Passive House Drumderry

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Building Type : Isolated or semi-detached house
Construction Year : 2016
Delivery year : 2016
Address 1 - street : Drumderry, Bunclody Y21 K8X3 CO. WEXFORD, Ireland
Climate zone : [Cbc] Mild, dry winter, warm and wet summer.

Net Floor Area : 227 m^2 Other
Construction/refurbishment cost : 330 000 €
Number of Dwelling : 1 Dwelling
Cost/m2 : 1453.74 €/m^2

General information

The project brief was to design a CertifiedPassive House on a sloping site in Drumderry. The dwelling is approached frombelow. This family Bungalow achieved Passive House Certification and the Bungalow also has a Irish BER of A1 @ 6.73 kWh/ m2/ yr (Audited result).

This is a single storey family house located in the Irish countryside. The design is contributing minimal impact on the surrounding landscapes, taking advantage of natural daylight and optimising the free heat from the sun.

See more details about this project

https://www.winkens.ie/passivebc02.htm

Photo credit

Winkens Archiecture

Stakeholders

Contractor

Name : Sean O'Brien, General Contractor
Contact : Sean O Brien, Ballynastraw, Bunclody, Co. Wexford, Ireland

Construction Manager

Name : Winkens Architecture
Contact : Zeno Winkens, architect MRIAI
https://www.winkens.ie

Stakeholders

Function : Environmental consultancy
Andrew Lundberg

Andrew Lundberg, andrew@passivate.ie

Http:///www.passivate.ie
Passive House Designer

Contracting method

General Contractor

Type of market

Realization

If you had to do it again?

The builder was not used to building low energy dwellings. He was a good builder and needed quite some tutoring. Some of this torturing should have been done earlier in the build.

Building users opinion

We wanted and got a Passive House. The design works well and comfort levels are high throughout the Year.

Energy

Energy consumption

Primary energy need : 40,00 kWhpe/m^2.year
Primary energy need for standard building : 40,00 kWhpe/m^2.year
Calculation method : Other
Breakdown for energy consumption : Annual heating demand 16 kWh /(m2a)
Heating load 10 W/m2
According to PHPP

Envelope performance

More information :
Exterior wall:
Fully insulated cavity wall, with 250 mm expanded polystyrene injected into cavity
U-value = 0.129 W/(m2K)

Basement floor / floor slab:
Concrete floor slab insulated with 300 mm rigid insulation.
U-value = 0.107 W/(m2K)
Roof:
Timber roof construction insulated with 420 mm mineral wool insulation.
U-value = 0.084 W/(m2K)

Frame:
GUTMANN AG, MIRA therm 08
Timber frame with insulation and external aluminium shell
U w-value = 0.87 W/(m2K)

Glazing:
Saint-Gobain glass, CLIMATOP LUX
Triple glazing 52 mm. Glass type 4(6)Gr- safety tempered glass. Warm edge spacer swisspacer.
U g-value = 0.6 W/(m2K)
g -value = 62 %

Entrance door
Solid insulated door
U d-value = 0.86 W/(m2K)

Indicator : n50
Air Tightness Value : 0,57

More information

With the PV installation, the house needs only 6.73 kWhpe /(m2a).

Real final energy consumption

Final Energy : 6,73 kWhfe/m^2.year

Renewables & systems

Systems

Heating system :
- Geothermal heat pump

Hot water system :
- Heat pump

Cooling system :
- No cooling system

Ventilation system :
- compensated Air Handling Unit

Renewable systems :
- Solar photovoltaic
- Heat pump (geothermal)

Other information on HVAC :
Ventilation :
Brink Climate Systems B.V., Renovent Excellent 300 (Plus)
Heat recovery ventilation system supplying fresh air to all living rooms and extracting from all wet rooms. Effective efficiency of 84%

Heating installation
Air to water heat pump used to underfloor heating distribution.

Domestic hot water
Direct electric water heater from PV panels with air to water heat pump contribution.

24.4 sq.m. of PV panels installed on the roof with an annual electricity yield of the inverter of approx 3678 kWh/a

Solutions enhancing nature free gains :
Reception rooms orientated due south fro solar gain.

Environment

Urban environment

Green field Site in rural Ireland. Slightly hilly area.

Land plot area : 6 500,00 m^2
Built-up area : 4,00 %
Green space : 5 500,00

Products

Product

Heat pump

Unipipe.ie / Nibe

Unipipe

https://www.unipipe.ie/
Product category : HVAC, électricité / heating, hot water
Heating system:
Air to water heat pump NIBE F2040 used to underfloor heating distribution.
Hot water , direct electric water heater from PV panels with air to water heat pump contribution.

The stake holder were happy

Brink MHRV

BRINK

BRINK

https://www.brinkhrv.com/

Product category : HVAC, électricité / ventilation, cooling

Ventilation:
Brink Climate Systems B.V., Renovent Excellent 300 (Plus)
Heat recovery ventilation system supplying fresh air to all living rooms and extracting from all wet rooms. Effective efficiency of 84%

The stakeholder were happy.

External; Windows and Doors

True Windows

True Windows

http://www.truewindows.ie/

Product category : Finishing work / Exterior joinery - Doors and Windows

Windows:
GUTMANN AG, MIRA therm 08, Timber frame with insulation and external aluminium shell
U w-value = 0.87 W/(m2K) Glazing Saint-Gobain glass, CLIMATOP LUX, Triple glazing 52 mm. Glass type 4(6)Gr- safety tempered glass.
Warm edge spacer swisspacer. U g-value = 0.6 W/(m2K) g -value = 62 %

The stakeholder were happy.

