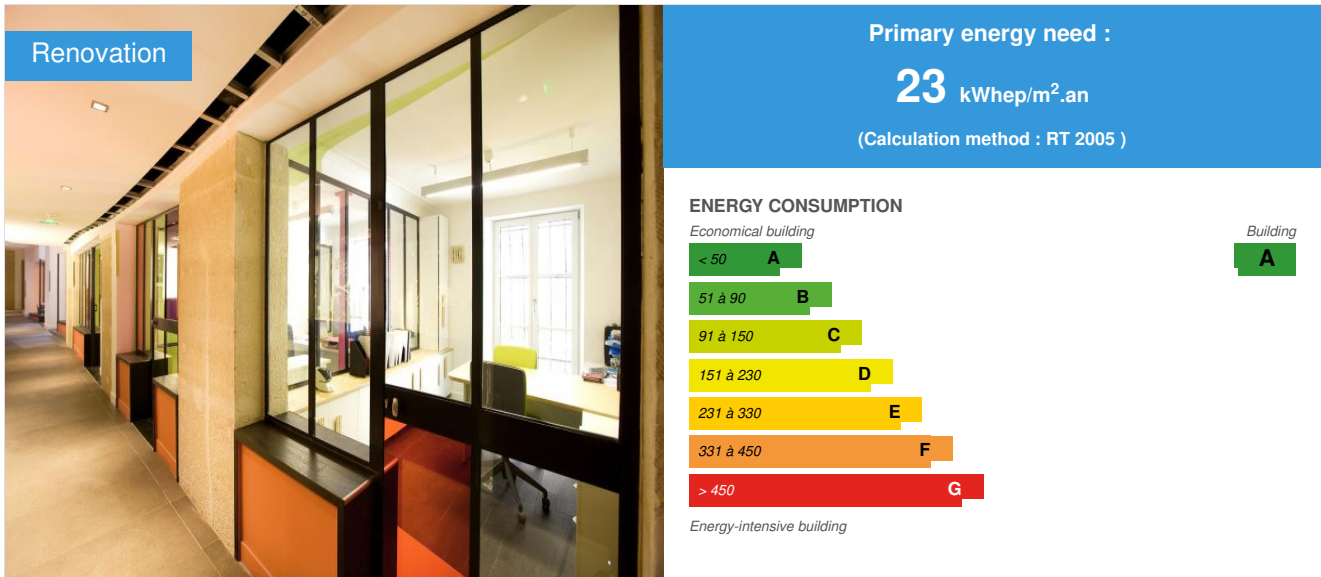


## The 95, a factor 10 concurrent renovation

by MARIE-PASCALE BLEIN / 2014-02-28 19:23:29 / France / 23619 / FR



**Building Type** : Office building < 28m  
**Construction Year** : 1780  
**Delivery year** : 2010  
**Address 1 - street** : 95 Boulevard BEAUMARCHAIS 75003 PARIS, France  
**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 360 m<sup>2</sup> SHON  
**Construction/refurbishment cost** : 680 000 €  
**Cost/m2** : 1888.89 €/m<sup>2</sup>

### General information

In 2009, The Architecteurs have undertaken with the help and advice of Dusan Novakov (Engineer in Renewable Energies) the renovation of their headquarters, located in the heart of Paris (at 95 Boulevard Beaumarchais - 3rd arrondissement of Paris).

From the start, the goal was to drastically reduce the heating needs and advocate the use of the best energy there is: the energy that is not consumed! A natural desire which is in line with the will advocated by the Adélie program, funded by the Fondation Bâtiment Energie (Building Energy Foundation), which The Architecteurs participated.

Changing phase materials, vacuum insulation, "parisian well", triple glazed windows... The sustainable renovation of 95 boulevard Beaumarchais was designed according to the needs of users and dedicated to their comfort and health.

On one side below is a narrow street, and on the other the headquarters are exposed to a noisy and busy boulevard with significant proportions of facades. At first sight, the place didn't show the immediate potential of a sustainable renovation or energy and environmental efficiency. However, while capturing its soul and energy, the Architecteurs set themselves the challenge of factor 10 renovation, reducing their energy consumption from 413 to 37.1 kWh/m<sup>2</sup>/year

### Sustainable development approach of the project owner

The starting point of the challenge was to drastically reduce the heating needs and advocate the use of the best energy there is: the energy we don't consume! That will come naturally and is fully consistent with the recommendations of the Adélie program, funded by the Fondation Bâtiment Energie (Building Energy Foundation), which The Architecteurs participated to.

