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OCTOBER 2020

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FROM PERIOD HOUSE TO ECO HOME

Traditional properties were built to last, and many have stood the test of time, but few meet today's high standards of sustainability. So is it possible to improve the eco credentials of an older home?

About 20 per cent of the houses we live in today were built before 1919, and four out of every five homes we'll be living in in 2050 have already been built*. The Government wants all UK homes to be carbon zero by 2050, which means achieving net zero carbon emissions via measures such as materials used and fuel efficiency. This obviously causes issues for those pre-war homes that were built to very different standards than those that are constructed today. While experts work out how to retrofit them on a mass scale, using materials and techniques that owners can afford, there are currently ways to improve the eco credentials of older properties that we could all consider, some cheaper and easier than others, but all reaping rewards.

WHAT ARE THE ISSUES WITH AN OLDER PROPERTY?

The main problems in such houses are draughts through gaps around doors and windows, up from the floor and down the chimney, as well as poor wall and roof insulation.

According to Andy Burnham, Mayor of Greater Manchester, who aims to make his area one of the leading green city regions in Europe: 'If we're going to meet our climate change targets, we need to reduce CO^2 emissions by reducing the excessive use of energy in heating our homes.'

WHAT KINDS OF THINGS CAN BE DONE EASILY AND CHEAPLY?

Quick wins range from fitting draught excluders around doors, windows, loft hatches and chimneys, to insulating the roof, loft and under the floor, in order to retain heat inside the home.

According to the Energy Saving Trust, there are further actions that will also reduce bills and environmental impact…

- Installing LED light bulbs
- Upgrading to a more efficient boiler
- Installing smart heating controls and a smart meter
- Swapping to a water-efficient shower head
- Turning off appliances rather than leaving them on standby

But what if you want to go further and make your period home truly ecofriendly and sustainable?

WHAT SORT OF STEPS WOULD BIGGER PROJECTS ENTAIL?

In homes with cavity walls, insulation injected into the gap stops heat leaking out through the walls. This can't be done in houses with solid walls – mostly those built before 1920 – but in the course of a major renovation project, insulation panels could be installed either on the outside or inside of the walls.

Ground or air source heating systems that use warmth from the ground or air to heat a home, solar panels, double- and even triple-glazed windows and doors, are also major projects that would improve efficiency, as would investing in the most energy-efficient appliances.

Each will have an impact on energy bills as well as carbon emissions, but may also cause other problems. For instance, ▶

Opposite A pair of Victorian properties in Manchester retain their period character but have been brought into the 21st century thanks to a retrofit by Ecospheric Developments (see details over the page). Now, they more than meet the rigorous PassivHaus standards, meaning they stay warm year round without the need for a central heating system, and there are zero energy bills. The second property was even kitted out with products from sustainable companies and artisans

Above At the back, the houses are clad with pre-fossilised wood, which should last for 50 years without maintenance, while windows are angled to maximise solar gain

Nimtim Architects used sustainable cork to clad the outside and inside of an extension to The Cork House

plugging gaps to reduce draughts and insulating the walls – effectively 'sealing' your building – also reduces ventilation, which can cause condensation leading to the growth of mould, and trap allergens, potentially resulting in health issues such as asthma, rhinitis and hay fever. The Energy Saving Trust advises investigating 'breathable' insulation materials, or talking to an experienced specialist insulation installer to develop a moisture-control strategy specific to your building.

IS IT POSSIBLE TO MAKE A PERIOD PROPERTY CARBON ZERO?

Two years ago, Kit Knowles and his firm Ecospheric Developments did just that. They retrofitted a pair of semi-detached Victorian villas in Manchester and brought them up to Passivhaus Enerphit Plus standard – the only Victorian properties in Europe to have achieved this.

This means they're warm all year round with no central heating system and with zero energy bills! They also have good air quality, and the materials used are so durable they require very little maintenance. But the overall look and shape of the houses is still traditionally Victorian, right down to their stained-glass windows. (See Bringing Victoriana Into the 21st Century opposite.)

Obviously the Manchester semis have pushed adding eco features to the nth degree. Few owners of Victorian properties could do the same – even if they do have the estimated £100,000 budget. For most of us, it will be about achieving a balance of effective systems.

WHERE'S THE BEST PLACE TO START?

