PassiveHouse SOLUTIONS LTD.

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www.passivehouse.co.uk info@passivehouse.co.uk

OKO House by YOUMEHESHE architects

The OKO House

The OKO House is a modular pre-fabricated design aimed initially at the European and North American housing market and to be developed for other global locations. It will be constructed from benign materials produced locally to the site of fabrication and perform to very low/'zero' energy standards. Ideally the house should be CO2 neutral.

The house sets out to meet and exceed the performance criteria for standards set-out in the 'Code for Sustainable Homes' achieving the maximum six star rating, allowing for specific site constraints. It will also meet the minimum criteria for 'Passivhaus UK' design and have overall low primary energy consumption and CO2 emissions. In addition to this the house will accommodate the requirements of 'Lifetime Homes' and have a low impact on its site and surroundings.

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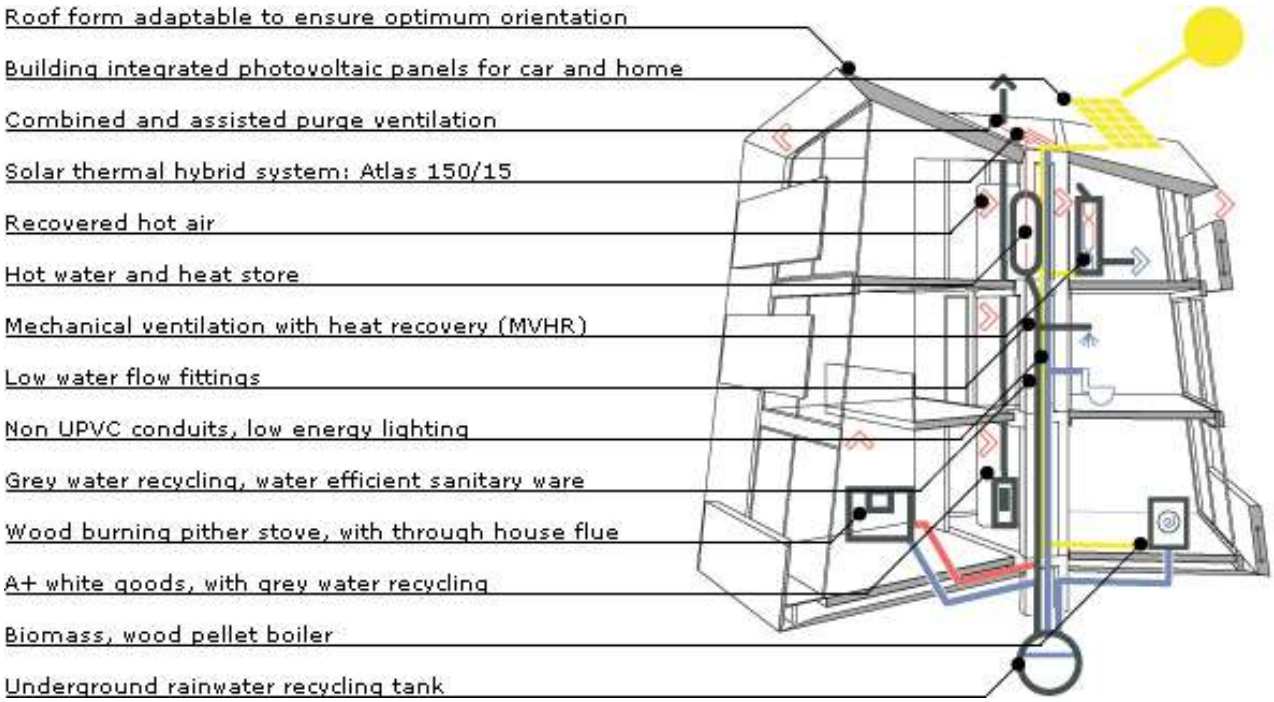
OKO House Energy Performance



Key Energy Performance Targets

The total primary energy use targets for all appliances, domestic hot water and space heating and cooling is for a reduction to a minimum of 85% primary energy use of a standard UK home.

The overall target value for primary energy use is for equal to or less than 58 kWh/m2/yr, with a space heating to utilize a maximum of 15kWh/m2yr for a European house located within latitudes 40-60° north.