## Architectural description

In 2009, The Architecteurs have undertaken with the help and advice of Dusan Novakov (engineer in Renewable Energy) the renovation of their head office, located right in the heart of Paris (at 95 Boulevard Beaumarchais - 3rd arrondissement of Paris). This urban and central location extends over two floors within a building from the late eighteenth century. The façades are bourgeois on one side and domestic on the other. The natural slope of the land creates two ground floors, one on the boulevard, the other on the street and courtyard. Strongly marked by the presence of a two-level gallery, the place is noticeable by its linearity and how far stretched it is.

Anxious to preserve the structural originality of the site, while making an accessible place, paced with a simple and functional repartition, the architects, Michel Debizet and Jacques Paul (Architecture Station) selected within the Architecteurs network, created 3 distinct poles out of the 360 sqm of the place:

- A pole for reception and representation,
- An administrative pole and
- An educational pole in the basement.

In other words, 8 permanent offices, a large meeting room and a workshop, called "low carbon Workshop". The common thread of this distribution remains the sloped and regular inner street and regular in tangency with all spaces.

The head office thus offers affirmed spaces for employees, parked along the inner street and on the same level, in full communication with the activity of the Architecteurs group.

## Building users opinion

"A very pleasant and friendly workplace... lively just like the Architecteurs."

## If you had to do it again?

The vegetated water wall represents significant maintenance costs and remains fragile

## See more details about this project



## Stakeholders

### Stakeholders

Function : Contractor

Directrice de la communication

<http://www.lesarchitecteurs.com>

Function : Construction Manager

ARCHITECTURE STATION

46 Boulevard de PORT ROYAL - 75005 PARIS

Function : Thermal consultancy agency

VIA POSITIVE

M. Dusan Novakov, ingénieur EnR, partenaire Minergie

<http://www.viapositive.com>

### Type of market

Realization

## Energy

### Energy consumption

Primary energy need : 23,00 kWhep/m<sup>2</sup>.an

Primary energy need for standard building : 150,00 kWhep/m<sup>2</sup>.an

Calculation method : RT 2005

Breakdown for energy consumption : - Cep heating: 5.1- Cep cooling: 0- ECS Cep: 0- Cep lighting: 27.81- Cep ventilation: 4.4- Auxiliary Cep 0.4

Initial consumption : 413,00 kWhep/m<sup>2</sup>.an

## Real final energy consumption

Final Energy : 37,00 kWh/m<sup>2</sup>.an

## Envelope performance

Envelope U-Value : 0,40 W.m<sup>-2</sup>.K<sup>-1</sup>

More information :

envelope has been isolated by two types of products, including walls in joint:- Polystyrene panels KnaufTHERM lambda 030, floor panels of polystyrene on vault cellar ditto and polyurethane panels lambda 0.023 on floors and earth-plain,- Insulation VaQVip lambda 0.0054 on tables and arches,no insulation in ceiling heating except under roof, glass wool ECOSE lambda 0.036 thickness 50cm.

## Renewables & systems

### Systems

Heating system :

- Low temperature floor heating
- No heating system

Hot water system :

- Heat pump

Cooling system :

- Reversible heat pump

Ventilation system :

- Double flow heat exchanger

Renewable systems :

- Other, specify

Renewable energy production : 70,00 %

### Smart Building

BMS :

5 "Clarinets" (regulation system of hot water coming from the heat pump and water returning from the underfloor heating) + Thermozyclus

## Environment

### Urban environment

Below a narrow street on one side and exposes the other to the noisy boulevard and passenger with significant proportions of facades, the place did not show the immediate benefits of a building conducive energetics eco-efficiency . The building is located in an urban center with frontage on a main boulevard and a second end of a back yard.

## Products

### Product

Paris Wells

Product category :



Polystyrene insulating graphite KNAUF

KNAUF

<http://www.knauf.fr>

Product category : Second œuvre / Cloisons, isolation

For the first time in France, a building benefited from polystyrene insulation board KNAUF graphite with lambdas of 0.0305 floor (30cm thick) and 0.030 walls (18 cm thick). Perfect insulation for insulation thickness optimized. Added to this a ease and speed of installation disconcerting, thanks to the new process KNAUF Easyclip, adapted to buildings under renovation. No glue, but a mechanical fastener that does not need a isolee screws to avoid any cold bridge and the system clips to lay the insulation plates almost a chain.



Vacuum insulating Will q-tec

Va-q-Tec

<http://www.va-q-tec.com/>

Product category : Second œuvre / Cloisons, isolation

Developer and manufacturer of vacuum insulating base has ground silica nanometric dimension, Va-Q-tec gets a product of  $\lambda$  0.0053. The principle: 25 mm thick this material evacuated in a triple thickness of fully welded aluminum sheets with a chip to control the electromagnetic vacuum lasts 30 to 50 years. A revolutionary technology with exceptional performance. To achieve this quality of insulation with a traditional insulation requires 18 to 25 cm thick.



