

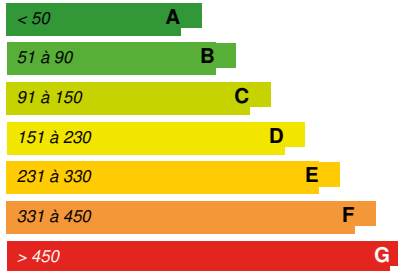
# Wooden hall of the Gaudier Bzerska High School

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New Construction

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**Building Type** : School, college, university  
**Construction Year** : 2012  
**Delivery year** : 2014  
**Address 1 - street** : 40 avenue Denis Papin 45800 SAINT-JEAN DE BRAYE, France  
**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 4 111 m<sup>2</sup>  
**Construction/refurbishment cost** : 9 356 522 €  
**Number of Pupil** : 900 Pupil  
**Cost/m2** : 2275.97 €/m<sup>2</sup>

## General information

The 'Wood Hall' function is to house all training activities in the timber industry (BEP, Bac Pro and BTS carpentry, building layout and wood) High School Gaudier Brzeska. This new building becomes for the establishment a showcase of its know-how as a "Lycée des métiers", gives students a culture of sustainable development and affirms the future of woodworking in buildings with high environmental quality. The project combines functionality, rationality with an architectural part allowing the implementation of a constructive system developed while being repetitive.

The project was designed and implemented in accordance with the High Environmental Quality (HQE) approach.

**Bio-based materials** used: Glue-laminated wood, wood fiber, solid wood, natural linoleum, cellulose wadding, sheep wool

## Sustainable development approach of the project owner

The materials used will be rough but presenting a quality of appearance. The project is conceived and realized respecting the High Environmental Quality approach.

## Architectural description

The division of the building into three volumes makes it possible to respect the climatic and acoustic zonings and to efficiently organize the flow of people and materials: - Volume 1 - Reception and study facilities. Included here are the entrance, the editing and exhibition area, the teachers' rooms and the two-level classrooms. The independent structure of the partitioning makes it possible to change the organization according to the needs - Volume 2 - Rooms of comfort like volume of transition: Cloakrooms and toilets. This transition space is the functional part that groups together the commodities and health flows. The roof terrace is equipped with zenithal skydome openings to naturally light

corridors, locker rooms and bathrooms. This volume is entirely made of concrete. - Volume 3 - Production hall: Individual and production work space, machine hall. The 40m wide and 71m wide production hall, based on a 14m grid, makes it possible to change the organization according to future educational needs. All areas of the wood construction sector, including the outdoor platform, are staged and visible "in the window" from Avenue Denis PAPIN. The two sides of the sheds roof are inserted in the triangulations of the beams, in order to create a structural "tablecloth" in which glass strips are also integrated. - Modular spaces of the workshop with wood frame partitions, posts with weft 14 mx 14 m Project incorporating many techniques for the use of wood labeled PEFC, FSC (structure, façade, insulation, partition): - Gray stained wood cladding dark to anticipate graying and 4 other types of untreated larch cladding. - Joinery mixed aluminum / wood for classrooms (including aluminum exterior) and aluminum joinery for workshops. - Main wall insulation: cellulose wadding and sheep wool for classrooms. - Environmentally friendly NF paint, Ecolabel CE. - Soft linoleum floor in classrooms and quartz concrete for corridors and workshops The bracing of the wood structure as well as the cutting of the acoustic, thermal and fire zones of the hall are ensured by a hard core made of reinforced concrete integrating the technical premises "central vacuum & waste." The facades are made of wood frame, carried by the columns in frontage and partially by the concrete structure. The finishing of the current facades is made of larch cladding in vertical overlap. The finish of the street façade (north-west) is composed of 3-ply panels, covered with larch blades spaced 12 cm apart to produce an effect of light and vibration.

