


## Rabot Dutilleul Construction Headquarters

by Julien BARCET / 2016-06-29 15:57:05 / France / 14774 / FR



Renovation

Primary energy need :

68 kWhep/m<sup>2</sup>.an

(Calculation method : RT existant)

**ENERGY CONSUMPTION**

*Economical building* *Building*

< 50	A
51 à 90	B
91 à 150	C
151 à 230	D
231 à 330	E
331 à 450	F
> 450	G

*Energy-intensive building*

**Building Type** : Office building < 28m  
**Construction Year** : 2015  
**Delivery year** : 2016  
**Address 1 - street** : 10 avenue de Flandres 59290 WASQUEHAL, France  
**Climate zone** : [Cfc] Marine Cool Winter & summer- Mild with no dry season.

**Net Floor Area** : 4 044 m<sup>2</sup> SHON RT  
**Construction/refurbishment cost** : 1 500 000 €  
**Cost/m2** : 370.92 €/m<sup>2</sup>

**Certifications :**



### General information

- Renovation on an occupied site of the Headquarters of Rabot Dutilleul Construction (4000m2).
- Issue: Energy and environmental renewal, without distorting "the soul of the building."
- Themes developed for this renovation: Renovation with obtention of the Effinergie BBC label.
- Educational: user support during work and after work on energy efficiency
- Biodiversity: hives, biodiversity roof
- Mobility: electric car-sharing
- Comfort: visual comfort acoustic absorbers +
- Technical natural ventilation through solar chimneys / heated windows
- Innovations: integration of start-up technology: SMART IMPULSE and EFFIPILOT
- Creation of a learning path

## Sustainable development approach of the project owner

Integrate sustainable development approach on this building by incorporating key environmental themes (energy, biodiversity, mobility, quality and comfort of indoor environments).

Support users during the works (works on an occupied site) and after the work on energy efficiency.

## Architectural description

Building renovation without altering the architectural, putting up to date some facades

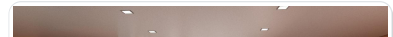
## Building users opinion

Good accompaniment when working with large display and communication on the progress of work. Surveys of employees during and after construction.

Perception some noise on some workstations

General sense of pride about the nature of the work and ongoing renovation.

## See more details about this project



### Stakeholders

#### Stakeholders

Function : Construction company

RABOT DUTILLEUL CONSTRUCTION

Julien BARCET

<http://www.rabotdutilleul.com>

Design-Builder

Function : Construction Manager

BplusB

Angélique STERNHEIM

<http://www.bplubarchitectures.com>

Design Work of mastery

#### Contracting method

Other methods

### Energy

#### Energy consumption

Primary energy need : 68,00 kWh/m<sup>2</sup>.an

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

Calculation method : RT existant

CEEB : 0.0001

Breakdown for energy consumption : - Heating: 22.55 kWhEp / m2.year

- Cooling: 2.97 kWhEp / m2.year

- Fans: 5.26 kwhef / m2.year

- Auxiliaries: 1.93 kwhef / m2.year

- Lighting: 5.51 kwhef / m2.year

Initial consumption : 175,00 kWh/m<sup>2</sup>.an

#### Real final energy consumption

Final Energy : 38,00 kWh/m<sup>2</sup>.an

#### Envelope performance

Envelope U-Value : 0,84 W.m<sup>-2</sup>.K<sup>-1</sup>

More information :

Refurbished facade wall : curtain wall with 10 cm insulationRenovated roof with 10 cm of polyurethane, R = 4.3 m<sup>2</sup>K / W

Indicator : I4

Air Tightness Value : 1,70

## More information

The thermal performance joinery has improved for 53% The renovation of the site reduces by 30% the building losses.

## Renewables & systems

### Systems

Heating system :

- Condensing gas boiler
- Heat pump
- Water radiator
- Tape

Hot water system :

- Individual electric boiler

Cooling system :

- Reversible heat pump
- VRV Syst. (Variable refrigerant Volume)

Ventilation system :

- Natural ventilation
- Single flow
- Double flow heat exchanger

Renewable systems :

- No renewable energy systems

### Smart Building

BMS :

Effipilot System

## Environment

### Urban environment

Land plot area : 9 906,00 m<sup>2</sup>

Built-up area : 22,00 %

Green space : 6 123,00

Building in suburban area with several catering services  
Tram stop Wasquehal Bridge located just opposite the site

## Products

### Product

Heated window

Duthoit Menuiseries

38 Rue Pasteur 59623 Houplin-Ancoisne 03 20 90 10 25

<http://www.duthoit-menuiseries.fr/>

Product category : Second œuvre / Menuiseries extérieures

A layer of metallic microparticles invisible to the naked eye is deposited on the inner surface of the glass and serves as low-temperature heating resistor (20 to 45 ° C) allowing:

- To eliminate the feeling of cold walls
- To have only one side of the heating pane (the other part of the glazing, outside stays cool).

It's nice not to feel the effect of cold walls: these are the surfaces poorly insulated a building, responsible for a cold radiation, heat loss and discomfort.



