



Drum Housing helps family of seven out of fuel poverty **with Minus7**

Drum Housing Association wanted to demonstrate the low carbon whole house refurbishment potential for off-gas properties. A 1930s 3-bedroom semi-detached house without gas supply and immersion hot water was the perfect choice.

This ambitious refurbishment project utilized Minus7's technology to deliver significant cost, energy and carbon emission

reductions to a family of seven with a high heating and hot water consumption rate.

Refurbishment
Several additional energy efficiency measures were included to primarily address heat loss, lighting and appliance use. The redundant chimney was removed, blocked door and window openings were in-filled; redundant air bricks were also blocked,

storage heaters and open fire were removed and a chimney balloon was used.

How does it work?
Minus7's Solar Energy Processor auto-controls are configured to maximize the output from the solar endothermic roof collector, harvesting energy day and night down to temperatures of -7°C.

Any top up required is provided by a heat pump also contained within the Solar Energy Processor. As the heat pump is not connected to the heating and hot water demand of the building, it can run when electricity is cheapest to ensure the thermal stores are kept at a consistent temperature.

It is the thermal stores that act as the energy source for the building, with heat being transferred to the building through a clever use of heat exchangers also contained within the Solar Energy Processor.

Due to the orientation of the house, Minus7 tileplanks were only sited on the south side of the building. The premium powder coating used was colour-matched to blend in beautifully with the tiles on the adjacent house. The rear of the house thus retains its original claytile roof.

Minus7's system is able to support the heat load requirements in normal winter conditions, generating enough renewable energy to provide hot water at a temperature of 46° and heating via low temperature Jaga



radiators to provide a comfortable room temperature of 21°C.

Performance Guarantee

With remote monitoring, this project has been invaluable in measuring the performance of the Minus7 system and the other low carbon measures that have been put in place.

Performance data is available on request – please contact info@minus7.co.uk for further details.

Stakeholder Engagement

Drum Housing used this project to educate staff on how to realise the full benefits of a refurbishment scheme. Based on their previous experience of other technologies, they understood that even the most advanced building fabric and technologies can

perform dismally if unaware or untrained occupants undermine their intended use. The residents were keen to be part of this exciting project and were given training on how to optimize their usage of Minus7's heating system. The residents were pleased to find the heating could be controlled using standard thermostats and timers.