New headquarters of Thomas & Piron Bâtiment

by Céline Goffin / 2021-03-04 14:22:07 / Belgique / 8544 / FR

Primary energy need :

-5.16 kWhep/m².an

(Calculation method :)

ENERGY CONSUMPTION

Economical 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 **A**

Building Type : Office building < 28m
Construction Year : 2017
Delivery year : 2019
Address 1 - street : Rue du Fort d'Andoy, 5 5100 WIERDE, Belgique
Climate zone : [Cwb] Mild, dry winter, cool and wet summer.

Net Floor Area : 3 140 m² SHON
Construction/refurbishment cost : 6 101 000 €
Number of Work station : 175 Work station
Cost/m2 : 1942.99 €/m²

Certifications :

breeam

Proposed by :

MATRI ciel

General information

The new building, designed by Synergy International, has three levels (garden level, ground floor and first floor) and is connected to the first wing by a 260 m² glass atrium.
This atrium is both the main entrance to the building and, above all, becomes the distribution point for all the offices and meeting rooms located in the two buildings connected around this articulation.
The new headquarters of Thomas & Piron Bâtiment is an energy-plus building, under the new way of working and BREEAM Excellent concepts.
The development and construction activity must respond to the contemporary concerns of our societies. Thomas & Piron Bâtiment's social responsibility is particularly evident in its social, economic and environmental issues. The first building, completed in 2014, met the "zero energy" standard, while the new headquarters, a major extension of the first inaugurated on 4 April 2019, is an energy-plus building.

Browser not compatible

Building users opinion

The comfort level of the occupants was measured by means of a satisfaction survey. An overall score of 80% was given to the building. Acoustics and ventilation were however highlighted as areas for improvement.

If you had to do it again?

In terms of energy efficiency, one thing to remember is that there are never enough energy meters to monitor all potential drifts.

See more details about this project

https://www.thomas-piron.eu/actualite/des-bureaux-limage-de-notre-revolution
https://www.synergy-international.com/fr/projects/TPBATII/279
https://www.matriciel.be/projet/exttpbat
https://www.six.lu/project/be-wierde-extension-de-bureaux-thomas-piron/

Data reliability

Assessor

Photo credit

Kolorsprod

Stakeholders

Contractor

Name : Thomas & Piron Bâtiment
Contact : Aubry LEFEBVRE - +32 81 32 24 24 - infotpbat@thomas-piron.eu
http://thomas-piron.eu

Construction Manager

Name : Thomas & Piron Bâtiment
Contact : Pascal DELAHAUT - +32 81 32 24 24 - infotpbat@thomas-piron.eu
http://thomas-piron.eu

Stakeholders

Function : Thermal consultancy agency

MATRIciel

Arnaud BERTRAND - +32 10 24 15 70 - bertrand@matriciel.be

https://www.matriciel.be/
Assistance with architectural, energy and environmental design - -Studies: water, biodiversity, renewable energies, thermal and visual comfort - Assistance with TS (geothermal energy dimensioning) - Resp. PEB - BREEAM Assessor

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Function : Designer

Synergy International

Julie THIRION - +32 2 640 87 47 - info@synergy-international.com

https://www.synergy-international.com/
Design and implementation monitoring

Function : Structures calculist

SIX Consulting & Engineering

Jean-François PONCELET - +352 26 10 62 1 - info@six-eng.eu

https://www.six.lu/
Studies and implementation monitoring Stability and Special Techniques

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Function : Structures calculist

D2S International

Geert DESANGHERE - +32 16 23 89 88 - d2sint@d2sint.com

https://www.d2sint.com
Design and implementation monitoring

Function : Others

Global Workspaces

+32 2 663 27 40 - global@global-dpm.be

https://www.global-workspaces.com/fr/
Advice on workspaces design

Function : Others

SIXCO

Philippe MALCORPS - philippe.malcorps@sixco.eu

https://www.sixco.eu/fr
Health & Safety Coordinator: Studies and implementation monitoring

