SENSATIONS

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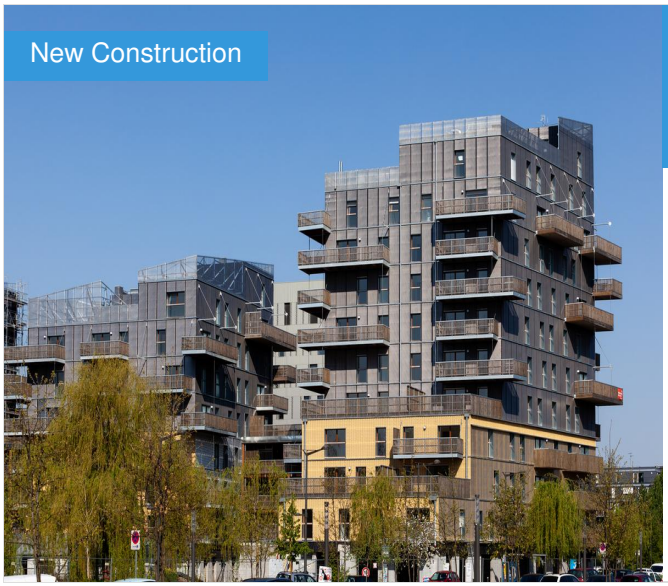

Primary energy need :

57.8 kWhep/m².an

(Calculation method : RT 2012)

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 : Collective housing > 50m
Construction Year : 2017
Delivery year : 2019
Address 1 - street : Avenue de Vitry-le-François / Rue des Cavaliers 67000 STRASBOURG, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 9 282 m² Autre type de surface nette
Construction/refurbishment cost : 19 000 000 €
Cost/m2 : 2046.97 €/m²

Certifications :

Proposed by :

General information

The highest timber construction in France
Wood, walls and floors, the only concessions are because of regulation. A pioneer of the genre, this set culminates at 38 meters high, with 146 apartments and shops spread over 3 buildings of 8 to 11 floors. An architectural and technical feat, unparalleled to this day, showcasing future-oriented and responsible buildings.

Wood: a construction accelerator
Avant-garde in more ways than one, the realization is particularly for its structure. The set of 3 buildings is almost completely made up of natural and biobased materials, including vertical circulation cores, namely elevators and stairs.
A real technical challenge, raised by Bouygues Immobilier and its partners, after 3 years of research and studies. Paradoxically, it took only 3 months to erect and assemble the structure of this building "demonstrator and eco-responsible". A total of 3,500 m3 of wood will have been required to complete the set.

An iconic building

SENSATIONS is located in the Eurometropolis of Strasbourg known for its bias and urbanistic audacity. Directly connected to Germany, by the bridge of Europe and a footbridge, SENSATIONS is an ambitious project, orchestrated by Bouygues Immobilier, in the heart of the emblematic district of Deux-Rives, taking advantage of the remarkable metamorphosis of the banks of the Rhine.

Comfort and complementarity of uses
Three buildings compose SENSATIONS whose height is between R + 8 and R + 11. 146 residential units from the studio to the T5 are proposed as well as 6 commercial spaces. The apartments are connected and smart. They all have a balcony, terrace or garden.

Sustainable development approach of the project owner

Buildings with passive energy and low carbon, SENSATIONS is composed of mainly natural materials, recyclable, low emission of pollutants. It is powered by a geothermal heat pump. "Building good for the planet, it is good for the economy by creating new opportunities for the wood industry," says Robert Herrmann, president of the Eurométropole. Naturally, SENSATIONS claims to be an exemplary residence, following an economical and ecological approach of tomorrow's housing.

Architectural description

Even when it will not be the highest in France, "Sensations" will remain the "most wood": almost all of its structure is made of this natural material. Including the cores of vertical circulation (lifts and stairs). Like the current floors, the load-bearing walls and the facade, they are made of Austrian KLH's cross-laminated timber (CLT), combined with a glue-laminated beam-to-beam structure. "Only the flights of stairs and the base on the ground floor of recovery charges are concrete, for regulatory reasons," said Christophe Ouhayoun, associate architect of the Paris office KOZ. This set culminates at 38 meters high , with 146 homes and shops, spread over 3 buildings from 8 to 11 floors. Bathed in natural light, a guarantee of well-being and energy saving, the majority of housing are through and systematically offer an outdoor living space: balcony, terrace or private garden.

