

Off grid homes need more choice

As the UK faces threats of further increases in heating costs, there are more than 4m homes off the gas grid facing a huge challenge balancing their budgets. **Jason Hobson** has a solution

This strengthens the case for investment in domestic systems that can provide more choice and flexibility in the way that renewable energy sources are used for off-gas locations.

The market is now waking up to the need for easier integration of different renewable energy sources to combine solar thermal, wood burning stove boilers and heat pumps to provide both heating and hot water.

But many off-grid homeowners are still nervous about abandoning fossil fuels – especially if they have an oil- or LPG-fired boiler which may be expensive to run but still does the job. Therefore it makes sense to create a system that enables the homeowner to use that boiler as a back-up, while prioritising the use of renewable energy resources.

Analysts predict that the average “dual-fuel” gas and electricity bill in the UK which currently stands at a record £1,300 a year could rise by 10 per cent to £1,430 while a 15 per cent increase would add £200, taking the total for the year to £1,500.

At the same time the all-party parliamentary group (APPG) reported that a typical off-gas grid family faces fuel bills up to 120 per cent higher than a mains gas user, and some 32 per cent are classed as being in fuel poverty. After conducting a six-month inquiry on the issue the MPs called for households which are not on the mains gas network to be given more consumer protection to save them from fuel poverty.

Electric heating

Electricity is the most common heating source for the large number of urban off-grid households, while for rural off-grid populations heating oil is the most common fuel.

The OFT research in 2011 showed the average cost of heating a typical UK three bedroom house was around 50 per cent higher with heating oil and 100 per cent higher with LPG than with mains gas. UK average heating costs for both heating oil and LPG continue to rise with LPG consistently the most expensive and heating oil the most volatile.



With soaring energy prices there is little doubt that homeowners will turn away from oil

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The report stated: “Microgeneration technologies represent an increasingly viable alternative. With its lower running costs and green credentials, microgeneration is potentially an attractive longer-term alternative for consumers off the gas grid (including those currently using heating oil and LPG) who are facing rising and volatile energy costs. Indeed, off-grid consumers are seen as being ideally placed candidates for early adoption of microgeneration. This is evidenced by uptake to date being highest amongst this group.”

The report examined various renewable energy sources – solar thermal, wood burners and wood chip boilers, ground and air source heat pumps, and photo voltaic and wind turbine electricity generation.

But it noted that solar thermal is ‘not generally used for space heating’. That reflects the lack of joined-up thinking on making it easier to integrate all of the energy sources in a domestic system.

The case for wider use of thermal stores or similar devices to integrate energy sources has never been stronger. Many of the solar thermal systems and log burners on the

market are still just used for hot water, missing an opportunity when they could also be contributing to heating.

It’s also a fact that an uncontrolled heat source such as a wood burning stove boiler or a biomass boiler ideally requires an open vented thermal store which has the added advantage of removing the need for discharge pipework - negating the requirement for G3.

Use of thermal store

Using an open-vented thermal store provides more options than any other store or cylinder to use the widest range of renewable energy sources to deliver safe, cost effective and environmentally friendly domestic heating and hot water.

Off-grid homeowners can now choose to combine economical green energy sources such as solar thermal, heat pumps, log burners and biomass boilers, and retain an oil or LPG boiler which will be used only as a last resort if the renewable energy sources cannot meet demand.

So one typical example of an off-grid property taking advantage of renewable energy could be a house with solar thermal panels and a wood burning stove boiler feeding energy into a thermal store, which heats the home and provides mains pressure hot water. Low standing losses from a well-insulated store should mean that the majority of the time the solar units or the wood burner will be sufficient to maintain the operating temperature.

However, if the renewable heat source is insufficient to maintain the best operating temperature for the store, then the oil or LPG boiler can be automatically switched on to boost the store.

A primary store which circulates water directly through radiators or underfloor heating, makes it hugely efficient, both in terms of receiving heat and delivering it to the home.

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