

Macfarlane Close – CB24 9LZ

Thorough well thought out renovation of 1960s detached house with numerous DIY and installer fitted solutions

Meet your hosts, Shaun and Fran

We bought the house in 2011. Family health has always been a goal of mine (Shaun). I wanted to make my home modern and comfortable, but without all the pitfalls like extra energy demands. I have a view to being more self sufficient and not so reliant on the public supply systems (water and energy).

Financial considerations were very important to us but we didn't calculate payback times. We took on each part as finances become available. We self-financed the project with some savings and an extra mortgage. We consider this an investment but equally important is family health and well-being, and also showing an example for our children.

The project has taken several years and been completed in stages, part DIY and partly with local builder Matt Salmon (see contact below). The entire house was addressed, internal walls and floors removed and rebuilt. This has made a huge difference. Pollen and dust is reduced, electric usage is reduced, hot water is mostly free, Parking improved, house temperature improved.

Insulation

We insulated the whole house, installing solid underfloor insulation to new parts, solid reflective insulation to new walls (within cavity), rock wool to the remaining cavity walls, solid reflective insulation behind concrete barge boards on the front wall of the property.

We decided to insulate the floor and ceiling of the loft. We put solid insulation on the attic floor and placed boards over for access. We then fitted advanced insulation in-between the rafters. This has made the roof space semi-warm without any extra heating.

Heating

We have very low heating demand. Cooking at home now heats the entire house, as the Mechanical Ventilation and Heat Recovery unit extracts the waste heat and distributes it as warm air around the house. The MVHR also takes away excess moisture, pollen and dust, as well as ensuring a regulated supply of fresh air, which makes the house more healthy.

We make the most of our solar thermal collector by staggering when we have showers. We have installed a very efficient boiler for the times when we do need some extra heat or hot water. We also have a drying room for wet clothes as the MVHR removes moisture fast.



Blinds in-between the double-glazing panes

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Renewable Electricity

We have a 4 kW PV roof system and most of our electricity consumption is during the day, including use for home working. We also have an electric car, which we charge off the solar panels. The system was installed under the 'rent roof' system. A Shade Greener installed the PV system for free. We get the free electricity and they earn the Feed-in-tariff payments.

On a smaller scale we have PV in the garden and have various battery powered garden tools we can charge using solar electricity. These include a Bosch 37c lawn mower and Bosch strimmer.

Other measures

I (Shaun) have done a lot of the work myself, including laying floorboards made from reclaimed timber and re-using materials from the construction process to build raised beds and a lean-to greenhouse. I built a gravel heat store underneath this with a warm air vent to provide warming during the colder months.

Performance

The house is now 86% efficient, which is about as good as it gets for a 1960's property. Gas usage has been almost zero since the installation of the solar hot water system. There has been a reading increase of 1.5KWh on the gas meter between May and mid August this year, that's about 6p compared to a local average of £59 over the same period (figure source = British Gas).

Electric demand improvements have been complex to estimate due to having an electric car.

What is your top tip?

Sometimes the simplest change can make the biggest difference, and much can be done on a small budget (the cavity wall insulation cost £50 in total). Some expensive features can be cheaper than you think.

What are your future plans?

Yes, depending on funds, UPS (uninterruptable power supply - basically battery backed electric supply), water recycling/grey water and ground source heating (there is a module that plugs directly into the MVHR).

Some cost details

Solar PV was free (rent roof – see above).
Solar Hot water was approx. £4500.
MVHR was about £8000 fitted.

Age, Type: 1962, Renovation, Detached

Wall type: Cavity wall, with part fascia boards to the front elevation

Floor area: 135 sq m.

Project timescale: February 2012 - June 2017. Still working on decoration and outside areas.

Number of people: 2 adults, 3 children

Cost of improvements: £160,000

Energy use: Not done a year to calculate yet.

Key features

- Insulation: Underfloor, cavity wall, under-barge board and loft (floor and ceiling).
- Reflective double glazing.
- Double glaze patio doors include inter-pane blinds to reduce solar gain when needed (see picture).
- LED lighting throughout.
- Heating zones.
- Thermal store for hot water, fed from 'direct feed' solar thermal and high efficiency boiler.
- Mechanical Ventilation and Heat Recovery.
- 4 kW solar PV array.
- Separate solar PV for some garden items.
- Waste building materials from the build re-used in garden structures. Reclaimed wooden floors.
- All outside spaces are soakaways with subterranean drainage installed.
- Underground heat store for recycled lean-to greenhouse.
- Leaf electric car (powered by Solar PV).
- Extension with passive solar gain

Key contacts

Ground work (foundation, front drive and rear landscaping): The Home & Garden Company
Building work (inc electrical and plumbing):

[Salmon & son builders](#), Histon

Solar hot water: [Carmichael-Browns](#)

Solar PV: www.Ashadegreener.com

Kitchen and bespoke furniture:

kestrelfurniture.com

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