

Multi-use: Grégoire-Opdebeeck in Brussels BE

PROJECT SUMMARY

Conversion and renovation of an old laundry to residential and office space in two phases:

- Insulation and solar collectors
- PV installation

Primary energy reduced 70% !

SPECIAL FEATURES

16 m² Solar thermal collectors
41 m² PV installation

ARCHITECT

Modelmo Office
Marc Opdebeeck

OWNERS

Mrs Grégoire and Mr Opdebeeck



IEA – SHC Task 37

Advanced Housing Renovation with Solar & Conservation



Before



After

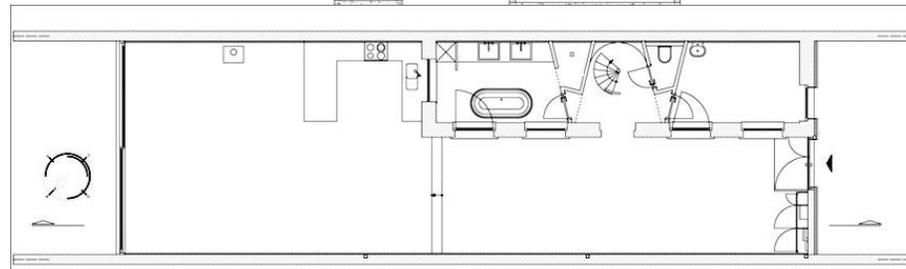
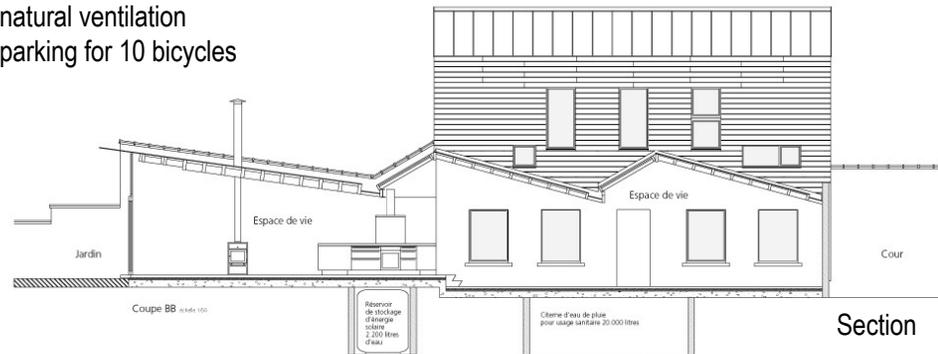
SUMMARY OF THE RENOVATION

- House on the street :
 - 440 m² residential
 - heating by radiators
- House to the rear :
 - 200 m² residence
 - 16 m² solar panel type CPC with 2200 L storage
 - Radiant floor heating in all rooms
 - wood-stove
- In common:
 - regulation-system type Consolar 601
 - natural ventilation
 - parking for 10 bicycles

BACKGROUND

Until the 1960's the building was an old laundry behind the main house.

This structure has been converted to an architectural and a graphic office on the ground-floor facing the street with apartments above and to the rear is a very low-energy house.



Ground floor



CONSTRUCTION

Floor construction U -value: $0.49 \text{ W}/(\text{m}^2 \cdot \text{K})$

Ceramic tile	10 mm
Screed	80 mm
Insulation	70 mm
Concrete	120 mm
Total	280 mm

Wall construction U -value: $0.20 \text{ W}/(\text{m}^2 \cdot \text{K})$

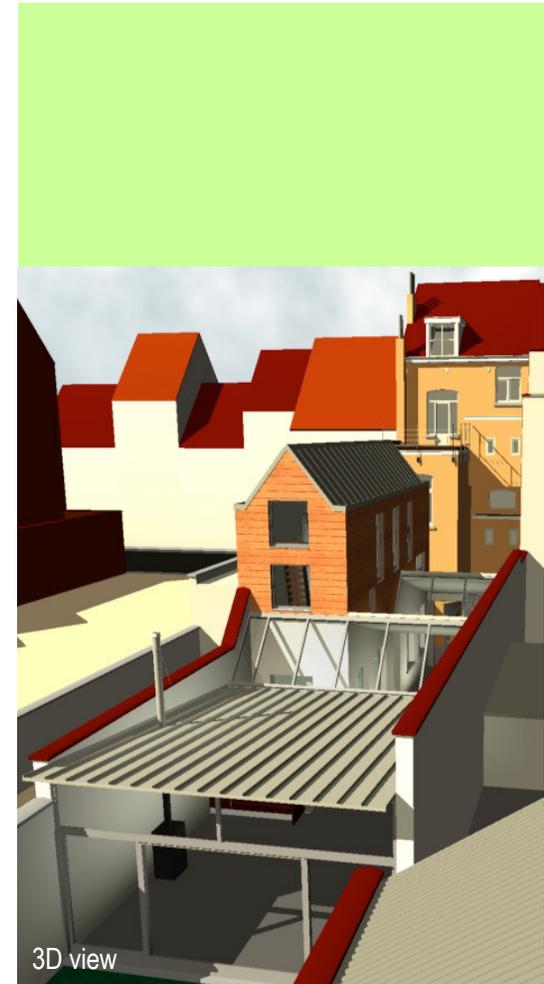
(interior to exterior)

Interior plaster	15 mm
Celulose	200 mm
Traditional masonry (existing)	300 mm
Total	515 mm

Main roof construction U -value: $0.21 \text{ W}/(\text{m}^2 \cdot \text{K})$

(top down)

Zinc roof with cleats	0.8 mm
Mineral wool panels	240 mm
Still air space	25 mm
Plaster	15 mm
Total	280 mm





Summary of U-values W/(m²·K)

	Before	After
Ground floor	3.65	0.49
Walls	2.12	0.20
Roof	3.0	0.21
Windows	2.6	1.10

BUILDING SERVICES

Phase I (2002-03):

- Insulation house to the rear
- 16m² solar thermal collectors
- 2200 l thermal storage tank

Phase II (2008):

- PV-installation
 - 23 m² on the roof of the main house
 - 18 m² in the garden
- estimation total production: +/- 5550 kWh/year

RENEWABLE ENERGY USE

- 16 m² solar panel
- 20 m³ water tank
- 41 m² PV installation

ENERGY PERFORMANCE

before renovation

		kWh primary energy
Heating (gas)	180 kWh/ m ² / a	x 1.1 = 198
Hot water (gas)	28 kWh/ m ² / a	x 1.1 = 31
Electricity	16 kWh/ m ² / year	x 2.7 = 43 P
Total	224 kWh/ m²/ year	272

after renovation

Heating (gas)	52 kWh/ m ² / a	x 1.1 = 57
(wood)	4 kWh/ m ² / a	x 0.2 = 1
(gas)	12 kWh/ m ² / a	x 1.1 = 13
(wood)	4 kWh/ m ² / a	x 0.2 = 1
Electricity (grid)	4 kWh/ m ² / a	x 1.1 = 4
Electricity (PV)	8 kWh/ m ² / a	x 0.7 = 6
Total	82 kWh/ m²/ a	82

Reduction Primary Energy*: 70 % *PHPP 2007

INFORMATION SOURCES

Architect M. Opdebeeck
www.modelmo.be

Brochure author

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 B. Vanden Breede