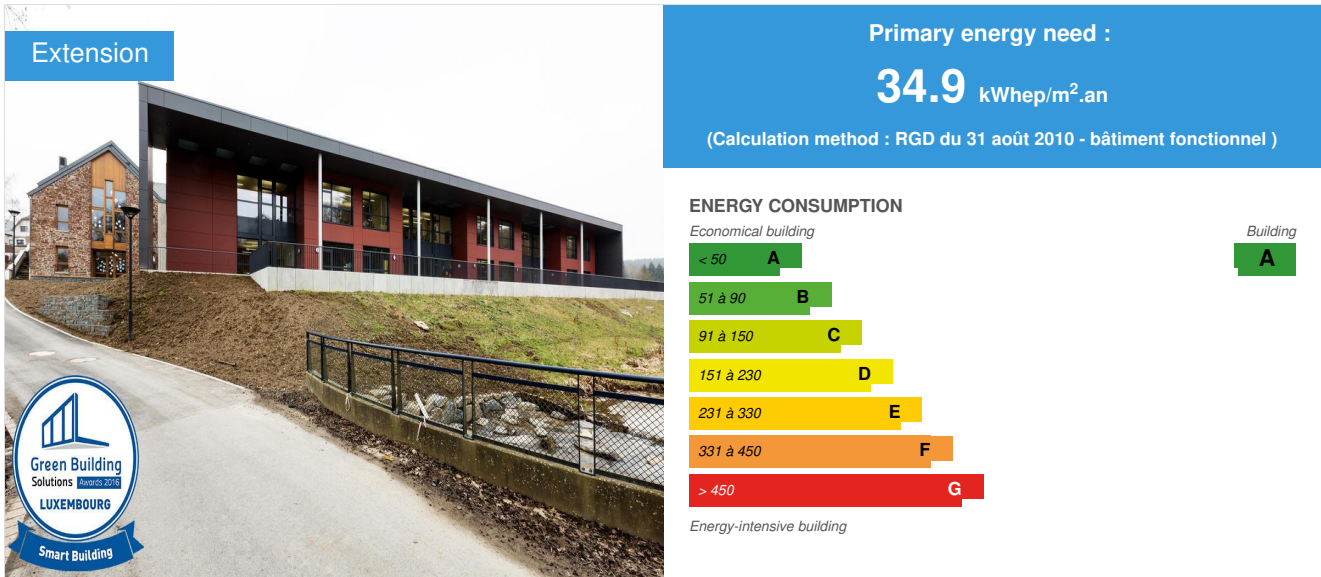


Regional School Uewersauer - Luxembourg

by Wirtz Jean-Marie / 2016-06-09 09:31:32 / Luxembourg / 9718 / FR



Building Type : Preschool, kindergarten, nursery
Construction Year : 2012
Delivery year : 2015
Address 1 - street : 15, rue Mgr Fallize 9655 HARLANGE, Luxembourg
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 2 375 m² Autre type de surface nette
Construction/refurbishment cost : 5 205 000 €
Cost/m2 : 2191.58 €/m²

General information

The primary cycle school is connected to a school building and an existing sports hall along the creek Walterbaach. Design of different volumes connected by a canopy overlooking a game terrace and oriented to the natural environment of the site. A covered courtyard was created between the existing building and the classrooms which provides access to the different floors of the new building and existing buildings such as the former sports hall and canteen / kindergarten. The construction was carried out in timber frame for the ground floor and first floor. Only a few concrete elements were executed in these floors (stairs and elevator shaft) and, for static and safety reasons. These elements are materialized by the visible concrete walls whose surface has been structured with vertical wood planks. The basement, dedicated to technical equipment and storage, is fully apparent with rough concrete. Most of the wooden elements were prefabricated, which helped save time on site and gave the opportunity to work simultaneously inside the building. These wooden elements were completely covered with plaster to ensure their fire resistance and to avoid over-sizing of the wooden building elements to achieve sufficient strength.