Triple glazed windows and doors Passiv Haus level Striegel

Striegel

<http://www.fenster-striegel.de/start.php?Sprache=FR&s=1>

Product category : Second œuvre / Cloisons, isolation

Since the Adelle project, Architects use the triple-glass lives more often. It was obvious to equip the new headquarters to reach 10. The factor joinery German Passiv Haus triple glazing level Striegel provide 0.61 g UW and 0.72 W / m / K Thermal comfort and acoustic comfort.

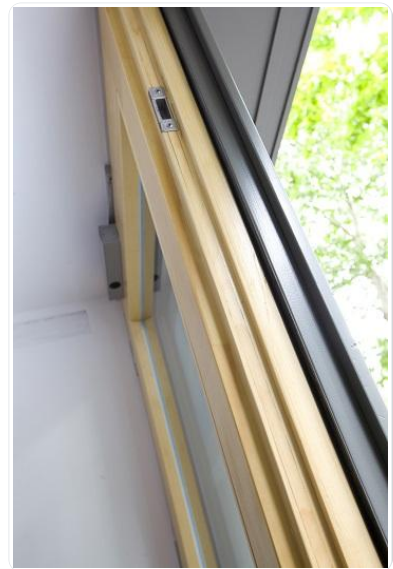


Plate phase change

Dupont-Energain

<http://www.energain.fr/>

Product category : Second œuvre / Cloisons, isolation

The plate is a phase change technology-core unknown. The principle is based on a paraffin oil which reacts after the 21.6 Å C. It will then melt, changing the phase by absorbing excess caloric energy of a room. This surplus is stored until it has cooled the room at the end of the day or a return of energy. Thanks to this property of the wax, energy savings (cooling) we made tremendous. The plate phase change, a thickness of 5.6 mm has the same storage capacity energy than concrete 50 mm or 90 mm clay brick. Of September Dupont-Energain go even further by replacing the outcome of paraffin oil with a mineral paraffin.



## Costs

### Construction and exploitation costs

Global cost : 680 000,00 €

Reference global cost : 700 000,00 €

## Health and comfort

### Indoor Air quality

Using two dual flow ventilation systems:- Offices and the entrance: preheating and cooling of the air exchanger air / water wells Paris,- Room meetings' conferences: Self exchanger with its control by a CO2 sensor.Realisation of a wall of water:- To purify the air by plants and humidify the air,- Fed by rainwater recovery,- Used as buffer mass for cooling in summer.Use of gypsum board to the zeolite in the meeting room. They allow to set the glue fumes and CO2.Using mineral paints (PRB).

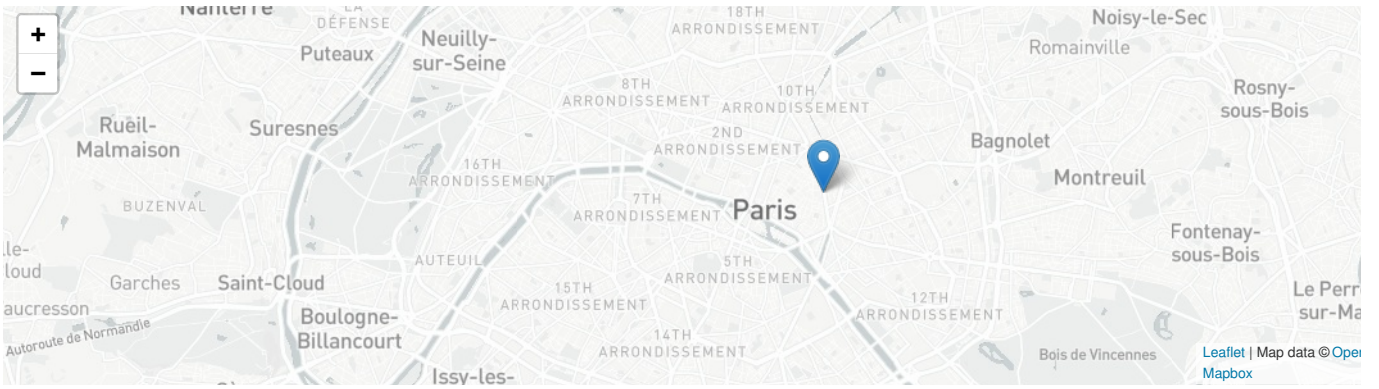
## Carbon

### GHG emissions

Methodology used :

Lesosai software ecole Polytechnique de Lausanne and certifies CSTB.

## Contest



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