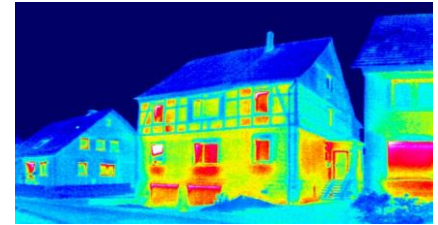


EXPLORING THE OPPORTUNITIES

LOCAL CASE STUDY 2: DRIVE TO CARBON ZERO, 1970s house



PROPERTY	4 bed detached house built in 1970
OCCUPIERS/USE	Family
OBJECTIVE	To reduce carbon emissions to near zero
INSTALLATIONS	2012 Cavity wall and loft installation 2016 8No solar voltaic panels 2.5 kWp 2019 Air source heat pump 11.5 kW (ASHP) – Mitsubishi Ecodan
OTHER	LED lighting throughout A++/A++ appliances More efficient wood burner with catalytic converter Appliance monitoring Behavioural change: appliances off, wearing warm clothing, smart meter monitoring of usage patterns

There was nothing radical about the work and most of the costs were covered by government CERT, FIT and RHI subsidies. Net of subsidies the total capital outlay has been about £3,000 as of 2020.

Although the motivation was to reduce carbon emissions, reducing emissions also reduces energy usage and therefore costs. At 2020 rates, the saving was about £1,300 each year. At the costs of the April 2022 price cap, the saving is more like £2,700 a year.

Some pointers:

- Carbon coated polystyrene beads were used for the cavity wall insulation.
- An A+++ rated appliance typically has a lower lifetime cost than a more energy intensive appliance.
- LED lighting uses only about 1/7th the energy of halogen bulbs.
- Appliance monitoring can point up high energy use by appliances on standby.
- The solar panels produce 2,200 kWh of electricity a year, which covers the non-heat energy demand.
- An air source heat pump needs changes to radiator and hot water systems, as well as a place to house the hot water tank and control systems. An MCS certified supplier can advise on what is required.
- A more efficient wood burner with a catalyst uses less wood and reduces emissions. The wood must be sourced sustainably and be of low moisture content.
- Behaviour change includes lowering the thermostat!

The reduction in carbon emissions has worked out approximately as follows:

Change	kg CO ₂ per year			
	Impact alone	Impact together	Emissions before	Emissions after
Cavity wall and loft insulation	-800		7900	200
Appliances	-600			
Wood burner	-1300	-7100		
Behaviour change alone	-2100			
Air source heat pump	-5500			
Solar PV panels	-600	-600		

97%
reduction

Detailed information is available [here](#).