See more details about this project

https://www.construction21.org/france/articles/fr/a-38-metres-de-haut-le-bois-fait-sensations-a-strasbourg.html

Photo credit

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Stakeholders

Contractor

Name : Bouygues Immobilier
Contact : contact[at]bouygues-immobilier.com
https://www.bouygues-immobilier.com/

Construction Manager

Name : KOZ Architectes
http://www.koz.fr/indexhibit/

Stakeholders

Function : Construction Manager

ASP Architecture

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associate

Function : Construction Manager

Ingénierie Bois

info[at]ingenieriebois.fr

https://www.ingenieriebois.fr/
BE wood structure

Function : Construction Manager

Illios

https://effilios.fr/
Study and energy consulting of buildings

Function : Construction company

Eiffage Construction

communication.energie[at]eiffage.com

https://www.eiffageconstruction.com/
Wood frame Altibois

Function : Company

Socotec

https://www.socotec.fr/
Control office

Function : Structures calculist

AIDA ACOUSTIQUE

contact[at]aida-acoustique.com

http://www.aida-acoustique.com/fr.html
Acoustical design office

Energy

Energy consumption

Primary energy need : 57,80 kWhep/m^2.an

Primary energy need for standard building : 59,71 kWhep/m^2.an

Calculation method : RT 2012

Breakdown for energy consumption : Cep heating: 16.2 kWh / m2.an Cep cooled: 3 kWh / m2.year Cep ECS: 30.7 kWh / m2.an Cep lighting: 4.1 kWh / m2.an Auxiliary plants: 3.9 kWh / m2.year

Envelope performance

More information :
WALLS
In-floor housing facades: Up = 0.240 W / (m².K)
Wood frame front: Up = 0.190 W / (m².K)
Frontage Ground floor housing: Up = 0.200 W / (m².K)
Walls on Lift: Up = 0,487 W / (m².K)
Walls on Commerce and LnC of the rdc: Up = 0,281 W / (m².K)
Partition SAD 160: Up = 0.540 W / (m².K)
Roof terrace sealed: Up = 0.158 W / (m².K)
Low floor on crawl space: Up: 0.187 W / (m².K)
Low floor of R + 1 on the outside: Up = 0.224 W / (m².K)
Low floor of R + 1 on LnC or trade: Up = 0.267 W / (m².K)

Indicator : I4

Air Tightness Value : 0,60

More information

Cmax RT2012 = 76.30 kWhEP/m² SHONRT.an

Renewables & systems

Systems

Heating system :

- Condensing gas boiler
- Geothermal heat pump

Hot water system :

- Condensing gas boiler
- Heat pump

Cooling system :

- Geothermal heat pump

Ventilation system :

- Natural ventilation
- Humidity sensitive Air Handling Unit (Hygro B

Renewable systems :

- No renewable energy systems

Other information on HVAC :

The heating is provided by a geothermal heat pump and a collective condensing gas boiler. This couple ensures the energy needs of the building, for the production of heating but also domestic hot water.

Refreshment by natural-cooling. In the RT2012 calculation engine, the cooling is simulated by a PAC with a COP of 100 and an absorbed power of 20 kW corresponding to the power of the well pumps and circulator.

Ventilation: Simple humidity-controlled flow type B with low energy consumption. The extractors are placed in roof terraces of the building.

Environment

Urban environment

Directly connected to Germany, by the bridge of Europe and a footbridge, SENSATIONS is an ambitious project, orchestrated by Bouygues Immobilier, in the heart of the emblematic district of Deux-Rives, taking advantage of the remarkable metamorphosis of the banks of the Rhine. Bordered by small streets, SENSATIONS is nevertheless subject to the urban and acoustic constraints of two major arteries. To remedy this, the building has 135 meters of facades on Avenue de Vitry-le-François. This urban front preserves the island core of acoustic nuisances.

Products

Product

Product category : Génie climatique, électricité / Ventilation, rafraîchissement

-VMC hygro B single flow
-Reversible heating plate (refreshing by free cooling) powered by a cap on table / booster by gas boiler

Product category : Second œuvre / Cloisons, isolation

Façades housing in floor:
- Exterior cladding (larch or expanded metal panel)
- Th38 type external insulation of 70 mm (Ri = 1.85 m².K / W) - l: 0.038 m.K / W certified ACERMI
- External insulation type Alphalene 70 mm (Ri = 2.00 m².K / W) - l: 0.035 m.K / W certified ACERMI
- KLH panel 162 mm
- Technical vacuum 75 mm inside + Bio sourced wool 70mm (Ri = 1,75 m².K / W) - Not certified l: 0.040 m.K / W
- Drywall - BA13

Product category : Second œuvre / Cloisons, isolation

Wood frame facade:
- Exterior cladding (larch or expanded metal panel)
- Th40 type external insulation of 70 mm (Ri = 1.75 m².K / W) - l: 0.040 m.K / W certified ACERMI
- Insulation between chevron (spacing of 60 cm) of 140 mm (Ri = 3.50 m².K / W) - l: 0.040 m.K / W certified ACERMI
- Technical vacuum 60 mm inside + Mineral wool of 50 mm on 50 cm at the minimum from the joinery (Ri = 1,25 m².K / W) - Not certified l: 0.040 m.K / W
- Drywall - BA13

Product category : Second œuvre / Cloisons, isolation

Ground floor of housing:
- Concrete sail
- Inner insulation with 180 mm mineral wool (Ri = 4.75 m².K / W) - l: 0.038 m.K / W certified ACERMI
- Drywall - BA13

Product category : Second œuvre / Cloisons, isolation

Walls on Lift:
- Insulation with 45 mm mineral wool in the technical vacuum (Ri = 1.125 m².K / W) - certified ACERMI
- KLH panel

