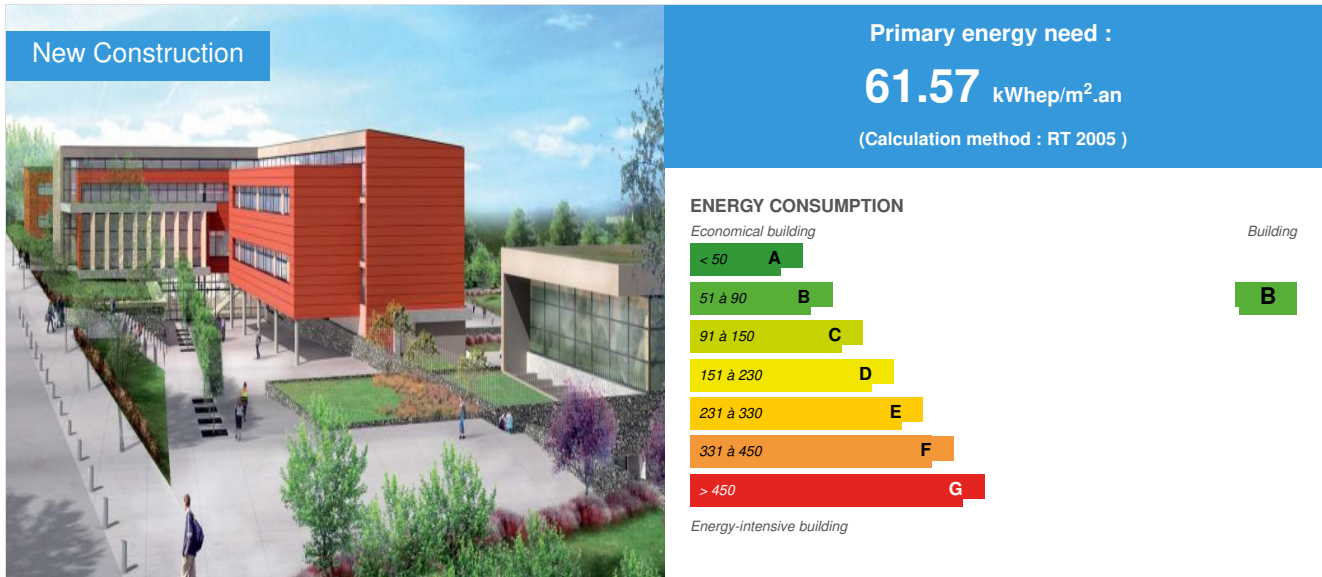


## COLLEGE Vauban in Maubeuge

by yann hovenaghel / 2012-03-22 11:49:28 / France / 9568 / FR



**Building Type** : School, college, university  
**Construction Year** : 2010  
**Delivery year** :  
**Address 1 - street** : 115 rue de douzies 59600 MAUBEUGE, France  
**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 9 239 m² SHON  
**Construction/refurbishment cost** : 25 745 000 €  
**Cost/m2** : 2786.56 €/m²

**Certifications :**



### General information

An exemplary HQE ® labelled college.

Thorough insulation, systems to recover rainwater and the heat contained within the building, use of natural light and free energy from the sun .... The Vauban college combines a multitude of new techniques that respect the planet and at the same time contribute to the well-being of college (junior highschool) students. In addition, the college was built with materials that respect both the environment and the health of all.

The college Vauban encourages people to change their habits, because respect for the environment is also a matter of small daily actions that affect the entire world. The college encourages sorting, the rational use of electricity, and bicycle travel, with his bicycle garage for 100 spaces.

### Sustainable development approach of the project owner

The construction of the school was carried out under a High Environmental Quality approach with certification, and is part of a program to rebuild the school with 12 certifications obtained to date for the Northern Department of France.

