


## Passive House Drumderry

by [Zeno Winkens](#) / 2019-06-17 18:26:11 / International / 6475 / EN

**New Construction**



**Primary energy need :**

40 kWhpe/m<sup>2</sup>.year

(Calculation method : Other )

**ENERGY CONSUMPTION**

*Economical building* *Building*

< 50	<b>A</b>
51 à 90	<b>B</b>
91 à 150	<b>C</b>
151 à 230	<b>D</b>
231 à 330	<b>E</b>
331 à 450	<b>F</b>
> 450	<b>G</b>

*Energy-intensive building*

**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<sup>2</sup>  
**Construction/refurbishment cost** : 330 000 €  
**Number of Dwelling** : 1 Dwelling  
**Cost/m2** : 1453.74 €/m<sup>2</sup>

**Certifications :**



**Proposed by :**

winkens  
architecture

### General information

The project brief was to design a Certified Passive House on a sloping site in Drumderry. The dwelling is approached from below. This family Bungalow achieved Passive House Certification and the Bungalow also has a Irish BER of A1 @ 6.73 kWh/ m<sup>2</sup>/ 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 Architecture

## 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](http://www.passivate.ie)

Passive House Designer

### Contracting method

General Contractor

### Type of market

Table 'c21\_germany.rex\_market\_type' doesn't exist

### 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 tutoring 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<sup>2</sup>.year

**Primary energy need for standard building** : 40,00 kWhpe/m<sup>2</sup>.year

**Calculation method** : Other

**Breakdown for energy consumption** : Annual heating demand 16 kWh/(m<sup>2</sup>a)

Heating load 10 W/m<sup>2</sup>

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/(m<sup>2</sup>K)

Basement floor / floor slab:

Concrete floor slab insulated with 300 mm rigid insulation.

U-value = 0.107 W/(m<sup>2</sup>K)

Roof:

Timber roof construction insulated with 420 mm mineral wool insulation.

U-value = 0.084 W/(m<sup>2</sup>K)

Frame:

GUTMANN AG, MIRA therm 08

Timber frame with insulation and external aluminium shell

U w-value = 0.87 W/(m<sup>2</sup>K)

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/(m<sup>2</sup>K)

g -value = 62 %

Entrance door

Solid insulated door

U d-value = 0.86 W/(m<sup>2</sup>K)

Indicator : n50

Air Tightness Value : 0,57

## More information

With the PV installation, the house needs only 6.73 kWhpe/(m<sup>2</sup>a).

## Real final energy consumption

Final Energy : 6,73 kWhfe/m<sup>2</sup>.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 for solar gain.

## Urban environment

Green field Site in rural Ireland. Slightly hilly area.

Land plot area : 6 500,00 m<sup>2</sup>

Built-up area : 4,00 %

Green space : 5 500,00

## Products

### Product

Heat pump

Unipipe.ie / Nibe

Unipipe

<https://www.unipipe.ie/>

**Product category :** Table 'c21\_germany.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '18'

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 :** Table 'c21\_germany.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '19'

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 :** Table 'c21\_germany.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '10'

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 :** Table 'c21\_germany.innov\_category' doesn't exist SELECT one.innov\_category AS current,tw innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '31'

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.xratherm.com/>

**Product category :** Table 'c21\_germany.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '8'

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 :** Table 'c21\_germany.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '29'

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 :** Table 'c21\_germany.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '29'

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/>

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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.

## 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)

- Irish BER of A1 and assive House Certification
- minimal impact on the surrounding landscapes
- taking advantage of natural daylight
- optimising the free heat from the sun

### Building candidate in the category



Energy & Temperate Climates



Users' Choice