'Decide on your priorities,' says Kit Knowles. 'Understand what sustainable design means for you and what your focus is. Is it climate change, cheaper fuel bills, the health of your family by improving the air quality, warmth and comfort, or low and cheaper maintenance? Or, maybe it's all of them. Your approach and selection of technologies will depend on these answers.'

According to Kit, ventilation is a good place to begin. A Mechanical Ventilation with Heat Recovery system (MVHR) that allows you to control your home's air quality and helps keep you warm is a great first step in either a phased programme or even as one stand-alone project.

WHAT'S NOT WORTH DOING?

Most period houses were built to a design where the compact, cuboid shape with individual rooms and smaller windows are positive from a heat loss perspective. Trying to emulate the attractive features of purpose-built ecohomes by adding folding/sliding doors to create big expanses of glass, and knocking down walls to form an open-plan layout, can result in overheating, impact the air quality and reduce the energy performance of the house.

Kit suggests remodelling the existing building. Instead of adding an extension to create an open-plan kitchen diner, moving a staircase could open up enough space to make a dining room. A full house remodel can be designed to provide all the functionality you're looking for at lower costs and with much better comfort and performance when compared to extensions. With the leftover cash, more money can be spent on upgrading the performance of the existing building.

'You don't have to do a deep retrofit upfront,' says Kit, 'but it's always critical to plan the building to where you want it to go based on your budget and the balance of what matters to you, and then phase it. Then you can take positive smaller steps towards achieving it.'

ANY OTHER OPTIONS?

One project that's slightly different is The Cork House, designed by Nimi Attanayake, director and cofounder of Nimtim Architects in south east London. Her team added a loft room and an extension to a Victorian property – and then clad the extension in cork, inside and out.

'We're always looking at different materials and trying to do interesting things with them,' says Nimi. 'We proposed cork as it ages

'Decide on your priorities. Understand what sustainable design means for you and what your focus is'

Architects Fraher & Findlay transformed Etch House, a Victorian property in south London, by removing internal walls and repositioning the staircase, while adding high levels of insulation for a modern and efficient home

The interior of this Victorian property in central London was also re-configured by Fraher & Findlay architects to make it more suitable for contemporary living

to a lovely silvery grey colour, and doubles as insulation, so it's cost efficient. It's also a sustainable material, doesn't produce toxins, and it's recyclable, inherently waterproof and a great sound insulator!' The owners of The Cork House are thrilled with the end result, which means their home is now big enough to meet the future needs of their growing family – an important point as sustainability isn't only about reducing fuel bills.

'Sustainable design helps houses fit their clients lives better and therefore gives them longevity because it means they can stay in them for longer without moving,' says Nimi. 'It's about taking a more holistic, flexible and long-term approach to design and renovation rather than just providing a short-term solution.'

FOR MORE INFO

Ecospheric Developments ecospheric.co.uk
Nimtim Architects nimtim.co.uk
Energy Saving Trust energysavingtrust.org.uk
SuperHomes superhomes.org.uk
Fraher & Findlay fraherandfindlay.com
Eco Homes ecohomes.uk

BRINGING VICTORIANA **INTO THE 21ST CENTURY**

The Ecospheric team used as many natural materials as possible in each of the pair of Manchester-based houses they retrofitted. In the first, features included:

- One hundred pallets of insulation, predominantly made of recycled newspapers.
- Thermostatically controlled rooflight with rain sensor to provide effective passive cooling.
- Dirty handwash water directly flushes the WC and outside a Sustainable Urban Drainage System (SUDS) made from recycled car tyres relieves stress on the drains and keeps the drive weed free for life.
- Durable materials to reduce maintenance costs. For instance, graphene has been formulated into the interior paints and is 200 times stronger than structural steel.
- 'Pre-fossilised' wooden cladding that is resistant to rot and UV degradation.
- Copper guttering and downpipes expected to last more than 100 years.
- A central Mechanical Ventilation with Heat Recovery system (MVHR).
- Natural, breathable materials, such as lime plaster to soak up harmful gasses, control humidity and minimise mould, as well as avoid harmful off-gassing.

In the second of the houses, which has recently been completed, they also furnished it with products from sustainable interior artisans and producers, including a green bed in the main bedroom, said to be the first vegan organic upholstered bed made in the UK.

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