See more details about this project

<http://www.wirtzarchitecte.lu/fr/nos-projets/ecole-prescolaire-et-deduction-precoce-a-harlange/>

Data reliability

Self-declared

Stakeholders

Function : Other consultancy agency

Syntec

Mr Peter ugidos / +35226782010

<http://www.syntec.lu>

technical studies, follow up of heating installations, ventilation

Function : Designer

Jean-Marie Wirtz

Mr Jean-Marie Wirtz - +352 25 33 10

<http://www.wirtzarchitecte.lu>

Design, Construction site management

Function : Contractor

Syndicat intercommunal

Mr Gira - +352 93 70 90 241

<http://www.regionalschoul-uewersauer.lu/>

contracting authority

Function : Structures calculist

Bered solutions SARL

Mr Roland Bastenier - 95 80 96

<http://www.bered.lu>

Statistical studies, construction site management, infrastructures

Contracting method

Separate batches

Owner approach of sustainability

The 3 cities responsible of the school are part of the climate agreement and want municipal buildings to be renovated efficiently.

Architectural description

Construction based on low energy criteria: - thermal insulation of walls of +/- 24cm. - mineral thermal insulation of flat roofs: +/- 24cm. - mineral thermal insulation of floor slabs: +/- 14cm. - Installation of high performance exterior woodwork. - Air tightness of the building controlled via a blower door test. The building as been design in order to optimize the contribution of solar energy and natural light into the building through large windows in the classrooms and through the skylights at the courtyard. Two of these skylights give the possibility of having fresh air if necessary. The building was built contiguous to an existing building to provide a compact energy tower respecting the route of the creek "Walterbaach". This design permits maximum preservation of the environment and simultaneously optimizes the building area. - Renaturation of the creek by banks rehabilitation. - New plantings around the building. - Area designed around the building using natural materials such as grass and natural stone for access paths. - Building of a storm storage reservoir. - Use of LED lighting with presence detectors and brightness management. - Classrooms lighting divided in two distinct zones for better light management. - Heat management through external blinds with centralized management. - Use of delay taps. - Mechanical ventilation without air conditioning. - Use of environmental friendly materials requiring little maintenance

If you had to do it again?

using even more environmental friendly materials requiring little maintenance, and a design allowing more energy savings.

Building users opinion

users are satisfied with the building

Energy consumption

Primary energy need : 34,90 kWh/m².an

Primary energy need for standard building : 172,46 kWh/m².an

Calculation method : RGD du 31 août 2010 - bâtiment fonctionnel

Final Energy : 53,60 kWh/m².an

Breakdown for energy consumption :

In this case, it is difficult to determine the exact amount of energy consumption since the building is part of a complex of several buildings with the same energy network. Furthermore, new buildings were achieved less than a year ago.

More information :

No evaluation of the energy consumption since the achievement.

Envelope performance

Envelope U-Value : 0,66 W.m⁻².K⁻¹

More information :

The outer walls are made of a wooden frame covered with a fiber cement exterior cladding plates and whose U-value = 0.19W / m2K. The slabs between the basement and ground floor are made of a concrete slab insulated with 13 cm insulation with underfloor heating; U-value of this slab is U: 0.55W / m2K. The roof is composed of a wooden frame, the U-value of U = 0.16W / m2K.

Building Compactness Coefficient : 0,33

Indicator : EN 13829 - n50 » (en 1/h-1)

Air Tightness Value : 2,20

Users' control system opinion : users are satisfied

Renewables & systems

Systems

Heating system :

- Urban network

Hot water system :

- Urban network

Cooling system :

- No cooling system

Ventilation system :

- Free-cooling

Renewable systems :

- Biomass boiler

Renewable energy production : 100,00 %

Smart Building

BMS :

KNX-DDC

Users' opinion on the Smart Building functions : Satisfied . Additional switches were placed for the management of external blinds. Indeed, these may be maintained in open position during the cleaning of windows among others

Environment

GHG emissions

GHG in use : 12,30 KgCO₂/m²/an

Methodology used :

DIN 18599

GHG before use : 163,00 KgCO₂ /m²

Building lifetime : 50,00 an(s)

, ie xx in use years : 13.25

Life Cycle Analysis

Eco-design material : FSC wood used for the wooden frame

Water management

Consumption from water network : 350,00 m³

Water Consumption/m² : 0.15

Water Consumption/Children : 31.82

Indoor Air quality

NA

Comfort

Health & comfort : The building as been design in order to optimize the contribution of solar energy and natural light into the building through large windows in the classrooms and through the skylights at the courtyard. Two of these skylights give the possibility of having fresh air if necessary

