Address

Provinciaal domein Puyenbroeck Puyenbrug 1a 9185 Wachtebeke

Year of building

2011

Floor space

640 m2:

main building: 458 m2 sanitary block: 182 m2

Units

1

Number of floors

1

Building owner

Provincie Oost-Vlaanderen

Supervision

Architect

AIKO architecten & ingenieurs

Technical building services

How to get there

Car:

- E17, exit 11 Lochristi
- E34-N49, exit Zelzate

public transport: bus nr 76 (Ghent)



Photo: Maarten Marchau

Characteristics of energy demand (PHPP)

Heat energy demand:	11 kWh/(m²a)
Primary energy demand:	kWh/(m²a)
Cooling energy demand:	kWh/m2a

Construction (assembly and U-value)

Floor: U-value: 0.14 W/m2K

concrete floor slab: 20cmPUR insulation: 20cm

screed: 6cmceramic tiles

Exterior wall: U-value: 0.12 W/m2K

- Façade brick: 10cm

- cavity: 2cm

phenolic insulation: 18cmcalcium silicate blocks: 20cm

- plaster: 1.5cm

Windows

Uw-value: 0.78 W/m2K

U_g-value: 0.6 W/m2K, g-value =0.63 Window frames: wood + PUR Glass: triple glazed, plastic spacer

Roof U-value:: 0.11W/m2K

- EPDM membrane

phenolic insulation: 20cmconcrete 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



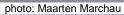




photo: Maarten Marchau









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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)