PV Array

Solarelectric.ie

Paul Murphy

https://www.solarelectric.ie/

Product category : Finishing work / Electrical systems - Low and high current

Electricity:
24.4 sq.m. of PV 15 panels installed on the roof with an annual electricity yield of the inverter of approx 3678 kWh/a

The stakeholders were happy

Insulation Floor

Hytherm

Hytherm

https://www.xtratherm.com/

Product category : Structural work / Passive system

Floor:
Strip foundation, concrete floor slab insulated with 300 mm rigid insulation EPS100. 65mm Sudanit 280 Fast
Screed U-value = 0.107 W/(m2K)

The stakeholder were very happy with the products

Insulation Wall

Thermobead

Bunclody Insulations

Product category : Management / Others

Walls: Fully insulated cavity wall, with 250 mm expanded polystyrene (bonded bead) injected into cavity
U-value = 0.129 W/(m2K)

The stakeholder were happy.

Insulation Ceiling

Isover

Isover

https://www.isover.ie/

Product category : Management / Others

Roof:
Slated, timber roof trussed construction insulated with 420 mm Isover Heat shield, mineral wool insulation.
U-value = 0.084 W/(m2K) ceiling with suspended service cavity.

The stake holder were happy

Thermal Bridging

Passivate

Abdrew Lundberg

http://www.passivate.ie/
Product category : Structural work / Passive system
Thermal bridging:.
Mix of Irish ACDs, Quinn lite certified details and bespoke. First 2 course of Quinn Lite blocks, low thermal conductivity teplo cavity wall ties. Calculated Y-factor (W/m2K) 0.019

The stakeholders were happy.

Costs

Construction and exploitation costs

Total cost of the building :330 000 €

Health and comfort

Indoor Air quality

A MHRV system is installed.

Contest

Reasons for participating in the competition(s)

Drumderry, Bunclody, Co. Wexford - Ultra Low Energy House (new build)

Architect: Zeno Winkens MRIAI of Winkens Architecture

More project photos can be found at the following link: https://www.winkens.ie/passivebc02.htm

Specification:

Walls 450mm, consisting of 100mm concrete block work outer leaf,

250mm cavity bonded bead 0.0343W/mK + Teplo ties and 100mm internal leaf concrete block work

with Quinn Lite B5 at perimeter floor slab and wall plate.

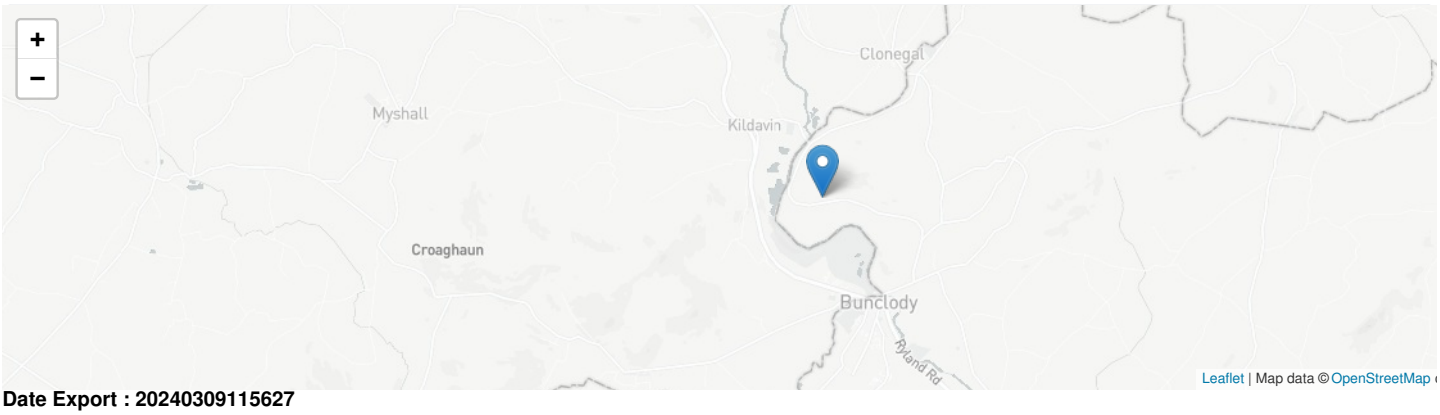
Floor Expanded Polystyrene (EPS 100) 0.033W/mK 300mm thick under slab normal strip foundations)

Ceiling 420mm Isover heatshield 0.035 W/mK
Windows Alucald Timber triple glazed argon filled
Heating system Air to water geothermal under floor heating system. Nibe VVM 320
Secondary heat source 1 closed timber stove closed glass door.
Solar Panels Solar photovoltaic array 3.75kW
Ventilation Brink Excellent 400 Heat recovery system ...
Lighting Low energy light bulbs CFL's or LED Bulbs

?The design is simple but with a few interesting features. The living room and Kitchen dinner are three steps lower than the rest of the house and are angled due south. The bedrooms to the left of entrance hall is curved and has a window at the end. A low energy home

Energy & Temperate Climates

Users' Choice



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