



PROPERTY:

AFFORDABLE HOMES

NEW BUILD

PASSIVEHAUS

TECHNOLOGIES USED:

BIO MASS



GAS BOILERS



INSULATION



LOCATION: OUTWELL, NORFOLK



Natural
Building
Technologies

The project

Natural Building Technologies were asked to provide insulation materials for a number of affordable homes in the village of Outwell. Hastoe Housing Association were approached by the local district council to develop 15 affordable homes to passive house standard.

John Lefever of Hastoe commented on the affordability of the properties "We have to charge what's called affordable rents, which are slightly higher than the old social rents. So our board took the view – is there any way we can offset this? The obvious way forward is to deliver something that will ensure that [residents] fuel costs are much lower than normal. Hence passive house."

The project was initiated with a people first approach. Thinking about the needs of the inhabitants, the materials were chosen in response.

Specification

Natural Building Technology's Pavatex wood fibre insulation was selected for use in the project, with 100mm of Pavatherm-Plus installed over a 140mm deep insulated timber frame. The thermal performance of building envelopes are primarily based on three main factors: U-values, airtightness and Y-values. The latter two can be improved at no cost to reduce the U-value requirement and wall thickness, eventually reducing overall cost.

The insulation was installed both within and over the timber frame to ensure thermal continuity through the immediate floor zones. Wrapping the timber frame with woodfibre not only provides better U-values but also minimises thermal bridging at floor junctions, around windows and at other similar junctions where insulating between the frame is impossible.

Benefits

The properties achieved EPC ratings of B83-B86 with average space heating demands of 9 kWh/m² per year. Primary energy use was around 105 kWh/m² year. The homes achieved an average Airtightness Level (at 50 Pascals) of 0.57 ACH. The homes benefited from low U values with the walls, roof and floor achieving U-values of 0.137 W/m²K, 0.105 W/m²K, and 0.17 W/m²K respectively.



"The way we approached it was to keep it as simple as we can, use tried and tested products and material, keep the building footprints as tight as they could be to meet the housing association requirements and not put lots of fancy bolt-ons on"- David Thompson, Architects Ingleton Wood