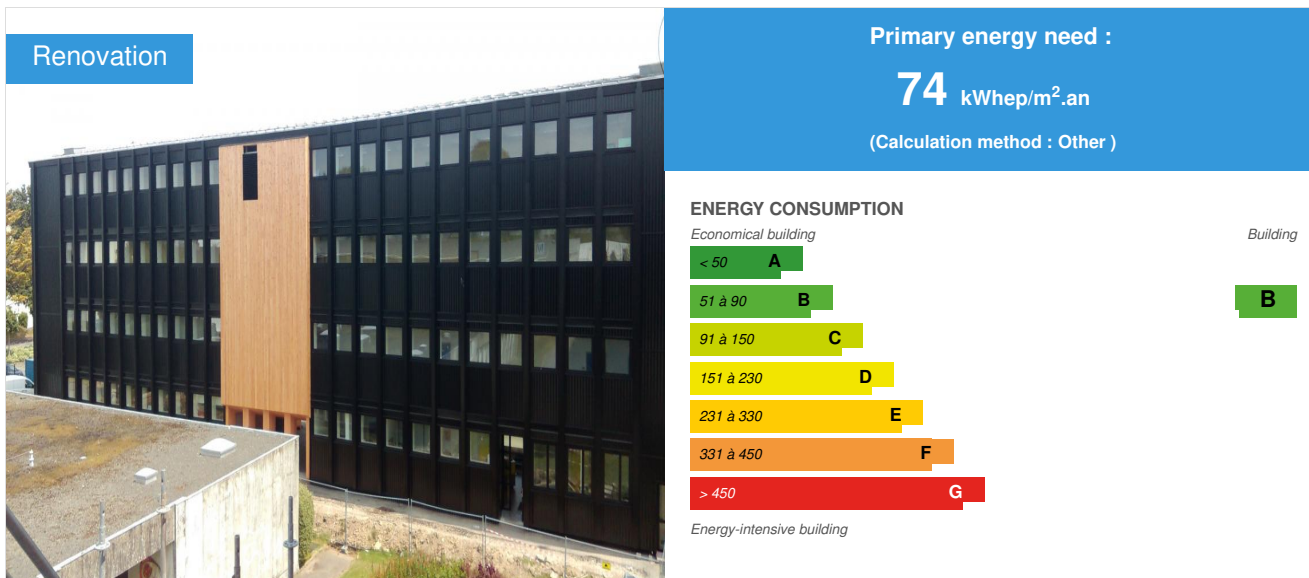


## High school Colbert de Lorient - Buildings B and C

by Yoann RICHARD / 2015-06-24 17:57:14 / Francia / 16411 / FR



**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 m<sup>2</sup>  
**Construction/refurbishment cost** : 2 891 000 €  
**Number of Pupil** : 1 200 Pupil  
**Cost/m<sup>2</sup>** : 477.06 €/m<sup>2</sup>

### 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 m<sup>2</sup> 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 :

BOUYGUES BATIMENT GRAND OUEST

02 78 62 28 40

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

## Contracting method

Separate batches

## Type of market

Table 'c21\_spain.rex\_market\_type' doesn't exist

## Energy

### Energy consumption

Primary energy need : 74,00 kWh/m<sup>2</sup>.an

Primary energy need for standard building : 90,00 kWh/m<sup>2</sup>.an

Calculation method : Other

Breakdown for energy consumption : Heating: 54 Ventilation: 8 Auxiliary: 1 Lighting: 11

Initial consumption : 161,00 kWh/m<sup>2</sup>.an

### Real final energy consumption

Final Energy : 62,00 kWh/m<sup>2</sup>.an

## Envelope performance

Envelope U-Value : 0,89 W.m<sup>-2</sup>.K<sup>-1</sup>

More information :

Intervention only on the facades (excluding roofs). Thickness of the façade : 300 mm. Thermal resistance of insulation: 6.8 m<sup>2</sup> K / W. U wall = 0.186 W / m<sup>2</sup>K

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 : Table 'c21\_spain.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '6'

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<sub>2</sub>/m<sup>2</sup>/an

### Life Cycle Analysis

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

## Contest

### Reasons for participating in the competition(s)

- Intervention in an occupied high school. Noisy works concentrated during school holidays.
- High speed of execution : 6000 m<sup>2</sup> of floor area renovated in 10 months
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### Building candidate in the category



Rénovation énergétique

