RENEW SCHOOL

KALMTHOUT KINDERGARTEN

In the middle of a green area a new kindergarten was built in 2014 to replace the old prefabricated school. The main energy related target was the attainment of the passive house standard, since the building was used as a study project for the Flemish government.
The building contains 4 classrooms on the ground level. These are grouped in sets of two around an entrance and toilets. On the first level there is one class for elementary school, a dining room and a hall for different purposes.



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RENEW SCHOOL

GENERAL INFORMATION

Location:	Kalmthout, Belgium
Project type:	New building
Net cost:	2,16 million EURO
Main contractor:	DCA Beerse
Architect:	B-architecten
Building owner:	Basisschool Zonnekind
Gross floor area:	753 m^2
Number of storeys:	2
Construction time:	2010 - 2014

FINANCING

70 % payed by AGIOn and 30 % payed by the building owner Basisschool Zonnekind.

AWARDS / CERTIFICATES

The project was selected by the Flemish government as one of the 25 pilot projects for passive school building.

TECHNICAL SOLUTIONS AT A GLANCE

- Passive house standard
- Partially prefabricated timber facade
- Mechanical ventilation with 83 % heat and moisture recovery
- Earth-air heat exchanger (EAHX)

ENERGY DATA / SUPPLY

The kindergarten was built as a passive house building, with a calculated final heating demand of 13,34 kWh/m^2GFAa.
If cooling should be necessary, only 2,01 kWh/m^2GFAa would be used.

Air is supplied from an earth-air heat exchanger (EAHX) of 6 tubes of 45m with a diameter of 300mm.
During winter one small condensing heater on natural gas makes sure that all rooms are comfortably warm.
Overheating is prevented by the large cantilevered roof.

No renewables are installed.


1


2





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DESCRIPTION OF CONSTRUCTION

The footprint of the old construction was used to optimize the orientation of the building towards the sun and maximize the use of the existing playground.

The design resulted in a compact rectangular shape oriented along the north – south axis. The roof cantilevers on the south side of the building, providing shelter against rain during winter and overheating during summer. The covered area can be used as a playground during bad weather conditions.

The load bearing structure of the building is made of concrete columns.
This structure was finished by placing prefabricated facades which were later finished with plasterboard on the inside and wooden shingles on the outside.

From the inside to the outside the wall consists of:

- Two layers of plasterboard on a metal structure
- Cavity for wires and plumbing + mineral wool 5cm
- OSB 18mm + air sealing foil
- Wooden profiles, I-shaped + Cellulose
- Bituminous fiber board + EPDM rubber
- Wooden structure + 3 layers of cedar shingles

VENTILATION AND INDOOR ENVIRONMENT QUALITY

Mechanical ventilation with 83 % heat and moisture recovery, controlled with a timer. No CO_2 sensors are used.

The windows on the south side are shaded by the cantilevered roof. In addition, one window on the west side is shaded by outside blinds.

LESSONS LEARNED

It is of great importance to talk with the constructor about the composition of the facades in an early stage of the process.
Cheaper solutions might be possible with the same outlook and passive house standard.

Picture1 The school completed with prefabricated facades

Picture 2 Cantilevered roof preventing overheating

Picture 3 Mounting of the prefabricated timber facades

All pictures by Ilse Liekens & Olmo Peeters

THE RENEW SCHOOL PROJECT WILL DISPLAY 18 RENOVATED OR NEW SCHOOL BUILDINGS ALL OVER EUROPE

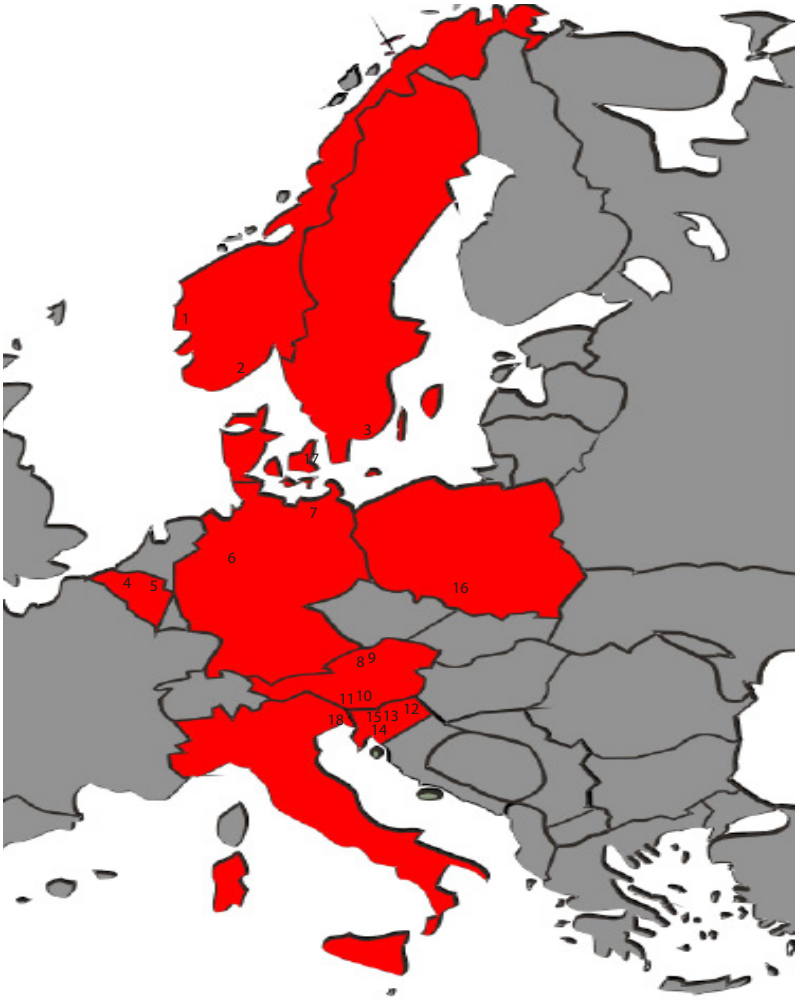
The RENEW SCHOOL project aims at retrofitting a large number of school buildings to Nearly Zero Energy Building (nZEB) standard. The project will promote and increase high-energy performance and prefabricated timber-based renovation of school buildings in Europe.

The project assists municipalities, school owners/-financiers and companies with appropriate tools and solutions and offers renovation possibilities for them.

Integrated and multifunctional solutions are based on:

- Timber prefabrication (with integrated components)
- Ventilation (indoor air quality)
- Intelligent daylight / shading (control)
- Renewables (on-site or nearby)

The project has chosen 18 frontrunner buildings, to present to municipalities, school owners, companies and users as good examples and solutions for the renovation of existing school buildings to nZEB standard.



1. Søreide Primary School
2. Risør Technical College
3. Backsippans Preschool
4. Kalmthout
5. School CVO Heusden-Zolder
6. Detmold Vocational College
7. Gymnasium Reutershagen
8. Schwanenstadt
9. Rainbach
10. Neumarkt
11. St.Leonard
12. Tišina kindergarten
13. Lavrica kindergarten
14. Kekec kindergarten
15. Storžek kindergarten
16. Siemianowice
17. Vibeengen
18. Capriva del Friuli kindergarten

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