Contracting method

Lump-sum turnkey

Owner approach of sustainability

Thomas & Piron has always been able to anticipate the evolution of the construction sector, and was the company that built the first passive offices in Wallonia (with ecological management of maintenance practices by users). These offices, completed in September 2008, are located in Marche-en-Famenne.
In 2013, the Thomas & Piron Group underwent an important change; a partial split of Thomas & Piron SA in favour of several new companies including Thomas & Piron Bâtiment SA.
The multi-residential activity of the Thomas & Piron Group therefore moved to the outskirts of Namur in 2014 in new buildings with a "zero energy" standard. This location, which is more central than the one in Our (in the Commune of Paliseul in the Province of Luxembourg), was not chosen at random. Namur is close to all major cities. Namur has thus become the centre of activity for Thomas & Piron Bâtiment and brings the staff closer to the nerve centres.
The increasing size of the teams required the creation of new work spaces. A reflection process involving the employees was put in place. The study carried out with the Global Workspaces office made it possible to decide on the division of spaces into mini openspaces, the creation of meeting rooms adapted to the needs of each department, the gathering of employees in coffee corners or the reception of external visitors around an atrium, all taking into account the acoustics and luminosity of the spaces defined.
By making this exemplary building the property of all its employees, the aim is to ensure that it can be reproduced and implemented in future projects.
This building is the first one built by the company to be an energy-plus building, which means that the consumption of lighting, heating, cooling, ventilation and auxiliaries is covered by the production of renewable energy. This building has enabled Thomas & Piron Bâtiment to establish its expertise in the design and construction of quality office buildings; a showcase for its know-how!

Architectural description

This building rises over 4 levels (semi-buried car park and cellars, garden level, ground floor and first floor), taking advantage of the slope of the land, and is connected to the first, pre-existing wing by a 260 m² glass atrium. This atrium is both the main entrance to the building and the meeting and distribution point for all the offices and meeting rooms located in the two buildings connected around this articulation.

The project was developed in close partnership with the end users of the offices. Synergy International and the Global office worked together to study the specific needs of each user and to propose a synthesis that brings together the expectations of each, but also the new challenges of an office building allowing for flexibility of use with regard to the actual presence of each person in the office, but also future developments.

While proposing open-space office floors that optimise the surface area of the building, the layout offers a high degree of conviviality while respecting the work of each individual. Thus, wooden screens punctuate the passageways and give more privacy to the work areas, plants soothe the work atmosphere and improve air quality, and small meeting rooms or telephone booths are set up so that each task can coexist serenely. Coffee corners have been set up and are real meeting places for workers, but also for visitors.

Lastly, the emphasis was placed on comfort, which was reflected in particular attention paid to acoustics and the use of highly sound-absorbent materials, natural light and direct views of the exterior, and thermal comfort. The latter was achieved by leaving the concrete structure partly exposed in order to benefit from the building's good inertia and by using an insulating envelope to prevent heat build-up. The thermal ceilings are set back from the facade and thus make it possible to benefit from the thermal inertia of the slab. These provide a high level of thermal comfort both in the summer by providing cold and in the winter by providing heat.

Energy

Energy consumption

Primary energy need : -5,16 kWhep/m^2.an
Primary energy need for standard building : 639 815,00 kWhep/m^2.an
Calculation method :

CEEB : 0.1049

Final Energy : 136 589,00 kWhef/m^2.an

Breakdown for energy consumption :
Heating: 26%, Cooling: 38%, Lighting: 24%, Ventilation: 12%

More information :
FFollowing the monitoring of the first year, we were able to verify that the different production modes were used at the right times: - In heating mode, the heat pump always has priority over the boiler. The boiler is only switched on when the outside temperature is negative. - In cooling mode, geocooling from geothermal boreholes and free cooling are always used whenever possible before the chiller is switched on. A corrective action is currently being studied to optimise the ventilation rates that are really useful according to the occupancy and the air quality. We realised that we could extend the periods of cut-off or lowering of the hygienic airflow.

