

# Cosy and carbon neutral

How a family turned a draughty Edwardian terrace into a warm haven — and kept it stylish



Ben Ridley and his wife, Susanne, pictured with their daughter, Edyth  
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## Martina Lees

How do you make a draughty period house fit for a net-zero world? The architect Ben Ridley, with his wife, Susanne, and their two-year-old daughter, Edyth, has done just that, insulating their Edwardian terrace in Muswell Hill, north London, to the highest Passivhaus levels in a serene top-to-bottom

makeover for £250,000.

Untouched since the 1970s, the four-bedroom property was a swirl of red floral carpets, pink flock wallpaper, damp and mould when they bought it for £1 million in 2019. “It was dark, old and hadn’t been lived in for a year,” says Susanne, 41, a yoga teacher, who admits that she was filled with “trepidation”. But Ben, 37, the founder of

Architecture for London, saw its potential — and the wide garden, where he plans to build a second Passivhaus next door.

Using permitted development rights, the Ridelys extended their ground floor four metres to the rear and added a loft room without the need for a full planning application. The end result, a haven of oak, stone and lime



plaster walls, was recently valued at £1.7 million.

Yet much of what makes their home remarkable is hidden beneath the natural surfaces: the fabric that makes this a masterclass in low-energy design. Instead of adding green tech, Ben, a certified Passivhaus designer, focused on improving the shell of the house to retain heat. “Follow Passivhaus principles before you start looking at heat pumps and solar panels,” he says. A heat pump and accompanying water cylinder would have added £15,000 to the Riddleys’ build cost. “It got killed by the budget.” Instead they have a gas boiler, which they rarely need for heating because the house is so well insulated.

Britain is legally bound to cut carbon emissions to net zero by 2050. “Every house that we refurbish now won’t be refurbished again before 2050, so it has to be as close as possible to the net zero low-energy standard,” Ben says. “If you renovate and don’t do that, it’s a wasted opportunity. It’s going to have to be pulled apart again.” So how did he do it?

### Airtightness

“Make sure there are no gaps in the construction that air leaks out of,” Ben says. A 12mm to 15mm thick layer of Lime Green Solo plaster (£18 for 25kg, [lime-green.co.uk](http://lime-green.co.uk)), applied by a standard plasterer directly onto the brick walls, creates a naturally



Natural materials have been used to transform the interior in minimalistic style  
CHRISTIAN BRAILEY

airtight layer inside the house. The new timber structures in the loft and rear extensions are lined with an Intello Plus airtightness membrane then coated with a thin layer of lime plaster to match the rest of the house. Left unfinished, the bare lime walls add texture and depth to the minimalist interiors.

“The key is then to tape up any junctions where you insert a window or a roof light, or where a joist penetrates the wall,” Ben adds. Keep a close eye on builders, he warns. “One guy was using masking tape around joists instead of airtightness tape. That won’t work.” In the loft no downlights penetrate the ceiling, to avoid breaking the airtight shell.

### Insulation

The aim is to create a continuous layer “like a warm

jacket” around the house, Ben says. He covered the side and rear walls externally in 17cm thick expanded polystyrene insulation boards under grey render. “That gives you a low U-value [which measures heat loss] of 0.15, equivalent to Passivhaus standard.” The new extension walls were built from structural insulated panels (SIPs) made offsite, which meant the walls could be thinner with the same performance, giving valuable extra floor space.

To preserve the Edwardian details on the front façade, breathable wood-fibre insulation was added internally. “That performs less well, but there’s a balance of aesthetics and low energy.”

Ben kept the single-glazed sashes along the front bay window, attaching secondary Perspex glazing with magnets. But he discovered another



error that is yet to be fixed. “The contractors painted over the brush strip seals of the sash windows. You should never do that. Rather than the seals being flexible, they are now rigid because they’re coated in paint, so they let more air in.” Everywhere else there are new triple-glazed Velfac windows that cost only 5-10 per cent more than double-glazed windows.

On the original front door, with its stained glass panels, a magnetic letterbox flap and more secondary glazing limit heat loss.

### Ventilation

You can’t have insulation without ventilation or you’ll end up with damp and mould. Hidden in a cupboard in the loft is a mechanical ventilation and heat recovery (MVHR) unit, its ducting disguised behind a curved staircase wall (Brink Flair, £7,000 including ducting installation, [brinkhrv.com](http://brinkhrv.com)). “It extracts the stale air from the bathrooms and kitchen, transfers the heat to the fresh air coming in and supplies it to all the bedrooms,” Ben says.

While living in a rented flat he had a severe allergic reaction to mould. “We moved seven times in a year, but I didn’t get better,” Ben recalls. “We had to throw away all our belongings because of the spores. He wasn’t breathing well,” Susanne adds.

“In a low-energy house you don’t have these problems,” Ben says. The MVHR filters



Upstairs, the floors are oak or, in the master bedroom, Douglas fir  
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out pollen and toxic particulates such as diesel and nitrogen oxide for healthy indoor air. “For the first time I don’t even have hay fever.”

### Embodied carbon

Ben tried not only to limit the energy they would need once they lived in the house, but also the energy and carbon emissions embodied in the products they used. “Use as little steel and concrete as possible. Both are energy intensive,” he says.

To avoid having to add a steel box frame to the kitchen extension, he kept part of the old rear wall to define the space. Instead of a large concrete floor slab, Ben opted for a suspended timber floor resting on two concrete strips. And in the loft, instead of the steel frame most builders are

familiar with, he chose a timber framework that works equally well. “Timber can be almost carbon negative.”

Rather than a polished concrete floor, beloved of architects, Ben used grey limestone tiles for the ground floor and in all the bathrooms. Even the Knoll coffee table top and the basins are sculpted from the same limestone ([designdriven.co.uk](http://designdriven.co.uk)).

Upstairs, the floors are oak or — in the master bedroom — Douglas fir, by Dinesen, while the built-in wardrobes are budget-friendly Ikea Pax behind bespoke oak-faced plywood doors ([relianceveneer.com](http://relianceveneer.com)).

The simple palette creates a tranquil backdrop, with designer accents such as natural brass taps from the Danish brand Vola,



architectural door handles by Izé and minimalist Viabizzuno pendant lights. “This is very minimal for me, but with the textures, especially all the wood, I was surprised at how cosy and warm and inviting it feels,” says Susanne, who prefers more maximalist decor but has been won over by Ben’s approach. “It’s lovely having a calm space at the end of the day . . . It takes away that stigma of what a low-energy house could look like. You picture this square-cubed, tiny-windowed, uber-insulated building, but this is your showpiece of character and warmth.” ■

