

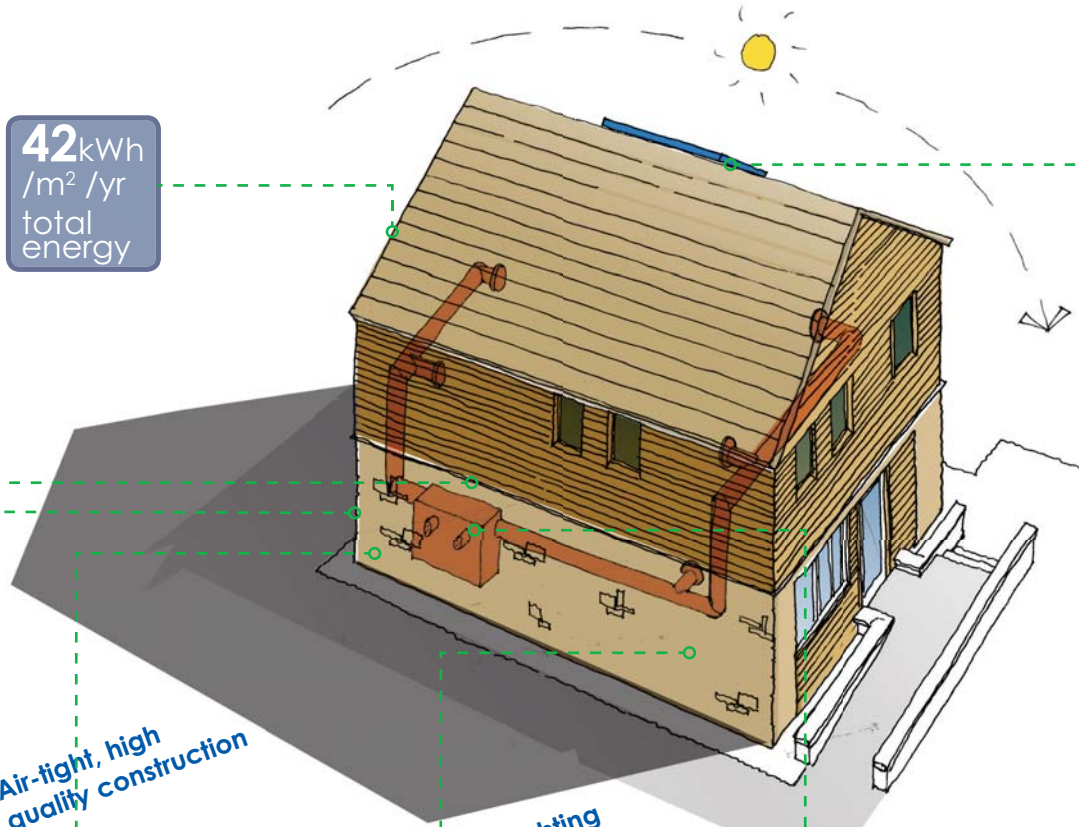
What makes the Demo House special?

It is a combination of the factors listed and explained in greater detail below which makes the Bicester Demonstration House II so very different from the average home in the UK - capable of achieving exceptional energy and CO₂ savings - summarised as 6 key ingredients.

The **6 key ingredients** of green building and how these are applied to the Demo House...

42kWh
/m² /yr
total
energy

0.5
tCO₂ /yr
saving



1. Local, sustainable materials



Lightweight construction is employed which reduces the depth of the concrete foundations which use a mix of recycled aggregates, helping divert waste from landfill.

The structure is constructed from an FSC timber frame closed panel wall system.

FSC timber triple glazed windows and external doors are used throughout.

A combination of locally sourced Bekstone and FSC timber are used for the cladding.

2. Super insulated



170mm of Xtratherm rigid board insulation (with a very low thermal conductivity of 0.022W/m/K) provides walls and roof with a U-Value of 0.1W/m².K - three times better than UK building regulations!

The house also employs clever detailing to avoid any gaps in insulation at connections and junctions where heat might otherwise be lost.

3. Air-tight, high quality construction



The Demo House achieves airtightness of 0.6 Ach/Hr - in line with PassivHaus Standards and 10 times better than current building regulations. This is achieved through considered design and the precise construction of every junction and detail in the building.

To ensure no gaps or cracks every joint was sealed either with sealant or covered with industrial tape.

