Cosy Homes transformations
Retrofitting an end-of-terrace family home in east Oxford

Jan Rosenow is an energy expert, well-known for his work at Oxford's Environmental Exchange Institute and as Europe Director of a clean energy think tank - and for his countless expert interviews for the BBC, The Guardian, the New York Times, and more. It's important for Jan that he practices what he preaches. That's why he embarked on a mission to retrofit his end-of-terrace home in east Oxford, reducing energy use to cut the carbon footprint of his family.

About the home

Jan's home is an end-of-terrace house in east Oxford, dating from the 1880s with solid brick walls. The family moved in in 2014, knowing that it was going to be a long-term project to renovate.

The renovation has included extensions on both the ground and first floor, as well as a loft conversion - meaning that the house now has a mixture of old and modern parts.

What motivated the retrofit?

Increasing comfort

When the family moved in it was clear there was much work to be done in the house to make every room comfortable - warm in the winter and cool in the summer. Therefore, home comfort was a driver for undergoing retrofit measures to improve the energy efficiency of the property and reduce heat loss.

> "Reducing carbon emissions was our key driver for undertaking the retrofit."
>
> **Jan Rosenow, Cosy Homes client**

Reducing carbon emissions

Alongside this, carbon emissions were the key driver for the family. Jan's profession, working in energy research and advising policy makers on the topic - including on how to retrofit homes - meant that he had a deep knowledge of the environmental impact of our homes. It was important to him that he practiced what he preached, ensuring that his own home was compatible with a net zero carbon emissions future.

What measures were installed?

Jan had already had an air source heat pump (ASHP) installed in his home, a low carbon method of heating which uses warmth from the air to heat the building. They're a much less intensive method of heating than a traditional gas boiler and radiators, running at lower temperatures. Because of this, for air source heat pumps to be effective and inexpensive, it's crucial that the building is also airtight and well-insulated to minimise heat loss. So, Jan's retrofit was focused around exactly this.

They had already installed floor insulation and loft insulation from doing their loft conversion, so additional retrofit measures in this phase included:

- Internal Wall Insulation (IWI) for the front of the house which was previously completely uninsulated, including a bay window space. They chose wood fibre insulation as a natural, sustainable option (see below images).
- Replacing windows with triple glazed where needed, especially older sash windows.
- Replacing the old front door to reduce draughts.

Internal wall insulation

New front door

Air Source Heat Pump

What impact has the retrofit made?

Before the retrofit measures were installed, the family could see a clear difference between parts of their home.

The new build extensions on the ground and first floor were built to modern performance standards and so were definitely warmer and more comfortable to be in, compared to the older parts of the house.

Having now improved the home's insulaton, replacing windows, and draught-proofing the front door, this difference is much less obvious, with the whole house a comfortable temperature throughout.

> "If you want a proper retrofit survey and support with project management and making the right decisions, Cosy Homes Oxfordshire is the way to go."

Of course, all of this is aided by the air source heat pump, which provides a much more constant source of heat.

The combination has also massively reduced the family's heating bills by a huge 60%. This is largely because the home is already well-insulated and retains heat all day long, meaning that they were able to move onto a flexible tariff with their energy provider, which is significantly cheaper. They expect the heat pump will have fully paid for itself through these savings in 6 years time, so the long-term cost savings are clear.

At a glance...

60%
estimated savings on energy bills after retrofit

2 tonnes
of CO2e emissions saved every year after retrofit - from 4.001t to 2.185t*

EPC C
the home went from EPC D to EPC C after retrofit*

**based on 2019 Whole House Plan estimates*

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Get started with your home retrofit transformation

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