

CAMPION HOMES / SCOTFRAME SCOTTISH PASSIVE HOUSE CENTRE

Val-u-Therm Passivhaus Standard Block 6

1 x 3 Bedroom General Needs House



With previous success of constructing certified Passivhaus homes, Campion Homes Ltd were keen to put their experience to good use at the Housing Innovation Showcase 2012.

Using Scotframe's Val-U-Therm Timber Frame technology, certified Passivhaus Designers, Oliver and Robb Architects were able to demonstrate the suitability of the Passivhaus standards as an appropriate methodology to deliver a sustainable and cost effective housing system that is suitable for the affordable and private markets.

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Campion Homes Ltd opted for a fabric first approach and invested in the Val-U-Therm wall, roof and floor panels, which will last the life of the building and are durable for a minimum of 60 years. This approach avoids renewable technologies, that need continual control by the occupants, frequent maintenance and certain replacement during the life time of the property.

Peter Bell, Managing Director of Campion Homes explains... *“At Campion Homes we wanted to demonstrate that using modern methods of construction, in particular large closed panel timber frame, it was possible to achieve energy efficient homes of the highest standards without relying on renewable technologies and which would meet public and private sectors requirements at reasonable cost”*.

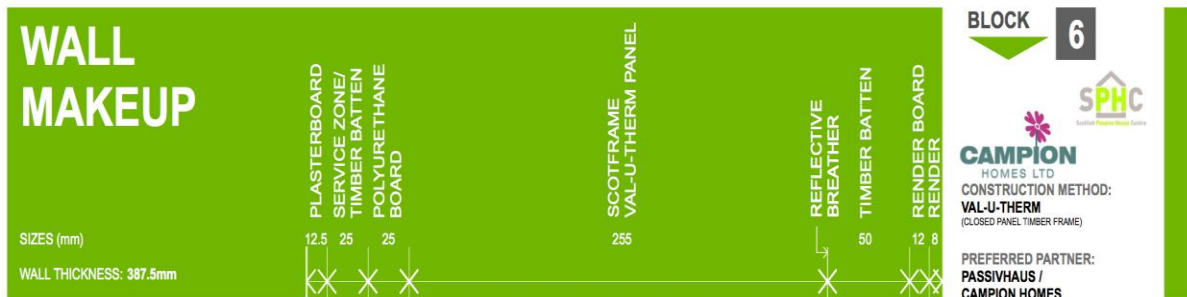
The benefits of a Passivhaus home constructed using the Val-U-Therm system with factory fitted windows and doors with exceptional thermal properties, is a complete package that provides warm, draught-proof homes with a high air quality and comfort value.

The main characteristics of the Passivhaus at Dunlin Drive Dunfermline are:-

- Building's shape and orientation optimised to reduce heat loss and maximise solar gain.
- Super insulated building fabric.
- Thermal bridge free design.
- **Reduced ventilation heat loss with an air tight envelope to less than $0.6h^{-1}$ @ 50Pa.**
- Continuous fresh air from the highly efficient mechanical ventilation and heat recovery system.
- Greatly reduced heating demand to less than 15KWh/m²/year.
- Reduced primary energy demand to less than 120KWh/m²/year.

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DESIGN OUTPUTS	PLOT 18 Passivhaus
CONSTRUCTION	Closed Panel Timber Frame
GROSS INDICATIVE FLOOR AREA M²	93.96
AVERAGE SUPERSTRUCTURE COSTS PER UNIT (INCLUDING RENEWABLES / EXCLUDING PRELIMS)	£99,613
AVERAGE M² SUPERSTRUCTURE COSTS PER UNIT	£1,060
CONSTRUCTION PERIOD (SUPERSTRUCTURE)	NUMBER OF WORKING DAYS OFF / PRE SITE : 2
	NUMBER OF WORKING DAYS ON SITE : 63
PASSIVE HOUSE PLANNING PACKAGE (PHPP) CALCULATION	
Based on the PHPP Calculation, the following data has been verified:	
SPECIFIC HEAT DEMAND	16 kWh/(m ² a)
PRESSURISATION TEST RESULT	0.56h ⁻¹
SPECIFIC PRIMARY ENERGY DEMAND	111 kWh/(m ² a)
HEAT LOADING	8W/m ²
COOLING LOAD	6W/m ²
FREQUENCY OF OVERHEATING	6% over 25°C



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DESIGN OUTPUTS	PLOT 18 Passivhaus
SAP RATING (BASED ON 2009 SAP)	86B
CO2 RATING (BASED ON 2009 SAP)	89B
U VALUES	
WINDOWS	0.8
DOORS	1.0
EXTERNAL WALLS	0.1
FLOORS	0.15
ROOF	0.1
RENEWABLES	N/A
ELECTRICITY GENERATED	N/A
AIR PERMEABILITY (at Design Stage)	0.6
AIR PERMEABILITY (Actual)	.54
VENTILATION SYSTEM	Mechanical Ventilation Heat Recovery (93%)
BOILER EFFICIENCY	88.8%
ENERGY USE	
SPACE HEATING (KWH/YEAR)	1069.53
WATER HEATING (KWH/YEAR)	2647.80
LIGHTING (KWH/YEAR)	412.73
ANCILLARY (KWH/YEAR)	397.89
TOTAL (KWH/YEAR)	4527.95
ENERGY COST	
SPACE HEATING (£/YEAR)	£33.16
WATER HEATING (£/YEAR)	£82.08
LIGHTING (£/YEAR)	£44.15
ANCILLARY (£/YEAR)	£145.79
TOTAL ENERGY COST (£/YEAR) EXCLUDING SAVING FROM ENERGY GENERATED	£305.18

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