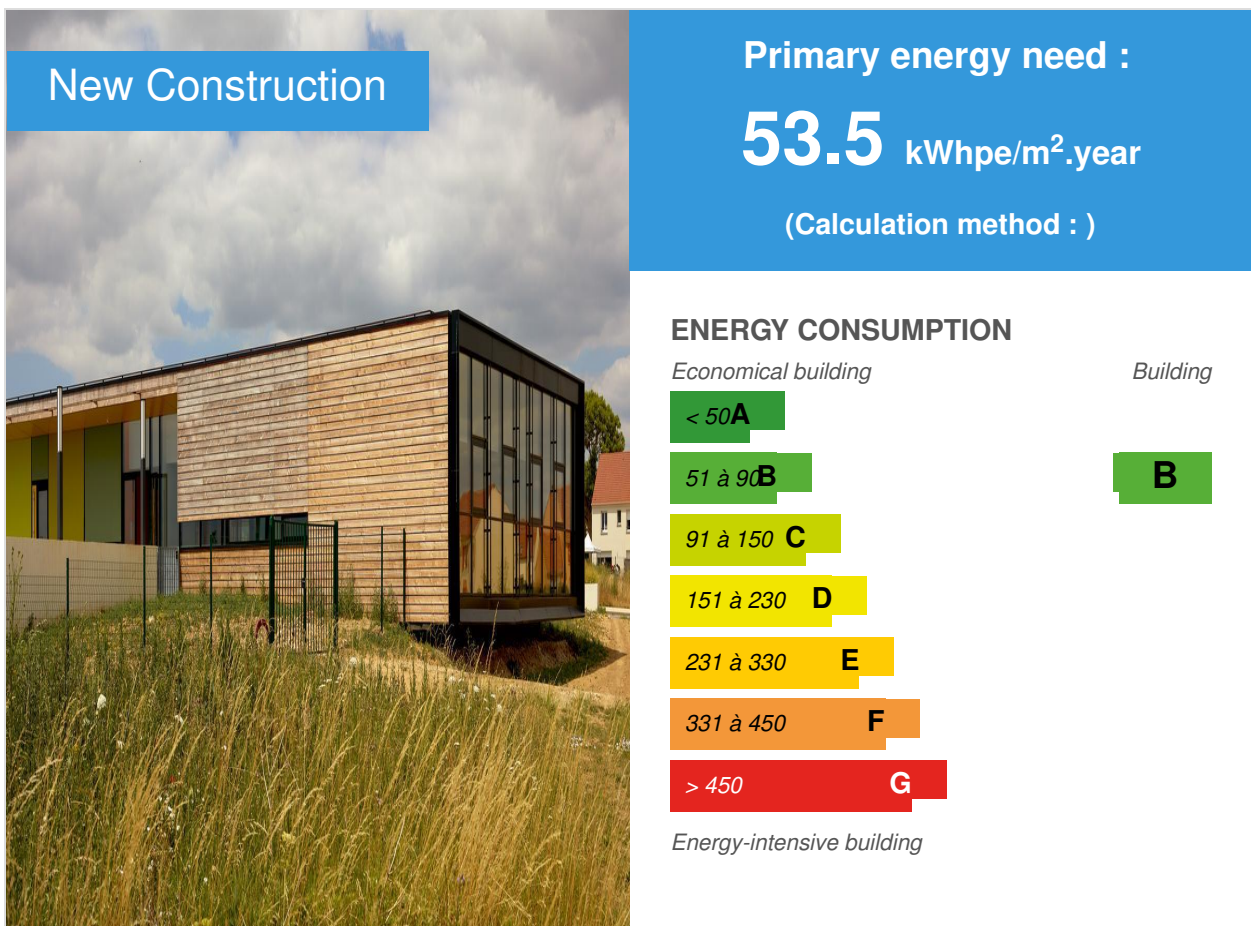


## Elementary school extension - Chauconin-Neufmontiers

by Hassan ABOUZID / 2019-05-24 15:20:33 / International / 3673 / EN



**Building Type** : Preschool, kindergarten, nursery

**Construction Year** : 2015

**Delivery year** : 2017

**Address 1 - street** : 68 st Charles Péguy 77124 CHAUCONIN - NEUFMONTIERS, France

**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 930 m<sup>2</sup>

**Construction/refurbishment cost** : 2 300 000 €

**Number of Children** : 450 Children

**Cost/m2** : 2473.12 €/m<sup>2</sup>

#### Certifications :



## General information

In October 2017, the municipality of Chauconin-Neufmontiers officially inaugurated the new premises of "Marianne" school, an unprecedented educational extension for this town of 3000 inhabitants.