Various architectural and technical solutions are implemented in the project to reduce the environmental and health impacts of buildings and to provide college students, teachers and staff of the institution a very enjoyable place to live and to learn :

- The soft modes of transport are privileged (secure bike garage, bus right next to the site).
- A landscape wetland for stormwater management is set in continuity with the urban fabric of the area as well as a pedagogic pond to preserve and enhance biodiversity.
- Rainwater is fully managed inside the plot with alternative waste water treatment techniques (retention basin) for zero discharge to the network.
- The orientation and organization of the building are designed to capture maximum natural light (second day input in class) and offer pleasant views on green spaces (reduced height for a qualitative view to the outside ).
- The building incorporates bioclimatic design and promotes "passive" solutions for summer comfort.
- Significant energy savings will be achieved through the choice of efficient and durable equipment (for heating, ventilation, lighting, ...) and also help to limit the impact on the environment in terms of pollutant emissions.
- Rainwater is collected for flushing toilets and watering gardens.
- The water efficient appliances are installed throughout the building.
- Solar panels are used to heat the water used in the school cafeteria.
- The sorting of waste will be extended to all levels (classes, administration, playground, ...).
- The choice of materials and equipment will ensure the continuity and quality of health areas, air and water of the future college.
- A site with low environmental impact is to reduce the impact of noise and pollution, but also to value and recycle waste.

## Architectural description

- The project is mainly developed along Douzies street in the upper part of the land in order to minimize its impact on natural areas and organize the whole college from a constant level of land from the forecourt entrance to the service yard.

> This arrangement facilitates flow management, accessibility of facilities for disabled people, service access and emergency facilities.

- In the outdoor terrace contribute to the integration of the building and linking of different spaces with the natural terrain.
- The establishment back volumes can be returned to the city of quality spaces formed by the landscaped areas along the street, giving the district places of ownership by the people.
- The organization of the volume preserves views from the street to the landscape. The lower part of the land is preserved natural area, in continuity with the future development of the area around Flamenne. Impermeable mineral surfaces are minimized, in this sense, the parking of vehicles is included in the half board. The site chosen for the reconstruction of College Vauban in Maubeuge and the will of the General Council to get the HQE Certification induces a sensitive approach to the project promoting the application of an assertive approach to environmental protection. Our project is therefore part of a comprehensive approach that closely links the urban integration project, functionality, aesthetics and techniques used with the consideration of environmental issues.

Our approach is based on several points:

- The open space of the college on the neighborhood, its sustainable urban integration and participation in the restructuring of the district
- The opening of the college landscape, maintenance, preservation and development of ecosystems and the natural environment
- The adaptability of the program to the unique topography of the site, simplifying access and flow
- Energy efficiency in respect of the RT 2005, good water management, maintenance and building maintenance
- The orientation and organization of interior and exterior spaces in the goal of providing a great visual and hygrothermic users
- The spatial organization of functional elements of the program and the organization of work spaces suitable for educational programs
- Providing special care in the development of indoor and outdoor spaces for comfort in daily life of the college.
- The development of buildings on a major route east / west to organize spaces focusing on views. Thus, the administration, spaces for teachers, CDI and restaurant open resolutely to the natural landscape.
- Classrooms are located mainly in the East as well as cusps North / South. This organization promotes passive solar gain and thus minimizes the need for energy.
- The establishment of playgrounds and central courtyard offers space ease of use for students who benefit from both protected areas and sunny in the morning and after favorable to ownership of these spaces noon.
- The compact volume and simple construction allows good control of the economics of the project, limiting soil sealing and optimum organization of education and college life spaces. It facilitates travel modes and management activities.
- The simplicity of the volume and the quality of materials contributes to achieving an institution established in harmonious dialogue with the urban and natural environment which characterizes the site.