Biodiversity roof

TOPAGER

10 bis rue Bisson 75020 Paris

<http://www.topager.com>

Product category :

Improved acoustic comfort thanks to absorbers in office spaceImproved noise insulation to achieve a weakening of 30 decibels between officesAudit acoustic measurements at the end of work

ZOE

UBEEQO

12 rue Barthélémy Danjou Bât A 92100 Boulogne-Billancourt 01 78 16 45 70

<http://www.ubeeqo.fr>

Product category :

Ubeeqo provides a car only when you need it: self-service car rental or traditional chauffeur-driven vehicle;

Hive

Bee City

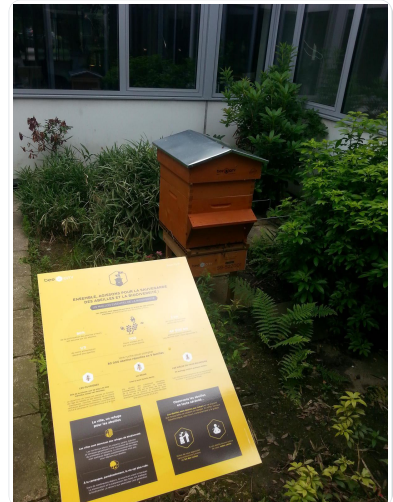
170 allée de l'Ecopark 59118 Wambrechies - France

<http://www.beecity.fr>

Product category :

There are 3 hives on the site.Local beekeeper + involvement of colleagues in the process

We act to protect bees and biodiversity.



Solar chimney

POUCHAIN

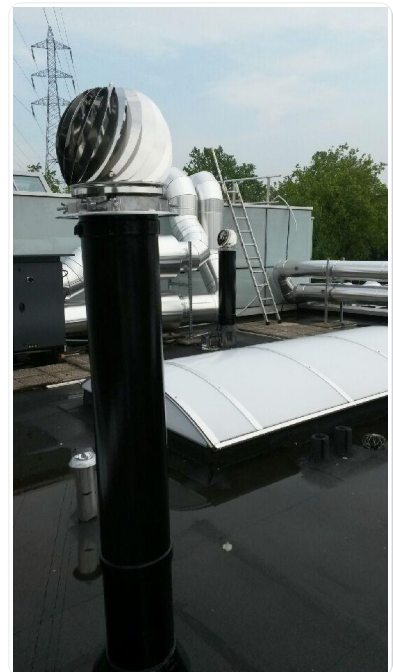
Jérémy AGAR

<http://www.pouchain.fr>

Product category : Génie climatique, électricité / Ventilation, rafraîchissement

Creating an air current between the opening of the window of the inclined curtain wall and a hole in the roof that extends through a steel tube, painted black.Natural convection movement created and amplified by the introduction of year-end aspirator fireplace that rotates with the wind and / or air movement.

The solar chimney is an innovative, simple, efficient, sensible and perfectly suited to our building.



Effipilot

EFFIPILOT

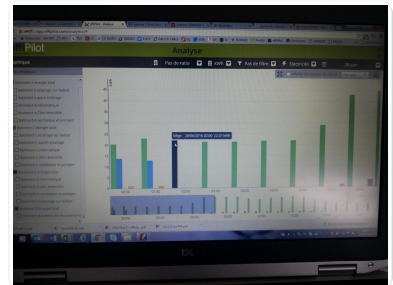
165 avenue de bretagne 59000 Lille 06 05 00 76 77

<http://www.fffipilot.com>

Product category :

Autopilot energy efficiency, it allows a daily and automatic optimization of equipment. The comfort level returned by the user on a web platform. The tool then manages the technical equipment to achieve this comfort, taking into account the actual and future weather conditions, the properties of buildings (permanently performed dynamic thermal simulation); to start the operation of equipment to the optimum.

Effipilot is a friendly and easy to handle tool.



## Costs

### Construction and exploitation costs

Total cost of the building : 1 500 000 €

## Health and comfort

### Indoor Air quality

Dual flow ventilation system extended to the whole building.air conditioning system replaced with solar chimneys in offices that were overheating mostNew ceiling tiles classified E1 (formaldehyde emissions in less than or equal to 0.124 mg / m<sup>3</sup>)interior paints and glue glass cloth rated A +

### Comfort

**Health & comfort :** Thermal comfort enhanced by replacement of woodwork and equipmentOptimization of office lighting by choosing appropriate windows and new lighting LEDs

**Calculated thermal comfort :** Simulation Thermique Dynamique réalisée

**Acoustic comfort :** Improved acoustic comfort thanks to absorbers in office spaceimproved noise insulation to achieve a weakening of 30 decibels between officesAudit acoustic measurements at the end of work

## Contest

## Reasons for participating in the competition(s)

- Energy: renovation with obtaining Effinergie BBC label .
- Educational: user support during work and after work on energy efficiency
- Biodiversity: hives , biodiversity roof
- Mobility: electric carsharing
- Comfort: visual comfort acoustic absorbers +
- Technical natural ventilation through solar chimneys / heated windows
- Innovations : integration of start- up technology : SMART IMPULSE and EFFIPILOT
- Creation of a visit educational trail

## Building candidate in the category



Energie & Climats Tempérés



Coup de Cœur des Internautes