The project is carried out as part of a HQE label approach. It meets the BBC (RT 2012) criteria in the context of France's commitments in terms of sustainable development, energy savings and drastic reduction of greenhouse gas emissions, while focusing on comfort, occupant's health's and economical management of buildings.

The architectural concept allows a harmonious relationship of the building with its environment: location, volumetry, orientation, compactness, organization.

Good energy management has been favored, architectural design optimizes energy consumption. On this project, the environmental targets were achieved thanks to a direct investment from the municipality.

The project manager assistant HQE 2D Score has identified the environmental characteristics of the materials selected for this construction allowing it to improve the technical notation from P to TP.

The set is compact, its volumetry simple and designed with great sobriety. The total cost of the project (building + roads, utilities and external works) is 3,242,000 euros.

## See more details about this project

<http://chauconin-neufmontiers.fr/enfance-jeunesse/ecole/>

## Stakeholders

## Contractor

**Name :** City of Chauconin-Neufmontiers

**Contact :** Michel BACHMANN, mayor of the city

<http://chauconin-neufmontiers.fr/>

## Construction Manager

**Name :** B&N Architectes

**Contact :** Cyprien LEGER - Olivier NEYRAUD

## Stakeholders

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**Function :** Other consultancy agency

Qualiconsult

Mr. Goudenege Sébastien

<http://www.groupe-qualiconsult.fr/>

control and security office

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**Function :** Thermal consultancy agency

Atelux

Mr. Bourdonnais

<http://atelux.fr/>

Thermal and fluid batch design and control

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**Function :** Other consultancy agency

Score 2D

Mr. Sabard

<http://score2d.eu/>

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**Function :** Other consultancy agency

Gamba Acoustique

contact@acoustique-gamba.fr

<http://www.gamba-acoustique.fr/>

**Function :** Assistance to the Contracting Authority

Terre et Toits

M. Bouchet

technical delegation

## Contracting method

Separate batches

## Type of market

**Table 'c21\_algeria.rex\_market\_type' doesn't exist**

## Energy

## Energy consumption

**Primary energy need :** 53,50 kWhpe/m<sup>2</sup>.year

**Primary energy need for standard building :** 110,00 kWhpe/m<sup>2</sup>.year

**Calculation method :**

**Breakdown for energy consumption :** CEP:

- heating: 32.40 kWh EP is 60% of Cep spe
- cooling: 0.00 kWh EP is 0% of Cep spe
- ECS: 8.20 kWh EP is 15% of Cep spe
- Auxiliary Ch / Raf / ECS: 0.90 kWh EP is 1% of Cep spe
- Ventilation auxiliaries: 1.30 kWh EP or 2% of Cep spe
- Cep lighting: 10.60 kWh EP is 19% of Cep spe
- Electricity generation: 0.00 kWh EP

\* Cep spe: Cep on which the possible electrical production of the project has not been subtracted

## Envelope performance

**Envelope U-Value :** 0,53 W.m<sup>-2</sup>.K<sup>-1</sup>

**More information :**

The envelope consists mainly of wood materials: frame and wooden cladding. Gantry structure with glued laminated beam. The exterior joinery is made of wood.

Good energy management has been favored, the architectural design optimizes energy consumption:

- By the elimination of thermal bridges,
- The ability of the building envelope to reduce heating requirements, including a very good airtightness and very good insulation from the outside.
- The building's ability to reduce lighting needs by optimizing the natural lighting of the teaching premises, of course, but also by paying particular attention to providing the maximum amount of natural light in the traffic and equipping the building efficient and economical electrical equipment.
- By optimizing heating and ventilation systems: high efficiency condensing gas boiler and double flow ventilation

Indicator : EN 13829 - q50 » (en m3/h.m3)

Air Tightness Value : 0,76

## More information

The Cep of this building complies with the decree of 26/10/2010 and 28/12/2012

Cep: 53.50 kWh EP

Cep Max: 110.00 kWh EP

Cep Gain: 51.4%

## Renewables & systems

### Systems

Heating system :

- Condensing gas boiler

Hot water system :

- Boiler fuel

Cooling system :

- Urban network

Ventilation system :

- Double flow heat exchanger

Renewable systems :

- No renewable energy systems

Solutions enhancing nature free gains :

The project is designed to avoid any unpleasant physical sensation: The winter comfort will be ensured by heating optimization and ventilation systems. It is also enhanced by the heat contribution linked to the glass surfaces of the school's South facade

## Environment

### Urban environment

Chauconin -Neufmontiers, is a village of Seine-et-Marne departement, west of Meaux and 45 km east of Paris. The town located 10 minutes from the Meaux station is served by the line 777 of the "Couriers de l'Ile de France" bus. This extension of the school group is organized around a plan which is articulated on the edge of the town, opened on the new district of Prés Bourdeau. The main exit of the building leads north to the center of the village.

