

**Address**

Provinciaal domein Puyenbroeck  
Puyenbrug 1a  
9185 Wachtebeke

**How to get there**

Car:  
- E17, exit 11 Lochristi  
- E34-N49, exit Zelzate  
public transport: bus nr 76 (Ghent)

**Year of building**

2011

**Floor space**

640 m<sup>2</sup>:  
main building: 458 m<sup>2</sup>  
sanitary block: 182 m<sup>2</sup>

**Units**

1

**Number of floors**

1

**Building owner**

Provincie Oost-Vlaanderen

**Supervision**

**Architect**

AIKO architecten & ingenieurs

**Technical building services**



Photo: Maarten Marchau

**Characteristics of energy demand (PHPP)**

Heat energy demand:	11 kWh/(m <sup>2</sup> a)
Primary energy demand:	kWh/(m <sup>2</sup> a)
Cooling energy demand:	kWh/m <sup>2</sup> a

**Construction** (assembly and U-value)

Floor: U-value: 0.14 W/m<sup>2</sup>K

- concrete floor slab: 20cm
- PUR insulation: 20cm
- screed: 6cm
- ceramic tiles

Exterior wall: U-value: 0.12 W/m<sup>2</sup>K

- Façade brick: 10cm
- cavity: 2cm
- phenolic insulation: 18cm
- calcium silicate blocks: 20cm
- plaster: 1.5cm

Windows

U<sub>w</sub>-value: 0.78 W/m<sup>2</sup>K

U<sub>g</sub>-value: 0.6 W/m<sup>2</sup>K, g-value =0.63

Window frames: wood + PUR

Glass: triple glazed, plastic spacer

Roof U-value: 0.11W/m<sup>2</sup>K

- EPDM membrane
- phenolic insulation: 20cm
- concrete deck (slope): 5cm
- concrete: 18cm
- plaster: 1.5cm

**Technical building services** (concept and components)

Ventilation

Forced ventilation with heat recovery wheel

The fresh is preheated/cooled using a ground heat exchanger

Heating

Condensing gas boiler

Low temperature convectors

Domestic hot water

Tankless condensing gas heater

Electric supply

Public grid and photovoltaic

**Specification**

- The building consists of two separate blocks: an office block/visitor center and a sanitary block. The visitor center has been built according to the passivhaus standard.
- The building is built using traditional building techniques of the region i.e. massive cavity walls, concrete roof.
- The windows are predominantly orientated to the south to allow maximum solar gains in winter. To prevent overheating in summer, blinds have been installed on the outside.
- To prevent air leaks and ensure the strict passive house air tightness rules are met, the building was designed as a box in a box. Most of the electrical outlets, plumbing, etc. has been installed in the inner walls, rather than outside walls. This, combined with the airtight calcium silicate blocks, plaster, applying of tapes around the window frames, has lead to an air tightness rate of 0.14 1/h, well below the passivhaus standard of 0.6 1/h.
- Forced ventilation with heat recovery is used to provide fresh air to the different rooms. The fresh enters the building via a ground heat exchanger.



Additional images



photo: Maarten Marchau



photo: Maarten Marchau



photo: Maarten Marchau

### Sources

[1] Author/editor (year): Title, URL (date)

[2] Author/editor (year): Title, edition, place, publisher, page

[3]

[4]

### Further information sources

Tine van Besien, AIKO architecten en ingenieurs

Responsible person and institution (name, date)