

People exploring low energy homes

## Virido Concept House

(Lingrey Court, CB2 9JA)

Lorna and Dave

Lorna and Dave won a year's rent-free housing in a [competition run by Hill](#) housebuilders, in return for helping increase understanding of life in a 'Zero Carbon' home. With three children under five, moving from a traditional but draughty older home could have been daunting, but the premise of the 'zero carbon' home is that it's user-friendly.

Lorna says: *'The house is so peaceful thanks to the triple-glazed windows and super-insulated walls; despite being close to a busy road. The air ventilation system is great – the house feels fresh without the need to open windows. It's comfortable, well-designed and family-friendly. I love spending time here.'*

### Overview

**Age:** 2015      **Type:** Semi-detached  
**Wall type:** Insulated panel  
**Floor area:** 135 m<sup>2</sup>  
**Cost of newbuild:** Valued at £550k (not yet sold)  
**Occupants:** 2 adults, 3 children

	Energy kWh/m <sup>2</sup> /yr		Carbon kg CO <sub>2</sub> /yr	
	Elec	Gas	/m <sup>2</sup>	/person
Estimate	36	40	26	697

### Insulation

Walls (insulated panels)  
 Floor insulation  
 Roof insulation

### Glazing

Most windows triple-glazed

### Heating/energy

Mechanical ventilation heat recovery (MVHR)  
 Condensing gas boiler with weather compensation  
 Multi-zone heating controls  
 3.8kW solar PV system

### Lighting/appliances

Low energy lighting: some LEDs, some CFLs

### Water

Low-flow showers, low volume baths  
 Rainwater harvesting



### Low Energy Measures

#### Insulation

The airtight insulated panel construction provides a high level of insulation largely free from thermal bridges and with a low embodied energy.

The panels are 200mm [Kingspan TEK](#) structural insulated panel (SIP), with an additional 50 mm internal insulation layer to minimise thermal bridging, bringing the wall U-value to 0.12W/m<sup>2</sup>K

The floor is insulated with the [Hanson Jetfloor](#) system employing 300mm PIR, U-value 0.12W/m<sup>2</sup>K

The roof insulation is 220mm PIR, U-value 0.10W/m<sup>2</sup>K

#### Glazing

The windows and doors are [Janex](#) aluminium-clad. Most of the windows are triple-glazed with a U-value of 0.8W/m<sup>2</sup>K, and a g-value of 0.6

#### Heating, ventilation and energy

The [Vent Axia](#) Sentinel Kinetic MVHR system circulates air, and gets rid of any humidity, stuffiness, damp and smells. Windows don't need to be

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regularly opened, helping to maintain a pleasant temperature. We just needed to be aware of the 'boost' button which increases air circulation so that bad odours like cooking smells don't linger – always a plus when you have dirty nappies to change! We also need to clean the filter about once a month – a quick rinse under the tap, shake dry and replace. I was amazed to see how much dust and dirt it collected – normally we'd inhale it without realising.

Heating and hot water is supplied by a [GlowWorm](#) condensing boiler with weather compensation and multi-zone heating controls.

We do a lot of clothes washing and when the weather is not so great are very lucky to have our drying room. It's fitted with a dehumidifier to dry laundry as quickly as on a washing line, and is more energy-efficient than an A+ tumble dryer. As it's nicely tucked away in a cupboard, I don't have clothes airers getting in the way and making the house look untidy – that's the children's job!

The shower in the master bedroom has a [Shower Save Recoh-tray](#) which recovers about 40% of the heat which would otherwise be lost down the drain.

There is a 3.8kW [Upsolar](#) PV system, with ballasted mounting on the flat roof.

### Water management

Fittings are all low consumption, with dual flush toilets, low-flow showers and low-volume baths.

I made a discovery in the garden recently (whilst collecting fresh herbs for tea) – if you stand behind the shed you can hear rainwater dripping into the underground tank ready to be used in the house. We are planning to buy a water butt to collect rainwater off the shed roof to use to water the garden.



### Sustainable materials

The house is covered with Metsa Thermowood, FSC-certified timber cladding baked at high temperature to make it rot-resistant and reduce the embodied energy compared with bricks.

### Professional contacts

Developer: [Hill Residential](#)

Solar PV: [Photon Energy](#)

### Suppliers

Timber cladding: [Metsa Thermowood](#)

### Insulation

Wall panels: [Kingspan TEK](#)

Floor: [Hanson Jetfloor](#)

### Heating/energy

MVHR unit: [Vent Axia](#) Sentinel Kinetic system

Condensing boiler: [GlowWorm](#)

Heat-recovering shower tray: [Shower Save Recoh-tray](#)

Solar PV system: [Upsolar](#)