Envelope performance

Envelope U-Value : 0,32 $W.m^{-2}.K^{-1}$

More information :
Frame: triple glazing with factor g 0.53: Uw = 0.95 W / m² - K Curtain walls: triple glazing with factor g 0.4: Ucw = 0.68W / m².K - Wall: U = 0.15 W /m².K (22 cm EPS) - Roof 0.11 W / m².K (20 cm PIR) - Slab: U = 0.21 W / m².K (20 cm PUR proj). The building slabs are all made of reinforced concrete without fallout. Several areas were formworked in situ (basement cover, atrium walkway, atrium roof, level -1 roof and exterior staircase). The other slabs were made using pre-slabs. The basement walls are made of concrete blocks, Stepoc blocks and precast walls. For the parts above ground, sand-lime blocks were used. Reinforced concrete walls are also present in various places.

Building Compactness Coefficient : 2,91

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

Air Tightness Value : 1,84

Renewables & systems

Systems

Heating system :
- Condensing gas boiler
- Geothermal heat pump
- Radiant ceiling
- Aerotherm Heater

Hot water system :
- Low temperature gas boiler
- Heat pump

Cooling system :
- Water chiller
- Reversible heat pump
- VAV Syst. (Variable Air Volume system)
- Floor cooling
- Radiant ceiling
- Others

Ventilation system :
- Natural ventilation
- humidity sensitive Air Handling Unit (hygro A
- Double flow heat exchanger

Renewable systems :
- Solar photovoltaic
- Heat pump on geothermal pile

Renewable energy production : 81,00 %

Solutions enhancing nature free gains :
High level of "passive" type insulation - Optimization of the window surface to maximize natural lighting - External solar protection against overheating - Free cooling by natural ventilation of the atrium

Smart Building

BMS :
Accessibility, access control, booking of meeting rooms

Users' opinion on the Smart Building functions :

The main advantage for the occupants of the building is the possibility to adjust the room thermostat (possibility to increase or decrease the temperature by 2 degrees).

Environment

Urban environment

The relocation of the company's activities to the centre of Wallonia is the first step towards reducing the distances travelled by workers.
The new building and its surroundings also include 6 charging points for electric cars, multiple bicycle storage areas, showers and changing rooms for cyclists, and a cafeteria that should save staff members having to travel for lunch.
A car-sharing group has been set up and runs within the company. Its users benefit from privileged parking spaces near the entrances.
Finally, 2 electric cars are available to staff for travelling to external meetings.
The design team called on an ecologist to ensure that the landscaping of the green spaces was as beneficial as possible to local biodiversity.
The landscaping of the surroundings has thus integrated interesting plant species that have been preserved. In addition to the 400 m² of green roofs, it offers different biotopes and shelters to accommodate a variety of fauna: an orchard, a flower meadow, a pond, nesting boxes and an insect hotel.
The planted species are numerous, varied and indigenous. In particular, there are more than 25 different species of plantations on the green roofs, and 24 fruit trees of 12 different species of regional origin in the orchard.

Land plot area : 15 800,00 m^2

Built-up area : 9,00 %

Green space : 5 400,00

Products

Product

Rainwater management

Product category : Aménagement extérieurs / Gestion des eaux pluviales

The rainwater management system is designed so that 100% of it is infiltrated into the ground, without being discharged into the sewer system: • The parking facilities are mostly permeable or semi-permeable to allow direct infiltration of water from current rainfall • Water from roofs that is not reused, and run-off water during heavy rainfall, is collected and taken to an infiltration basin. This system has been designed for 100-year rainfall.

Costs

Construction and exploitation costs

Renewable energy systems cost : 221 138,00 €

Cost of studies : 765 000 €

Total cost of the building : 6 101 000 €

Additional information on costs :
Geothermal energy and solar panels make up the costs of renewable energy systems

Energy bill

Forecasted energy bill/year : 1 212,34 €

Real energy cost/m2 : 0.39

Real energy cost/Work station : 6.93

Health and comfort

Water management

Consumption from water network : 1 235,00 m^3

Consumption of harvested rainwater : 486,00 m^3

Water Self Sufficiency Index : 0.28

Water Consumption/m2 : 0.39

Water Consumption/Work station : 7.06

The need for rainwater to supply the toilets, maintain the building and water the green roofs is estimated at 542 m³/year. A 30 m³ tank allows 477 m³ of drinking water to be saved per year and ensures 20 days of autonomous operation.

Indoor Air quality

- No measurement guaranteed for post-construction VOC and formaldehyde emissions.
- Production of an IAQ air quality plan including the technical prescriptions for ventilation, its design, implementation, commissioning, regulation and maintenance.

