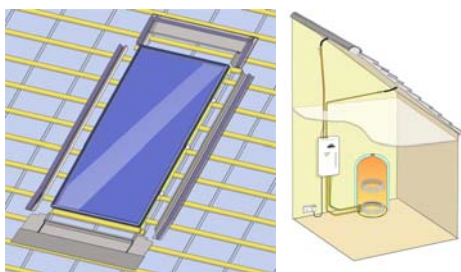
The Building Research Establishment (BRE) specified the measuring equipment, and is collecting the data to provide an independent report at the end of twelve months. Data in this interim report was received from BRE, and is presented by Viridian Solar.

"I love it. You just whack on the tap and there's always hot water. I've hardly had the boiler on – I'd recommend it to anyone"

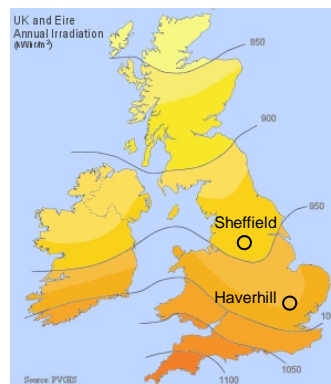
Hastoe Housing Association Resident  
Steeple Bumpstead, August 2007

### Buildability

Clearline has been designed with a series of patent-pending features developed to make installation as part of a new build programme simple and quick. A key part of the study was to assess the installation process for the solar panel. Roofing contractors and plumbers with no prior experience of solar were selected. The installation of the solar panels was completed in only 15 minutes per house. The simplified solar plumbing kit added only three hours of labour to the plumbing work per house.



Simple installation by roofer and plumber



Locations of Housing in Study



With support from:



Hastoe Housing Association, Steeple Bumpstead, Haverhill



Places for People Group, Norfolk Park, Sheffield

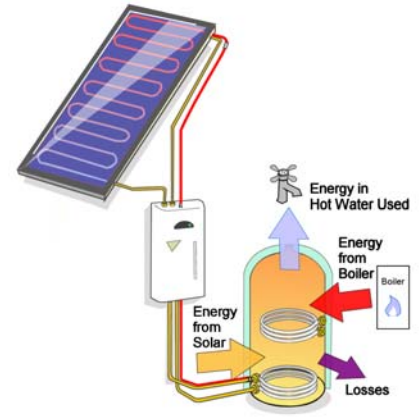


# CASE STUDY

## Performance Measurement

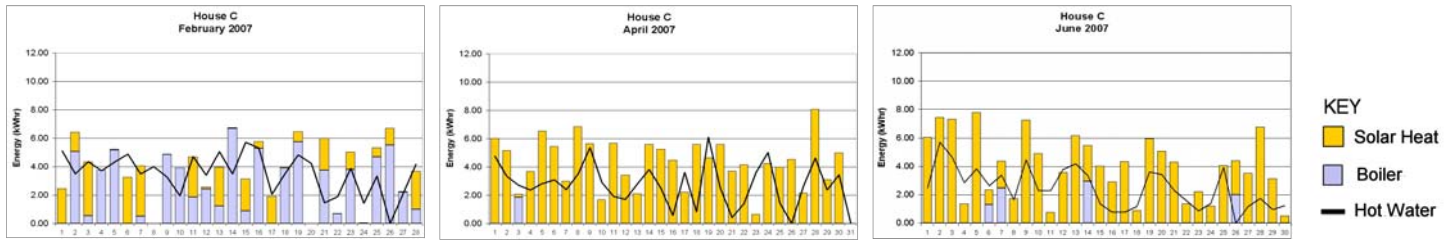
Instrumentation in the airing cupboards measures the flow of heat both into and out of the cylinder every three minutes over the twelve month monitoring period. Data loggers send the information to the BRE monthly.

Since the households did not actively purchase their solar system, they could be considered more representative of the mainstream compared to previous studies where households may have been more motivated to optimise hot water use to increase solar benefits.



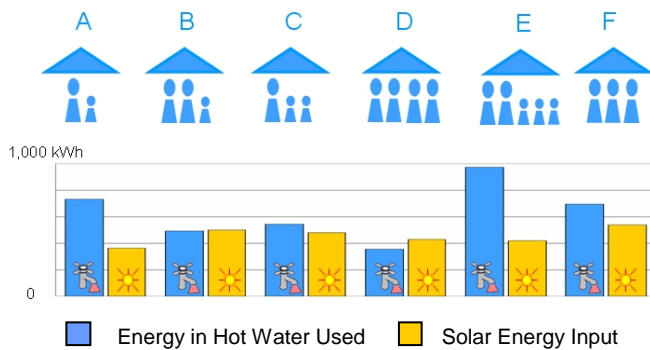
Results from one of the houses for three months are shown below

Energy Balance on Hot Water Cylinder



## Half Year Results

Data is available for the first six months of the monitoring period (Jan - Jun 2007). Since this period covers a half year of seasons, it offers a good indication of the full year results. Despite the poor spring and summer weather in this period (wettest summer for nearly 100 years), households are getting on average 50% of their hot water from the Clearline solar water heater.



The most striking aspect of the results is the variation in hot water use, which seems to have limited correlation with occupancy levels.

Some households are optimising their hot water use with solar energy supplying more than 65% of hot water energy in two of the households.



Hastoe Housing Association, Steeple Bumpstead, Haverhill

House E could benefit from much greater savings. Although a user leaflet was included in with the house information pack there may be a role for better education to improve the way householders use their heating system.

In moving solar heating technology into the mainstream, it is the average performance rather than the very best or the very worst that is important. Full year results will be published on the Viridian Solar web site (address below).