See more details about this project

<http://www.envirobatcentre.com/envirotheque/observatoire-des-realizations/fiches-envirobat/biosource/halle-bois-lycee-gaudier-bzerska-277.html?article=2315>

Photo credit

Florence Talpe, unless otherwise stated

## Stakeholders

### Stakeholders

Function : Contractor

Région Centre Val de Loire

info@regioncentre.fr

<http://www.regioncentre-valde Loire.fr/accueil.html>

Project management

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Function : Construction Manager

Atelier AWI

06.62.84.73.57

<http://www.awi-architecte.com/>

Subject mastery

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Function : Construction Manager

Hermann Kaufmann Architekten

office@hermann-kaufmann.at

<http://www.hermann-kaufmann.at/?pid=1&lg=en>

Subject mastery

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Function : Thermal consultancy agency

Alto Ingénierie

+33 (0)1 64 68 18 50

<http://www.alto-ingenierie.fr/>

Thermal study

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Function : Other consultancy agency

TECBOIS

01 39 20 62 00

<http://www.groupe-betom.fr/carrousel-presentation/Tec-Bois>

Structure study

### Contracting method

General Contractor

Type of market

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

## Energy

### Energy consumption

Primary energy need : 22,00 kWhep/m<sup>2</sup>.an

Primary energy need for standard building : 1,00 kWhep/m<sup>2</sup>.an

Calculation method :

CEEB : -0

Breakdown for energy consumption : Heating: 19,2 kWhep / m<sup>2</sup>.an

### Envelope performance

More information :

Structure: Glulam, wood fiber, solid wood

Exterior cladding: Melèze Wood cladding

Interior fittings: Wood, natural linoleum

Insulation: Cellulose wadding, sheep wool

Indicator : n50

Air Tightness Value : 0,56

### More information

/! \ Primary energy consumption for a standard building: unspecified

## Renewables & systems

### Systems

Heating system :

- Gas boiler

Hot water system :

- Other hot water system

Cooling system :

- No cooling system

Ventilation system :

- Double flow heat exchanger

Renewable systems :

- No renewable energy systems

## Environment

### Urban environment

Land plot area : 4 111,00 m<sup>2</sup>

Built-up area : 82,00 %

This new building becomes for the establishment a showcase of its expertise as a "Lycée des métiers", gives students a culture of sustainable development and affirms the future of wood trades in buildings with high environmental quality. The project combines functionality, rationality with an architectural part allowing the implementation of a constructive system developed while being repetitive.

## Products

### Product

Wood hall

groupe ARBONIS

contact.arbonis@arbonis.com

<http://www.arbonis.com/>

Product category : Gros œuvre / Structure, maçonnerie, façade

The purpose of the "Wooden Hall" is to house all the training activities of the wood industry (BEP, Bac Pro and BTS carpentry, layout and wood construction) currently practiced in two buildings of the site. Programming demands that this new building become for the institution a showcase of its know-how as a "Lycée des métiers", gives students a culture of development sustainable and affirms the future of wood trades in buildings with high environmental quality.

The materials used will be rough but presenting a quality of appearance. Project conceived and realized respecting the High Environmental Quality approach.



## Costs

## Health and comfort

### Indoor Air quality

Natural ventilation of the workshop by opening (tilt-and-turn manual opening) in front and exit by manually opening grids on the sheds on the roof to the North East.

### Comfort

Health & comfort :

Architectural design aimed at optimizing energy consumption by zoning according to the use of spaces and activities STD study (dynamic thermal simulation) in order to define the optimal temperatures according to the volume and the occupation. Taking into account heat input (occupants, computers and machines)

Calculated thermal comfort : Centrale d'air à régulation par sonde CO2 par salle

## Carbon

### GHG emissions

GHG in use : 5,00 KgCO<sub>2</sub>/m<sup>2</sup>/an

### Life Cycle Analysis

Eco-design material :

Structure: glue-laminated wood, wood fiber, solid wood Outside siding: Cladding Wood Melèze Interior furnishings: Wood, natural linoleum Insulation: Cellulose wadding, sheep wool

## Contest

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

Constructed mainly of laminated wood, this hall reveals its structure for aesthetic functions.

By the choice of materials and the use of bio-based, it is in fact very efficient in terms of carbon. Nevertheless, the respect of a strict specifications at the economic level and the polyvalence did not push the stakeholders towards a labeled approach.

This building is primarily an educational showcase of what can be done with wood, while providing modern comfort to students.

### Building candidate in the category



Energie & Climats Tempérés



Prix du public



Prix des Etudiants