## Products

### Product

Cruard Charpente

<https://cruard-charpente.com/>

**Product category :** Gros œuvre / Charpente, couverture, étanchéité

Oak core, 21/145 mm section

Apart from an "envelope" eliminating any thermal bridge, the architectural concept is a "prefabricated all-wood concept" that favors a great usage flexibility.

## Costs

### Construction and exploitation costs

**Total cost of the building :** 3 242 000 €

### Life Cycle Analysis

**Eco-design material :** The construction mainly favors wooden materials: a wooden frame, a wooden envelope, a vegetal terrace.

- Using wood as the main material of the extension
- Maximum use of biobased materials.

The architect sought to choose bio-based materials, and to facilitate future deconstruction or change of use by the use of beam posts in a timber frame and facade building. The insulation is a **bio-based hemp**. For this material, the local sector has been favored, Seine-et-Marne being a producer. All doublings, partitions, false ceilings, are **easily removable** and **recyclable** to respond to subsequent educational developments. **Natural lighting** is naturally enhanced: central area directly lit, deep classes without windows lit with borrowed light , large glazed areas for common premises. As the school is **HQE labeled**, it is coherent to continue this approach and to use for maintenance eco-labeled products which respect, on the one hand the environment and on the other hand the users' and staff's health. The constructive and technical choices anticipated the maintenance and cleaning procedures of the various materials used to ensure the sustainability of the performance of the heating, ventilation, lighting and water management systems. This instruction is detailed in a **user's booklet** and a **maintenance booklet** for staff and users of the school.

### Water management

In addition to the recommendation of water-saving solutions adapted to the different uses, particular care is given to the infiltration and the retention of rain water thanks to the realization of a green roof and the infiltration of rain water in the basins provided for this purpose around the playground.

An entry forecourt (to the north) also has a porous asphalt that allows the infiltration of rainwater.

A rainwater collection tank is used for watering and maintenance of spaces.

### Indoor Air quality

The project is designed to avoid any unpleasant physical sensation:

- The comfort of winter will be ensured by the **optimization of the heating and ventilation systems**, with the contribution of heat related to the glazed surfaces of the school's south facade.
- Summer comfort will be ensured on the south facade by the **wide roof overhang**, completed by wooden **sunshade blades**.

In the summer, the **natural ventilation** at night allows the cooling of the premises, an

**adiabatic cooling unit** provides refreshment during the day.

## Comfort

**Health & comfort :** The playground is protected and framed by the school catering building and the school building. Its shape allows **great versatility** of use. A bicycle shelter with cloakroom and showers will favor the use of bicycles, an aerial parking includes 6 electric vehicles stations, that is to say almost 30% of parking spaces. Exposed façades will be protected by external blinds.

- As part of the certification, identification of the **sources of electromagnetic emission**, carried out by an independent consultancy agency according to the standard NF EN 50499: the project does not present any equipment which would involve carrying out a complementary risk analysis
- **Lighting management on clock** guaranteeing safety and energy saving + arrangements made so that the lighting ensuring the signage of the site does not cause nocturnal visual disturbances for residents

This project is part of an "eco-quartier" construction project. A new forecourt leads to the entrance porch-canopy, it can accommodate children and parents, it also allows to park bicycles. The situation of the master-nursery room allows a surveillance of the entrances and exits, of the room multi-motricity and the playground.

**Acoustic comfort :** **Acoustic measurements** to achieve target 9 "acoustic comfort" of the certification, according to the NFS-31 057 standard for checking the acoustic qualities of the building. Achieved level of performance:

- Airborne sound insulation between premises: HIGH PERFORMING
- Noise impact level between premises: HIGH PERFORMING
- External noise insulation: VERY HIGH PERFORMING
- Noise level of technical equipment: HIGH PERFORMING
- Internal Acoustics: PREREQUISITE

## Carbon

## GHG emissions

**Building lifetime :** 50,00 year(s)

## Contest



## Reasons for participating in the competition(s)

This extension of 6 classes is the first "HQE certified - Exceptional level" school of France.

The project is presented in the "Low Carbon" category. It implements solutions promoting bio-sourced materials, the use and storage of resources, as well as artificial intelligence.

Thus, the structure and facades are made of wood, the insulation used in facades, partitions, and some false ceilings is bio-sourced. This insulation has been provided through short-circuit, it is composed of hemp plant growing locally in Seine-et-Marne.

Natural resources are maximized and promoted: bioclimatic implantation (optimization of solar gains and reduction of artificial lighting needs), sustainable water management (recovery tank, green roof, valleys, porous concrete forecourt), intelligent lighting management (presence detection and daylight detection, zone gradations), efficient mixed ventilation system (ventilation with heat recovery in winter, natural ventilation in summer, cooling by humidification), limitation of heating needs .

## Building candidate in the category



Low Carbon

