



# ESSENTIAL GUIDE TO... Reducing your heating

*By giving his Arts and Crafts home in Manchester an eco retrofit, Kit Knowles has reduced his utility bills by over £2,500 a year and turned a gas guzzling house into a nice little earner. Here he shares how...*

FEATURE **KATIE HALLETT** PHOTOGRAPHS **COLIN POOLE**

## THE ESSENTIALS

### THE HOME OWNERS

Kit Knowles lives here with his wife Ellie and their two young children. The couple bought the house four years ago: 'I was working on technology integration as a chemical engineer for BP and came to the conclusion that more thought should be put into integrating sustainable technologies into homes,' he says.

### THE HOUSE

'I wanted to give myself the biggest challenge by finding the hardest to treat property,' says Kit. 'This 1909 house has solid wall construction, is in a conservation zone, is semi-detached and has original features. The idea was to open it up to the public to show people how it they can achieve something similar in their own home.'

### FIND OUT MORE

Kit opens his home to the public in March and September as part of SuperHomes (a network of 160 energy aware households in the UK) open days. Visit [superhomes.org.uk](http://superhomes.org.uk) to find out more.

### How did you make your home more energy efficient?

We started by focusing on the walls, floors and ceilings. We wanted to stop our heat escaping so we removed all extractor fans and air bricks higher than ground level, sealed all the chimneys and fitted triple glazing and recycled glass fibre floor and roof insulation. We also fitted solar Photovoltaic (PV) panels plus an energy management system (a computer which decides where and when energy is needed). This now generates electricity which provides 52 per cent of all our power requirements with the rest coming from xxxxxxx.

### So, how does air circulate if the extractor fans and air bricks have been removed?

For a house to be healthy, humidity needs to be controlled through ventilation so, to achieve this, we fitted a mechanical ventilation with heat recovery system (MVHR).

### What exactly is MVHR?

It's a series of concealed ducts that run throughout the whole house,

continually extracting stale air from wet rooms (kitchen, utility and bathrooms) and replacing it with air drawn from outside. Instead of being in the form of a chilly draught, the incoming fresh air passes through a box (called a heat exchanger), which recovers heat from the stale air bringing it much closer to room temperature. Another benefit is that heat is distributed evenly through the house.

### And how effective is it?

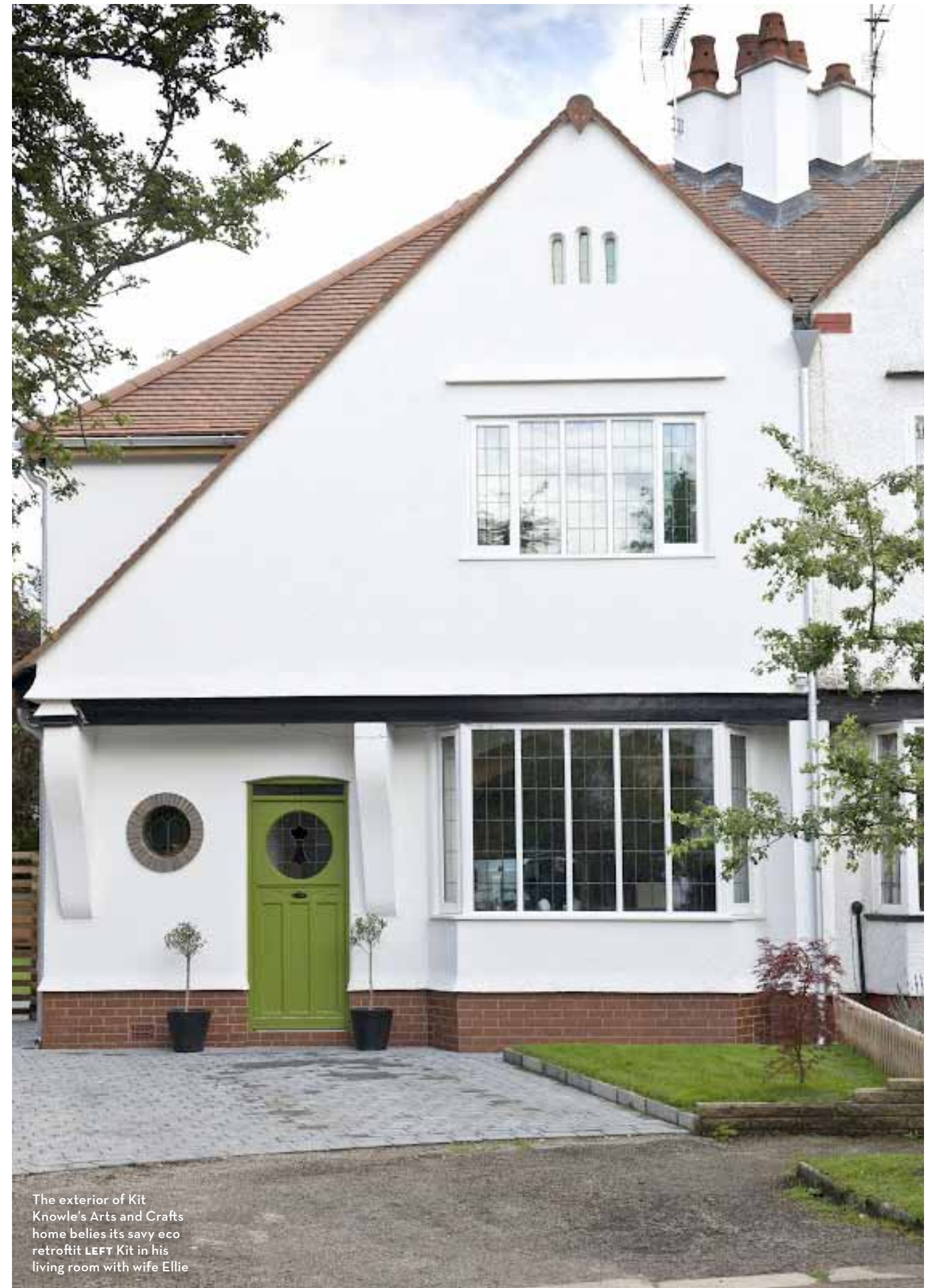
Surprisingly, in a house which is thoroughly sealed, it's more effective at keeping a house at a comfortable temperature than fitting insulation.