Calculated indoor CO₂ concentration :

NA

Measured indoor CO₂ concentration :

NA

Measured thermal comfort : NA

Acoustic comfort : Highly sound absorbent ceiling, classrooms with acoustic insulation doors of 37dB

Products

Product

Janitza UMG 511

Janitza

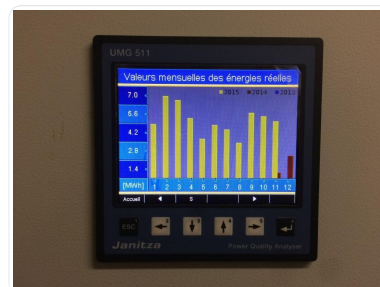
For Top - Automation and energy control - Tel: +31383372700

<http://www.janitza.com>

Product category :

Easy use, direct communication with maintenance, possibility of multiple data collection

the technical office is satisfied



Costs

Construction and exploitation costs

Reference global cost : 2 750,00 €

Reference global cost/Children : 2750

Cost of studies : 300 000 €

Total cost of the building : 6 935 685 €

Urban environment

The construction site is located in the village center, bordered by a stream and surrounded by a green environment (a forest and agricultural area) School buses

stops have been implemented to allow the students from the 3 cities to reach the school using public bus network. A few shops such as the post office, a bakery and a restaurant are located nearby.

Land plot area

Land plot area : 59 600,00 m²

Built-up area

Built-up area : 17,35 %

Green space

Green space : 12 500,00

Parking spaces

68 parking spots

Building Environmental Quality

Building Environmental Quality

- acoustics
- comfort (visual, olfactive, thermal)
- energy efficiency
- maintenance

CONTEST

Reasons for participating in the competition(s)

Le chauffage du bâtiment est relié au chauffage urbain.

Construction sur base des critères de la basse énergie : isolation thermique des murs de +/- 24cm.

isolation thermique minérale de la toiture plate : +/- 24cm.

isolation thermique minérale des dalles desol : +/- 14cm.

utilisation d'une structure en ossature bois pour les étages supérieurs et une structure béton pour le sous-sol enterré.

Mise en place de menuiseries extérieures à haute performance.

Étanchéité à l'air du bâtiment contrôlée via un blower door test.

Conception du bâtiment afin d'optimiser l'apport d'énergie solaire et de lumière naturelle dans le bâtiment via de grandes baies vitrées pour les salles de classe et via des lanterneaux au niveau de la cour intérieure. Deux de ces lanterneaux permettant l'apport d'air frais si nécessaire.

Le bâtiment a été construit accolé à un bâtiment existant afin de constituer une construction énergétiquement compacte tout en respectant le tracé du ruisseau « Walterbaach ». Cette conception a permis une préservation maximale du site verdoyant existant et en même temps un aménagement optimisé du construit.

Renaturation du ruisseau par remise en état des berges.

Réalisation de nouvelles plantations autour du bâtiment.

Réalisation des abords de la construction à l'aide de matériaux naturels tels que gazon, gabion et pierres naturelles pour les chemins d'accès.

Réalisation d'un bassin d'orage.

Utilisation du type d'éclairage LED avec gestion par détecteur de présence et de luminosité.

Éclairage des salles de classes réparti selon deux zones distinctes pour une meilleure gestion de l'apport d'éclairage.

Mise en œuvre de stores extérieurs avec gestion centralisée pour limiter l'apport de chaleur.

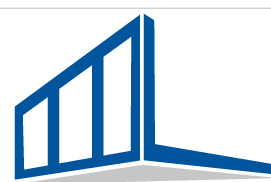
Utilisation de robinets à temporisation.

Mise en place d'une ventilation mécanique sans climatisation. Utilisation de matériaux ne demandant que peu d'entretien et ne présentant pas de risques pour l'environnement

Building candidate in the category



Energie & Climats Tempérés



**Green Building
Solutions Awards 2016**

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Bâtiment Intelligent



Coup de Coeur des Internautes