Product category : Second œuvre / Cloisons, isolation

Walls on Commerce and LnC of the rdc:
- Insulation by thermal-acoustic complex type ISOVER Calibel 100 + 10 (Ri = 3.20 m².K / W) - certified ACERMI
- Concrete sail

Product category : Second œuvre / Cloisons, isolation

Partition SAD 160:
- Plasterboard 25 mm
- 2 layers of mineral wool 2 * 48 mm
- Plasterboard 25 mm

Product category : Second œuvre / Cloisons, isolation

Roof terrace sealed:
- Sealing complex
- Insulation under waterproofing with 100 mm Polyurethane (Ri = 4.35 m².K / W) - I: 0.023 m.K / W certified ACERMI
- KLH wood flooring

Product category : Second œuvre / Cloisons, isolation

Low floor on crawl space:
- 6cm cap
- Knauf Thane Sol underfloor insulation of 82mm (Ri = 3.70 m².K / W) - Certified ACERMI
- Acoustic resilient
- Concrete slab thick according to needs

Product category : Second œuvre / Menuiseries extérieures

Joinery NF certified housing Wood window: - Wood joinery with argon glazing little emissive, performance of the whole Uw = 1.30 W / m².K (all bays are equipped with monobloc roller shutters). - thermal performance in line with the acoustic performance needed on the project. - Performance of the safe Uc ≤ 1.10 W / m².K. - Light transmittance of the glazing alone: 82% - Solar factor of the glazing alone: 65% - AEV classification: A3 - E4 - VA2 mini

Costs

Construction and exploitation costs

Total cost of the building : 19 000 000 €

Health and comfort

Indoor Air quality

Representing 9 282m2 of surface, the 3 buildings of SENSATIONS pay particular attention to the quality of indoor air. The building displays a low emission of pollutants, ensuring a healthier environment and respectful of nature. The indoor air quality of the apartments is improved by the use of low pollutant materials covering walls, ceilings and floors.

Comfort

Health & comfort :

SENSATIONS illustrates a new art of living, between city and nature. The project embodies perfectly the new habitat modes and ecological issues: "the city by nature"! In a completely redeveloped area, east of the Jardin des Deux-Rives, open to the city, the residence combines architectural excellence and comfort of life. A meticulous work on the comfort of the inhabitant was also realized: the use of insulated biosourced, an air quality improved, a reversible heating floor with a water-water CAP. New apartments are defined by a sustainable and modern approach to comfort. Interiors offer quality services consistent with environmental commitments. Bathed in natural light, the majority of accommodations are through and offer an outdoor living space: balcony, terrace or private garden. The wood structure also offers a perception of comfort different from that of materials such as concrete.

Acoustic comfort :

The project is subject to the noise of a transport infrastructure. The section consists of the following routes: -Avenue du Rhin / Route du Rhin-Avenue of the Pont de l'Europe Along the Rue des Cavaliers, the building has 135 meters of facades on the Avenue de Vitry-le-François. This urban front preserves the island core of acoustic nuisances.

Carbon

GHG emissions

GHG in use : 818,00 $KgCO_2/m^2/an$

https://www.construction21.org/france/data/sources/users/13985/sortieacv.xlsx

Life Cycle Analysis

https://www.construction21.org/france/data/sources/users/13317/sortieacv.xlsx

Eco-design material :

- The false ceilings are able to eliminate 80% of the main volatile organic compounds (VOCs);
- floor coverings are made of natural and recyclable materials
- wall paints are classified as A + low-solvent

In addition, fire and seismic risks have been anticipated: the technical nature of cross-laminated wood panels (CLT) guarantees the most stringent guarantees

Contest

Reasons for participating in the competition(s)

With a height level in wood construction not reached yet in France, SENSATIONS is remarkable by its ability to respond to climate issues. These "low carbon" housing programs significantly improve the quality of life for residents and their neighbors.
The structure of SENSATIONS meets a passive energy level, underlined by the NF Habitat certification. Its performance levels meet the most stringent and advanced requirements: RT2012 level Bepas and BBCA level Excellence.
Naturally, SENSATIONS claims to be an exemplary residence, following an approach that is both economic and ecological of tomorrow's housing.

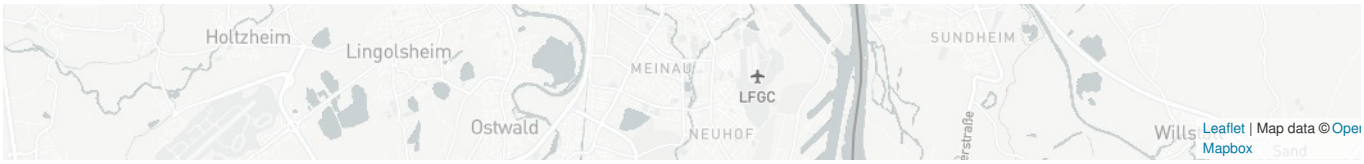
Building candidate in the category

Green Solutions AWARDS powered by Construction21.org

Bas Carbone

Prix du public

Prix des Etudiants



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