Whilst being grid connected for water and electricity, the house will use renewable energy technologies and passive solar design techniques to provide heat and power.

The house will use 100% dedicated low energy light fittings with a minimum efficacy of 40 lumens per circuit Watt. All white goods and appliance will have a minimum 'A' rating.

C02 Emissions

Target CO2 emissions from the house are for a maximum of 4kg/m2yr which equates to a 95% reduction in comparison to a standard UK home.

C02 emissions during construction, comparative to a conventional UK house, will also be reduced through the pre-fabricated method of construction.

The use of timber construction for the frame and cladding of the house will act to sequester a large proportion of the embodied energy for the production of the house?

Site and Orientation

The building/s will be orientated on the chosen site to make maximum use of Passive Solar Design principles with northern hemisphere sites using large south facing windows to allow solar gains modify the internal thermal environment. North facing windows will be of a comparatively reduced size to control heat loss.

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OKO House Building Elements

Façade

The houses will be timber clad using appropriate locally sourced FSC timber with registered chain of custody (CoC).

All components of the exterior shell insulated to achieve a 'U' value that does not exceed 0.14W/m2/K.

Air-leakage through unsealed joints will be less than 0.6 times house volume per hour – c. less than 1m3/hr/m2@50Pa.

Windows

Windows (glazing and frames combined) will have 'U' values of not exceeding 0.80 W/m2/K with solar heat gain co-efficient of around 50%. They will be 'Low-e', triple-glazed, insulated and use FSC timber.

MHRV

Most of the perceptible heat in the exhaust air is transferred to the in-coming fresh air (with a heat recovery rate of over 80%). Please recommend specification.

Materials

All materials include internal fittings, furnishings and structure will be benign and locally sourced from near to the site of fabrication.

Wherever timber is used CoC (Certified chain of Custody) FSC or equivalent timber will be used. This is will also be the case for composite timber materials.

All materials will have low or no VOCs and be produced by certified ISO14001 manufacturers.

All insulation materials used will have a GWP (Global Warming Potential of 5 or less).

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OKO House Ecology

Thermal Mass

The ground floor slab will be made from recycled concrete and aggregates and act as a thermal heat store.

Renewable Energy

Water heating will be from evacuated tube solar collectors using a heat store and photovoltaic pump system, supplemented with biomass heating in the Winter months.

Electrical supply from mono-crystalline PV panels/ or Concentrating Collector Panels with battery storage, supplemented with accredited green grid supply.

Space heating will be provided by Passive Solar Design principles, a biomass boiler, Solar Thermal or GSHP (ground source heat pumps) depending upon the intended location of the house.

Transport

Dedicated, sheltered cycle storage will be provided and external power socket for electric car charging.

Ecology and Biodiversity

The house has an option of a green roof panel or roof garden area depending upon the exact version of the house chosen.

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OKO House Resource Management

Water

Low use water appliances with combined water use of no more than 80 litres per person per day.

Combined rainwater and greywater recycling will provide water for WCs. Rainwater harvesting will also provide water for garden areas as applicable. Do you have specification information for relevant systems?

Waste

Dedicated recycling space will be provided in the homes and wherever possible materials used within the home will be made from recycled or re-used materials. The materials ill also be recyclable or re-useable.

Occupancy Comfort

There are a number of different versions of the house available for different site requirements and conditions. The houses are designed in accordance with the requirements of 'Lifetime Homes'. The houses will be safe and secure and an Occupancy User Guide will be provided.

Metering and Monitoring

Smart meters will be provided to monitor real-time energy use and production of energy from renewable energy technologies

Construction and Demolition

The houses will be 100% recyclable/re-usable. The houses will be built using a Considerate Contractors scheme or equivalent.

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OKO House Development

Why Passivehouse Solutions?

Passivehouse Solutions offer full project support and supply chain management for your OKO House development.

This includes the provision of

UK manufactured Passivhaus FSC Windows and doors.

Mechanical Ventilation with Heat Recovery (MVHR).

Biomass.

CHP.

Photovoltaics

Solar Thermal with Phase Change Material Heat Stores.

Wind Turbines.

Please contact us for further information.