



Low energy buildings - Case Study: **The BASF House**



Category / year

New construction: nearly zero energy building or better - Small residential (1-2 family houses) / 2007-2008



Address

United Kingdom, Nottingham, Creative Homes Project, University of Nottingham



Contact details

Developer:

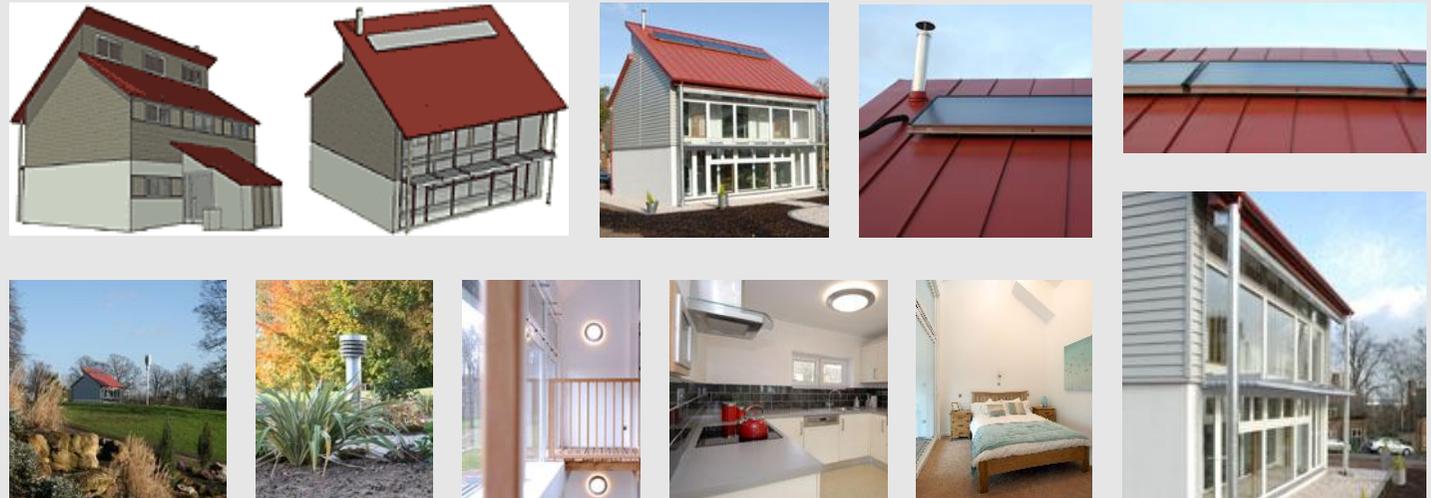
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Pictures





Description of the building

Detailed description:

The BASF House is a 82 sqm 1-family-home which can be extended to a row of terraces on demand. It is currently inhabited by 2 people. A low carbon emissions target was set for the house. Heat requirement reduction was essential, renewables are being used to heat the house and water. The house complies with the Passivhaus standards of 15 kWh/m² and can be called a 1.5 litre house. Materials were selected to balance the cost of building an energy efficient house against the requirement to make the house affordable to a first time buyer, based on whole life performance cost and energy use. Alternative methods of construction instead of traditional brick and block work, reduced building time and need for expensive skilled labour.

The house can achieve comfortable temperatures naturally by combining solar gains, natural ventilation and thermal mass provided by a new Phase Change Material (PCM).

Facing south there is a fully glazed, adjustable two-layer sunspace. The sun warms the air in the sunspace and acts as the primary heating source for the house. Windows between the solar area and the main part of the house can then be opened to enable the warm air to flow around the rest of the house.

Building envelop:

Ground floor: insulated Concrete Formworks (ICFs) made from BASF Neopor® and filled with concrete containing Rheocell®.

First floor and roof: structural Insulated Panels (SIPs) containing Elastopor®. The low carbon roof is made of lightweight steel and coated with a BASF Coatings' coil coating infused with specially-selected heat management pigments which have solar heat reflectant properties. These materials resulted in a U-Value of 0.15 for walls and roof.

Renewables:

An affordable Ground Air Heat and Cooling Exchange system and a biomass boiler to provide an effective, affordable heat and cooling source were incorporated.



Energy consumption

Energy values:

Heating demand: ca. 12.5 kWh/m²/year

Cooling demand: 0 kWh/m²/year

Final energy demand: 12.5 kWh/m²/year (incl. hot water)

Use of renewables:

100 % RES fraction of the energy used for hot water
100 % RES fraction of the energy used for cooling
100 % RES fraction of the total final energy demand (electricity not considered as renewable, even if from renewable supply)



Links

Website illustrating the building:

http://www.energyefficiency.basf.com/ecp1/EnergyEfficiency/en_GB/portal/_content/show_houses/show_houses_uk

