

Using i-SIP Construction to achieve certified Passivhaus



PROJECT	Standings Court
CLIENT	Saxon Weald & Horsham Council
CONTRACTOR	Osborne
ARCHITECT	Miller Hughes
VALUE	£2m
LOCATION	Horsham

“Finalist in the Architectural Design Category of the UK Passivhaus Awards 2014. Redeveloped brownfield site providing 38 homes, of which 12 reach Passivhaus standard; this low energy scheme comprises Code 4 & Code 5 flats and houses. The houses are arranged into a series of terraces that form a coherent street block, optimising orientation and forming ‘green rooms’ around mature trees.”

Source: <http://passivhaustrust.org.uk>



Sustainable, cost-effective homes

As part of its commitment to sustainability the client wanted to build 12 homes that met the Passivhaus standards for energy use and CO2 emissions as well as 26 units that would meet the Level 5 of the Code for Sustainable Homes. The aim was to create homes that provide a high level of comfort whilst being as cost effective to run as possible for the occupant, keeping heating energy below 15kWh/m².yr. This required close collaboration between Innovaré, Osborne, HM Architects and Passivhaus consultants, Warm Associates.

A thermal structure to meet Passivhaus standards

To achieve certified Passivhaus the homes required a structure with exceptionally high amounts of thermal insulation and low levels of air permeability to provide low running costs. In addition, a specific challenge in achieving the standards with all 12 houses included the shading of one block by the other.

Meeting Passivhaus standards requires a 'fabric first' approach providing a structure with exceptionally high levels of thermal insulation and low levels of air permeability. The starting point has to be a construction system with

inherently high thermal insulation and the ability to achieve a thermal bridge free design that can be manufactured to very tight tolerances. The i-SIP System manufactured by Innovaré is ideally suited to these challenges.

Because the i-SIP System of Structural Insulated Panels are made in controlled factory conditions there is enormous flexibility when it comes to design. Panels can be configured exactly as needed without compromising any insulation or air permeability standards. The Passivhaus standard also calls for a mechanical ventilation and heat recovery system. The flexibility of the i-SIP System made it simpler to incorporate the ventilation system into the design.

Innovative and effective designs

The 12 homes met the Passivhaus standard while overcoming additional challenges including the shading of one block by the other and balancing other social housing requirements. The designs developed were regarded as so innovative and effective they were exhibited at Ecobuild later the same year.

The 26 Code Level 5 homes are also highly energy efficient but not having to reach the certified standard reduced costs to increase the affordability of the homes.

Meeting Code Level 5 requirements often means adding expensive renewable energy features. Because the i-SIP System is thermally efficient and precisely manufactured the standards for energy use can be met with conventional heating systems.

All units were delivered on time and to budget.

