

Object name

Canolfan Hyddgen**United Kingdom**

Object photo



Object description

Canolfan Hyddgen is a building used for multiple tenants and occupancy; school, night classes, adult learners, meeting rooms and a drop in centre and council service point. JPW adopted a hybrid approach of a central masonry core with an external solid timber frame and I-beam cassette roof. A Proclima air tightness / breathable membrane system was incorporated into the timber frame which, together with the on-site management practices, ensured a pleasing and compliant permeability result: $n_{50} = 0.249 -1 @50Pa$.

Although Mid Wales experiences quite a mild climate, solar gain values tend to be lower than other parts of the UK due to overcast conditions. This meant high insulation values and large glazing areas had to be maintained. This enhanced natural daylighting levels but also had the potential for summer overheating. In the end it was internal gains from framework and IT equipment which was highlighted as the real overheating issue. To compensate, the lighting design was pushed below $10 W/m^2$ with extensive daylight balancing and PIR controls. The result was $5 kWh/m^2a$.

A decentralised ventilation system incorporating 5 Drexel & Weiss Aerobusiness Units with timer and PIR controls was favoured due to the multiple and varied occupancy. Auxiliary space heating is supplied by a 24-9kW low NOX gas boiler, the heat being distributed by radiators with TRV and more accurate thermostats and zone control. A robust delivery system was preferred by the client and has shown very good efficiency, heating the whole building very easily through Wales' coldest winter for 30 years.

Fact sheet

Office development in Wales

Treated Floor Area	335.9 m ² each
Number of homes	N/A
Completion date	2008

Energy standard [PHPP]

Heat requirement / year	5 kWh/m ² a
Heat load	12 W/m ²
Primary energy requ.	<120 kWh/m ² a
Air-tightness (n_{50} -value)	0.25 1/h
Building type	Timber & masonry hybrid

U-value

Exterior wall	0.183W/m ² K
Roof	0.125 W/m ² K
Basement floor /	0.122 W/m ² K
Floor slab	
Windows / average	0.78 W/m ² K

Specification ventilation system

5 Drexel & Weiss Aerosilent Business

Heating installation

Broag low NOX condensing Gas boiler

Construction costs Basic 1537 Euro/m²**Building owner**

Powys County Council

Architect/Planner

John Williamson, JPW

Photo credits

John Williamson