### Does it use electricity?

Yes, it costs around £60 a year to run. In our home though, this electricity is provided by the PV panels.

### Is MVHR tricky to install in a period home?

It can take a little longer to design but this isn't an issue for the home owner. My experience eco retrofitting our home led me to create my own eco consultancy and we've now retrofitted



The exterior of Kit Knowles's Arts and Crafts home belies its savvy eco retrofit. LEFT Kit in his living room with wife Ellie



40 homes, including some which are 200 years old.

### **Isn't it a bit unsightly?**

In most cases the ducts are completely invisible – fitters will hide them in built-in wardrobes, floor voids and in the loft. The heat exchanger box will also usually be hidden in the loft.

### **So, your house is thoroughly draught-proof but how do you heat it?**

We fitted a wood burning stove in the living room and it's now the only 'active' way we heat the home. There are radiators but we rarely use them.

### **Does the wood burner provide enough heat for the whole house?**

Yes, because the house is thoroughly airtight and the MVHR helps with distributing the heat.

### **And what sort of wood burner should I look out for?**

Look for designs which are Defra approved (meaning they can be used in smoke controlled zones), have an efficiency of 80 per cent or greater and are room sealable.

### **What does room sealable mean?**

The stove needs oxygen in order to combust so, if it isn't 'room sealed', it will drag warm air from the house, into the stove and out the chimney. If a wood burner is room sealed, it means it can't take any air from the house but, instead, the supply will come from a pipe that draws directly from outside. Air will also be lost via a stove which isn't room sealed when it's not in use.

### **For someone on a budget, what are the most effective ways you can make your home more economical?**

It depends on the property but the basics are: taking out extractor fans and air bricks (which costs just a few hundred pounds) and blocking chimneys (which costs from £450 per chimney) and then fitting MVHR. If you can afford to, upgrade doors and windows with timber framed composite panels such as Viking thermal windows. This could cost from £450 per sq m.

### **Could I skip the first step and just**



Kit's wood burner provides enough heat for the whole house. For a similarly efficient design, he recommends Burley's 'Debdale'

### **install MVHR?**

It's not worth installing MVHR if there are examples of 'unidirectional extraction' in the property. This occurs when air is constantly sucked out of the home via sources such as chimneys and fans. If these sources are removed then MVHR will save money and improve the comfort levels and health of the occupants.

### **How about if I can't afford to replace draughty windows and doors?**

MVHR will still work effectively and save you money.

### **How much have your energy bills improved by?**

We don't have any records of what the bills were like before we moved in but, taking information from surrounding homes of a similar size we've calculated that they would have been around £2,500 a year for gas and electricity. Now, we don't pay out and, thanks to the Photovoltaic panels and energy management system, we are now earning a few hundred pounds via feed-in tariffs and, when the Renewable Heat Incentive scheme (see right) comes in, we stand to earn £1,000.

### **HOW TO INSTALL MVHR**

Make sure you find an independent BPEC (the governing body for MVHR) qualified installer. They will begin by surveying your house and then create a bespoke system. The whole process, based on a 175 sq m house, costs from £5,000 and can take as little as three weeks from planning to completion. For advice, call upon the help of an eco consultant. For more information on Kit's consultancy, Ecospheric, call 0161 881 4173 or visit [ecospheric.co.uk](http://ecospheric.co.uk).

### **THE DOMESTIC RENEWABLE HEAT INCENTIVE SCHEME**

The government's domestic stage of the Renewable Heat Incentive is due to be launched next spring. The scheme will work in a similar way to feed-in tariffs (by paying home owners for using air source heat pumps, biomass systems, ground source heat pumps and solar thermal technologies) but will give a bigger return. Tariffs start at 7.3p/kWh. For further information, visit [energysavingtrust.org.uk](http://energysavingtrust.org.uk)

# Heating shortlist

## WOOD BURNING STOVE WITH BACK BOILER



'Vision 500', Clearview  
*£1,848*



'Cove' boiler stove, Charnwood  
*From £1,998*



'Stockton 11HB' boiler stove, Stovax  
*From £1,595*

## RADIATORS



'Tetro' radiator, Bisque  
*From £735*



Restored cloakroom radiator,  
The Old Radiator Co  
*From £375*



'Cherub 800' cast iron radiator, Holloways  
of Ludlow  
*From £48*

## WOOD BURNING STOVES



Debdale stove, Burley  
*£698*



Pedestal, Morsø  
*£2,100*



Cream enamel 4.7kw stove, Carron  
*£599*