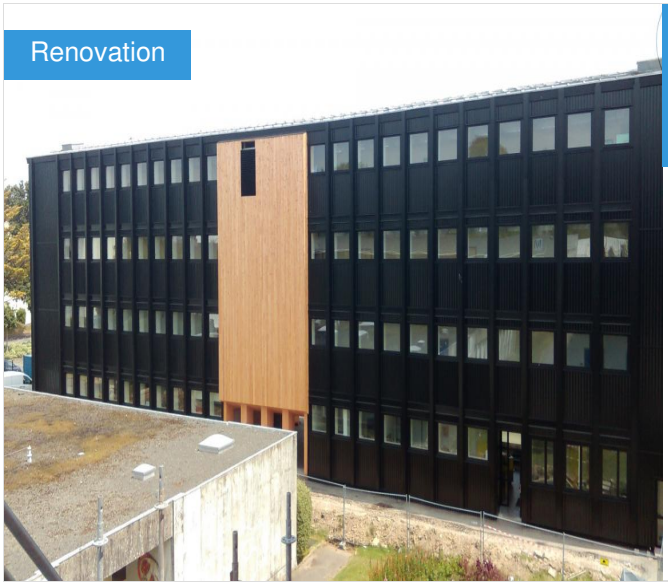
High school Colbert de Lorient - Buildings B and C

by Yoann RICHARD / 2015-06-24 17:57:14 / France / 16314 / FR

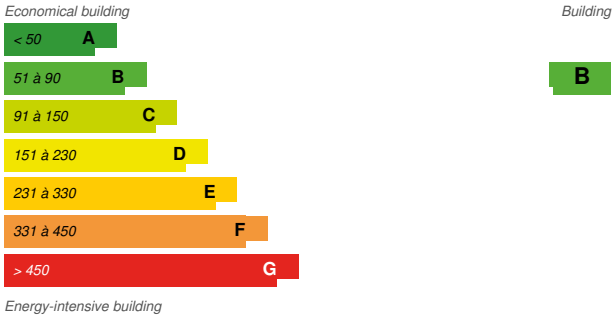


Primary energy need :

74 kWhep/m².an

(Calculation method : Other)

ENERGY CONSUMPTION



Building Type : School, college, university
Construction Year : 2015
Delivery year : 2015
Address 1 - street : 117 Boulevard Léon Blum 56100 LORIENT, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 6 060 m²
Construction/refurbishment cost : 2 891 000 €
Cost/m2 : 477.06 €/m²

General information

Educational buildings dating from 1959, renovated thermally by implementing prefabricated wooden panel frame for external insulation. Insulation, rainscreen, joinery and part of the external coating are assembled before the installation of wooden panel frame. Mechanical ventilation of interiors is installed in parallel.

- Intervention in an occupied high school. Noisy works concentrated during school holidays.
- High speed of execution : 6000 m² of floor area renovated in 10 months
- Air permeability of the building divided by three.
- Heat demand of the building divided by three.
- Summer discomfort reduced.
- Improvement of visual and acoustic comfort.

Sustainable development approach of the project owner

The project owner is Brittany Region, which has set up an Eco-referencial system for schools giving them a general framework of sustainable development. On this particular project, the objectives were:
the reduction of buildings' energy needs (class B and - 40% of primary energy consumption)
indoor air quality (low emission paintings and installation of mechanical ventilation)
reducing the carbon footprint through the use of wood

Architectural description

Monochrome and monolithic treatment of floors in black lacquered siding and recreational playgrounds surface in douglas siding. The use of prefabricated wooden coffers was considered from the competition to address the issue of the occupied site and to incorporate a bio-based material, renewable and carbon sinks. Sun protection is threefold:
solar control glazing 70/40 on classes exposed southeast,
black slatted panel forming external shading with horizontal blades
Clear interior screen blinds for the management of glare

Building users opinion

Satisfaction of the high school teams.

See more details about this project

Stakeholders

Stakeholders

Function : Thermal consultancy agency

EGIS

0299857039

http://www.egis.fr/activites/batiments
BET TCE

Function : Designer

ANTHRACITE ARCHITECTURE

0299676221

http://www.anthracite-architecture.com

Function : Company

BOUYGUES BATIMENT GRAND OUEST

02 78 62 28 40

http://www.bouygues-batiment-grand-ouest.fr/

Contracting method

Separate batches

Type of market

Global performance contract

Energy

Energy consumption

Primary energy need : 74,00 kWhep/m^2.an
Primary energy need for standard building : 90,00 kWhep/m^2.an
Calculation method : Other
Breakdown for energy consumption : Heating: 54 Ventilation: 8 Auxiliary: 1 Lighting: 11
Initial consumption : 161,00 kWhep/m^2.an

Real final energy consumption

Final Energy : 62,00 kWhef/m^2.an

Envelope performance

Envelope U-Value : 0,89 $W.m^{-2}.K^{-1}$

More information :

Intervention only on the facades (excluding roofs). Thickness of the façade : 300 mm. Thermal resistance of insulation: 6.8 m² K / W. U wall = 0.186 W / m²K

Indicator : I4

Air Tightness Value : 1,00

Renewables & systems

Systems

Heating system :

- Gas boiler

Hot water system :

- Gas boiler

Cooling system :

- No cooling system

Ventilation system :

- Single flow

Renewable systems :

- No renewable energy systems

Environment

Urban environment

Located in a residential area near the city center of Lorient, the High school is served by 14 different bus lines, urban and suburban. He faces another high school, and is located near a supermarket and a few snack bars.

Products

Product

Delta Maxx More

DOERKEN

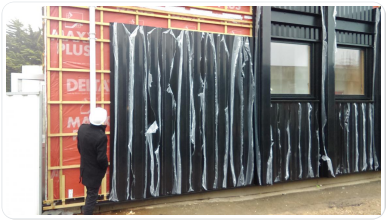
y.baumal@gmail.com

http://www.doerken.de/bvf-fr/

Product category : Structural work / Structure - Masonry - Facade

PET fleece with PU coating

The rain screen is used to achieve the airtightness of the facade.



Costs

Health and comfort

Comfort

Calculated indoor CO2 concentration :
1468 ppm

Acoustic comfort : Sound insulation between rooms enhanced thanks to works.

Carbon

GHG emissions

GHG in use : 13,00 $KgCO_2/m^2/an$

Life Cycle Analysis

Eco-design material : Wooden coffers construction (spruce) including Breton woods.

Contest

Reasons for participating in the competition(s)

- Intervention sur un lycée en site occupé. Travaux bruyants concentrés pendant les vacances scolaires.
- Grande rapidité d'exécution : 6 000 m² de SHON rénovés en 10 mois
- Division par trois de la perméabilité à l'air du bâtiment.
- Division par trois des besoins de chaleur du bâtiment.
- Réduction de l'inconfort estival.
- Amélioration du confort visuel et du confort acoustique.

Building candidate in the category

Rénovation énergétique

Green Building Solutions Awards 2015
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