

Property Overview

Built: 1990s

Location: St Andrew's Road, central Cambridge

Property type: Terraced

Timeline: July 2021 - June 2024

Meet your hosts: Chris & Linda

We moved into the house in 2015, when our kids were secondary school age, but we are now empty nesters. A professional couple working in tech and academic research, we consider global heating to be exactly what the scientists call it - an emergency. When there's an emergency you change how you do things and what you prioritise.

So, when our old gas boiler sprang a leak that didn't end its life immediately, but would have led to its demise within a year, we decided to come off gas. And so, an Air Source Heat Pump (ASHP) was the only option for us.

The aim was to electrify everything, reduce our carbon footprint and generate as much of our own energy as we could. We did a lot of research and found the Transition Cambridge Energy Group to be a great resource for information and advice.

The Renovations

Our house was built in the late 1990s with double glazing, cavity wall insulation and decent loft insulation. We haven't needed to upgrade any of them.

Back in July 2021, we decided to install a 3kW solar PV array on our rooftop from [Greenscape Energy](#), taking advantage of the then available [Solar Together scheme](#) to purchase the panels at a reduced cost, although we privately financed the installation and kit. Along with the solar panels, we installed a 5kW battery storage and [Ginlong Solis battery inverter system](#) to make the most of the energy we could generate. The full cost of getting this energy generation and storage set up came to £5,500.

Armed with the knowledge that our old gas boiler finally needed replacing, in March 2024 we decided to install an ASHP. This, and all the associated works were completed in June 2024. We were very grateful to get the [Boiler Upgrade Scheme grant](#) of £7,500 towards the £15,000 bill, as we couldn't have afforded it otherwise.



Front of house with roof solar panels

At a Glance

Challenges

- Electrify everything
- Maximise energy self-generation

Benefits

- We're nearly off gas
- We've got a warm house



Chris with the new Air Source Heat Pump

The 7.5kW Vaillant ASHP was installed by [Aira](#) based on a recommendation from a trusted contact. The existing microbore plumbing was no problem, and Aira took care of spec'ing the new radiators, removing and recycling the old ones, and installing the new ones. The water tank and expansion are about 30cm taller than the Megaflow they replaced. We've temporarily lost the airing space above the tank until we put an additional small door to access it.

Aira did a good job on the installation. However, they took a long time after the installation to come back and do a couple of fit and finish fixes (installing a further radiator and levelling the outdoor unit). But they've been ok since.

Performance

The improvements all perform as anticipated. However, we don't let the house cool down overnight as much as we used to when it gets really cold (below zero) as it takes too long to warm up again.

Energy Consumption

Figures for gas use are not available and the house now has extra people living in it. But gas use will have gone down as it is now only used for cooking, not for heating.

Energy Consumption (Electricity only)	Energy kWh/m ² /pa	Carbon kg CO ₂ e/pa	
	Electricity	/m ²	/person
Before Renovation	22.2	3.9	354
After Renovation	44.4	7.9	283

Energy costs vs savings

We didn't undertake the works to save money nor did we calculate the payback periods. We see these improvements in our home and lifestyle as an investment in a sustainable future.

Conclusions

Our aim was to electrify everything and generate as much energy as possible. We are nearly off gas but are holding off installing the induction hob for now. We're thrilled that we are very nearly at our goal and quite happy to finally stop thinking about energy improvements!

Future Plans

When the car dies, we won't replace it. We would much rather be part of a car share scheme and just rent a car when we need one. We aim to increase our battery storage capacity to 10kW and may add further PV panels at some point, but this might be tricky as the roof is an awkward shape.



Hot Water Cylinder

Key Features

- 3kW rooftop solar
- 4 PylonTech US2000c (2.4 kWh) batteries
- [Ginlong Solis](#) battery inverter
- 7.5kW [Vaillant](#) Air Source Heat Pump
- Electric cabling for PV, heat pump & induction hob
- New hot water tank
- New radiators
- Weather compensating thermostat
- Integration with [Havenwise](#)
- OVO Heat Pump Plus tariff
- Plug-in hybrid car

Top Tips

- Sort out the insulation & windows first.
- Visit people with an ASHP or solar PVs to learn about it. Don't believe everything you read, particularly from some quarters of the media.
- Don't feel you have to do *everything* and get to ultra-efficient. Every improvement is a good step forward.

Professional Contacts

Rooftop PV: [Greenscape Energy](#)
Air Source Heat Pump: [Aira](#)