4. Low energy lighting + appliances



Cutting edge LED lighting provided by local company, Zeta Ltd. is installed throughout.

Rainwater is collected, stored below ground and used in lavatories and washing machines.

A+ or A++ appliances are installed in the kitchen.

Smart metering provides real-time energy data.

5. Mechanical ventilation with heat recovery



Heating and ventilation is provided by the Mechanical Ventilation with Heat Recovery (MVHR) system from Genex. This provides heating, cooling and fresh air year-round with a fraction of the energy of a conventional heating system.

6. Renewable energy generation



A small 4m² array of solar photovoltaic panels (PVs) converts light into electricity (0.5 kWp).

The panels have saved over 0.5 tonnes of CO₂ in their first year, better than predicted which equates to over 30% of the total energy demand.

What is a Passivhaus building?



Passivhaus is a method of building which has been developed in Germany over almost 25 years, and widely reputed as **the** benchmark for low-energy design and construction. Buildings achieving this standard represent a typical 'in-use' energy saving of up to 90%.

The Centre has been designed and built to achieve full PassivHaus Certification and is being certified by InBuilt RES, accredited Passivhaus assessors.

To be comply with PassivHaus standards buildings must adhere to the following criteria:

- Space heating < 15kWh/m²/year
**a 75% saving compared with UK Building Regulations
- Electricity demand must not exceed 120kWh/m²
- Airtightness of 0.6 air changes per hour at 50 Pascals
**an improvement of over 90% on current UK Building Regulations
- U-Values of 0.1 W/m².K for the building fabric
**a 70% improvement compared UK Building Regulations

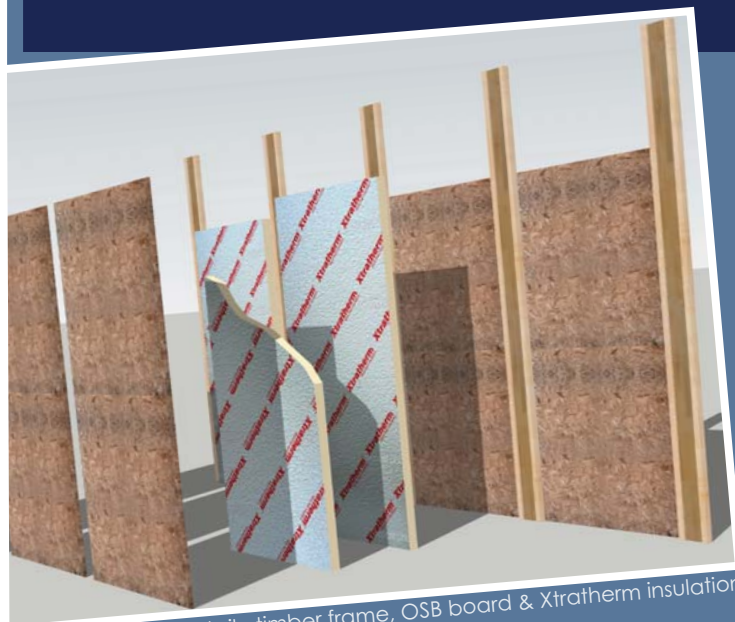


Underhill Passivhaus, Warwickshire - Passivhaus trust UK

For more information please visit the following websites:

Eco Bicester - www.ecobicester.co.uk

BioRegional - www.bioregional.com



Construction detail - timber frame, OSB board & Xtratherm insulation



Eco Bicester
be part of it

P3Eco

BioRegional

solutions for sustainability

Scan this code to find out more information about the Demo House and it's green technologies



Eco Bicester Demo House

A hub for advice and information on green buildings for Bicester community



Demo House, The Garth, Bicester

The Eco Bicester Demonstration House was completed in May 2011 and marks an important moment within a broad range of initiatives being developed as part of Bicester's 'One Shared Vision'.

Built by local company Ardent Construction Ltd. and mutually funded by P3 Eco and Cassadian Homes, the house is located in Garth Park and utilises a range of innovative features which allude to the future of sustainable construction not just for NW Bicester, but across the UK.

The Demo House goes beyond saving CO₂ and energy however, creating a place of learning for all its visitors. The house serves as a resource for the whole community; a full scale example of sustainable building all residents of Bicester can experience.