## Stakeholders

### Stakeholders

**Function :** Construction Manager

TAO Architecte à ROUBAIX

Atelier 24 (L. PAUCHET) à LILLE

### Type of market

Global performance contract

## Energy

## Energy consumption

Primary energy need : 61,57 kWh/m<sup>2</sup>.an

Primary energy need for standard building : 78,44 kWh/m<sup>2</sup>.an

Calculation method : RT 2005

Breakdown for energy consumption : Building College:

- U bat: 0,449 (Ref: 0.563 - standard: 20.25%)
- Cep: 6.57 kWh/m<sup>2</sup> (Ref: 78.44 - difference: 21.51%)
- Heating: 13.85 kWh/m<sup>2</sup>
- Lighting: 17.38 kWh/m<sup>2</sup>
- Auxiliaries: 0.81 kWh/m<sup>2</sup>

Details on other buildings (half-board accommodation, gym) on energy doc download

- Cep 0.545 0.563 3.18 Coefficient performance (primary energy kWh / m<sup>2</sup>) 60.29 77.21 21.91 148539

HEATING Gas , 54 212,168.13 29.99

Total Primary Energy (EP kWh / m<sup>2</sup>) 20.81 29.72 29.99

COOLING ECS Electrical LIGHTING 44,236.86 102,070.26 56.66

Total Primary Energy (EP kWh / m<sup>2</sup>) 15 99 36.89 56.66 2889.65 2047.42 -41.14

AUXILIARY Electric Fans (electric) 62138.08 27295.19 -127.65 Total

Primary Energy (EP kWh / m<sup>2</sup>) 1.04 74 -41, 14 Wind-

Total Primary Energy (EP kWh / m<sup>2</sup>) 22.46 9.86 -127.65

## Envelope performance

Envelope U-Value : 0,56 W.m<sup>-2</sup>.K<sup>-1</sup>

## Renewables & systems

### Systems

Heating system :

- Condensing gas boiler

Hot water system :

- Condensing gas boiler
- Solar Thermal

Cooling system :

- No cooling system

Ventilation system :

- Double flow heat exchanger

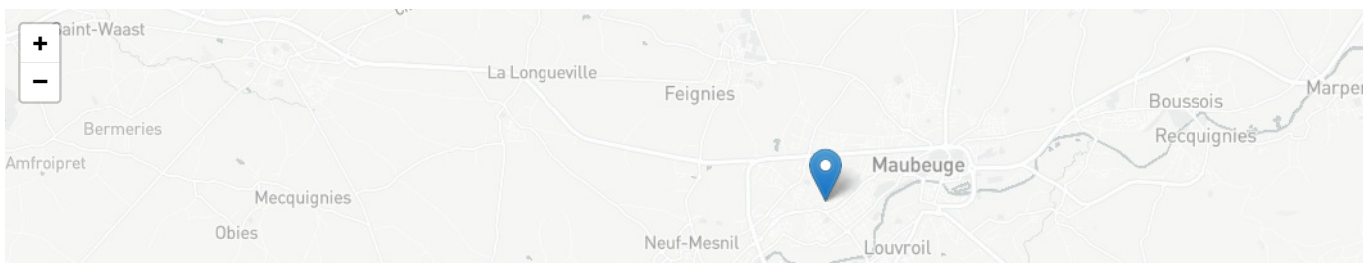
Renewable systems :

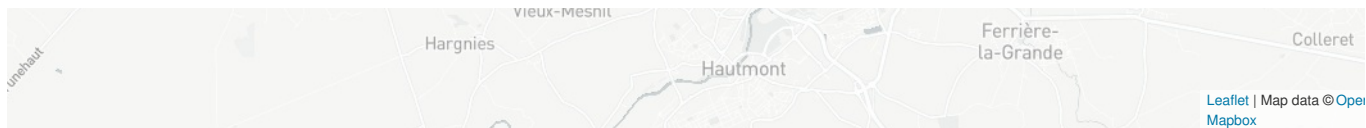
- Solar Thermal

## Environment

### Urban environment

The new Vauban college replaces the old of the same name is located in the district of Douzies, not far from the site of the old school, along the road Douzies. The project was to integrate the building into the site and deal with five vertical meters of land in an urban environment, while benefiting from the existing coverage of the site by public transport





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