Comfort

Health & comfort :

- Optimization of window area to maximize daylight
- Dimming of artificial lighting according to natural light
- Validation of the HEA01 Breeam criterion (visual comfort): more than 95% of the relevant net area meets the requirements of the view to the outside criterion
- Storage of the building's summer heat in the basement for winter use via geothermal energy

Calculated thermal comfort : Critère HEA03 de Breeam obtenu et validé par simulation thermique dynamique via TRNsys - Respect de la norme EN 15251

Daylight factor : FLJ moyen sur paysager : 2,94% au R+1 et 2,04% au rdc simulé par Ecotect/daysim.

Carbon

GHG emissions

GHG in use : 3,20 $KgCO_2/m^2/an$

Methodology used :

The LCA analysis tool used for this study is the ELODIE © software developed by CSTB. This tool is validated for BREEAM certification by BRE.

Building lifetime : 60,00 an(s)

GHG Cradle to Grave : 1 433,17 $KgCO_2/m^2$

The calculation of GHGs is carried out with the ELODIE tool (CSTB) using the INIES database

Life Cycle Analysis

The calculation of GHGs is carried out with the ELODIE tool (CSTB) using the INIES database

Eco-design material :

ECO-MATERIALS : Use of FSC-certified wood for construction

Contest

Reasons for participating in the competition(s)

It is an energy-plus building: the consumption of lighting, heating, cooling, ventilation and auxiliaries is covered by the production of renewable energy from more than +/- 900 m² (166 kWp) of photovoltaic and BiPV solar panels. The performance of the building according to the PEB regulation is Ew = -3 with a specific primary energy consumption of -8.4 kWh/m².year.
To reduce the environmental impact of the construction, the company has given preference to local suppliers.
Thomas & Piron Bâtiment has more than 200 employees. In recent years, the expansion of the teams has necessitated the creation of new work spaces. This reflection was based on the opinions of 70 employees. The aim: to think with them about the solutions to be implemented in terms of workspace, well-being, mobility and innovation.
Thomas & Piron Bâtiment places the fight against global warming at the heart of its concerns and claims a different approach to work while maintaining the well-being and comfort of its employees as priorities.

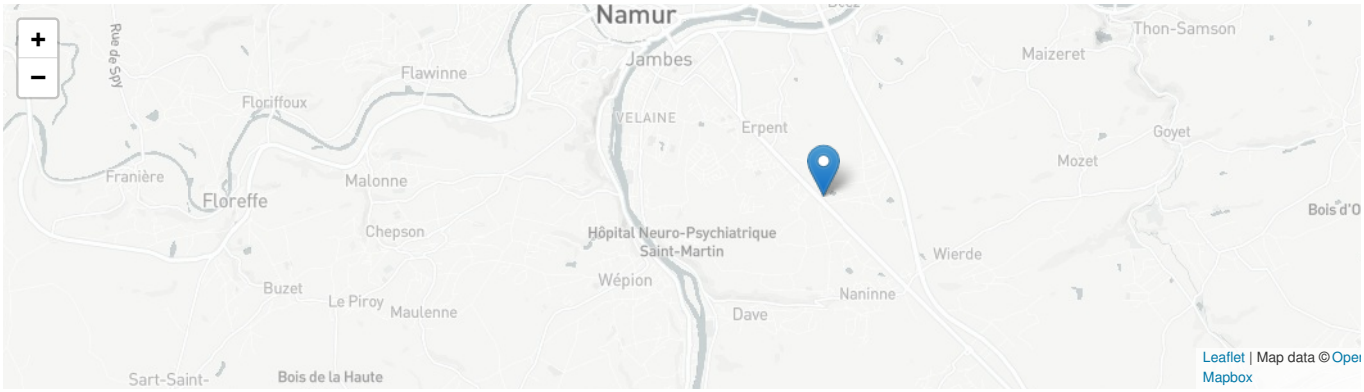
Building candidate in the category

Energie & Climats Tempérés

GREEN SOLUTIONS AWARDS
POWERED BY Construction21.org

Bas Carbone

Santé & Confort



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