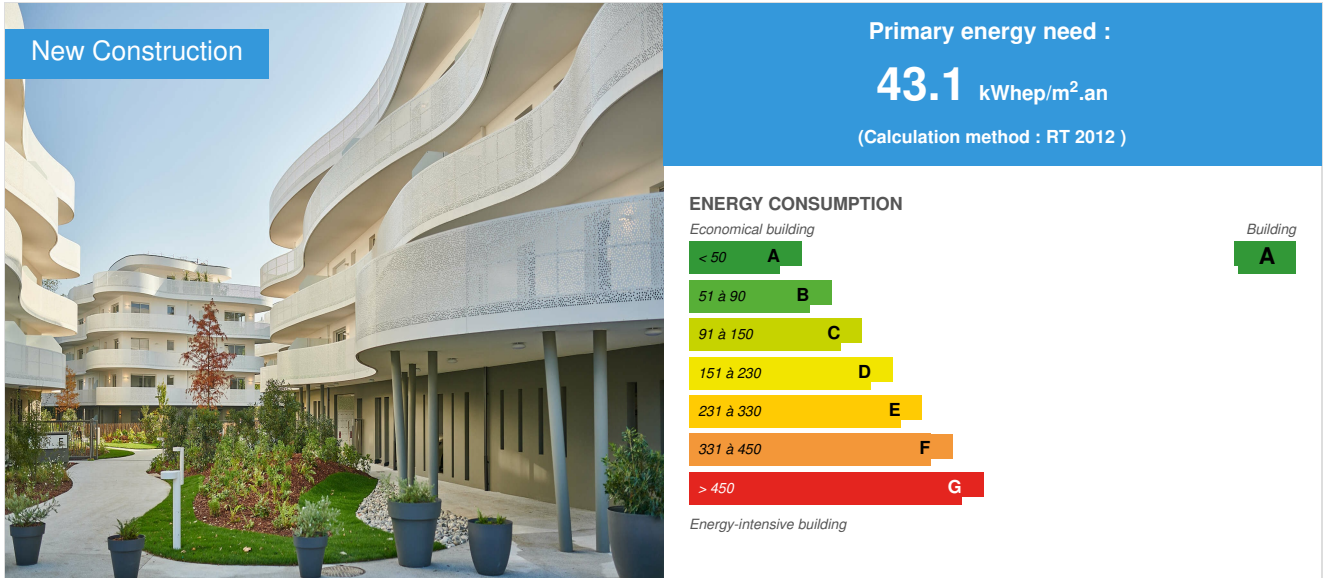


Opalescence

by Foucault de Franclieu / 2022-02-03 00:00:00 / France / 1766 / FR



Building Type : Collective housing < 50m
Construction Year :
Delivery year : 2022
Address 1 - street : 5 bis avenue de Cam de Prats 64100 BAYONNE, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 2 924 m²
Construction/refurbishment cost : 12 000 000 €
Cost/m2 : 4103.97 €/m²

Proposed by :



General information

Case study submitted and written by Foucault Pasquier de Franclieu and Clothilde Gaumer as part of their Masters in Engineering and Sustainable Construction Management at the Ecole Nationale Supérieure d'Arts et Métiers (ENSAM).

The Opalescence program is a bold and innovative real estate project which, through its architecture, its structural organization and its energy performance, creates links. It is first of all a link created with its natural and architectural environment through precise work on integration into the existing heritage. It is then a virtuous link created with nature by ensuring the energy sustainability of the building and by inserting green spaces at the heart of the project. Finally, it is the creation of a renewed social link between the inhabitants and project leaders through a participatory design approach and the development of shared spaces.

The Opalescence program is therefore the fruit of an innovative reflection on a new way of designing the urban habitat of tomorrow and in this it is a model for all builders who are keen to recreate the link.

Sustainable development approach of the project owner

It is undeniable that the Basque Country, and the metropolis of Bayonne, are particularly attractive, as evidenced by the increase of its population. However, the housing stock in the city of Bayonne is old and the urbanization very spread out. The city is therefore facing a new challenge, poorly tackled in the region, namely that of its densification to curb its sprawl and therefore prevent further artificialization of the soil. The Opalescence program fits precisely into this dynamic of densification of the city through R+3 or R+4 buildings constituting a set of more than 100 housing units.

The Opalescence program succeeds in this risky bet of combining densification and living comfort, thanks to unobstructed views from the large bay windows of the housing units, green spaces or even the flexibility of the lines of the building. In this, Opalescence responds to the new challenges that the cities of tomorrow must face.

Architectural description

"The program is part of a remarkable plant environment. The desire is to propose an architecture in dialogue with nature. With its flexible and random shapes, like twirling ribbons, this project is reminiscent of trees with tall stems swaying in the wind. The rounded and asymmetrical shapes give fluidity to the whole project and a feeling of calm and well-being, thus reinforcing the sought-after bioclimatic architecture."

François Hebrard - Architect

Photo credit

JPEG STUDIOS

Stakeholders

Contractor

Name : SCCV BICHTA EDER c/o SOBRIM

Contact : christelle.infantes@sobrim.fr

<https://sobrim-immobilier.com/>

Construction Manager

Name : François HEBRARD

<https://www.hebrard-architectes.fr/>

Stakeholders

Function : Others

LUR

Function : Company

Visual Concept

Energy

Energy consumption

Primary energy need : 43,10 kWh_{ep}/m².an

Primary energy need for standard building : 140,00 kWh_{ep}/m².an

Calculation method : RT 2012

Breakdown for energy consumption : Heating: 18.7 kWh_{EP}/m²/year Domestic hot water: 18.9 kWh_{EP}/m²/year Lighting: 4.2 kWh_{EP}/m²/year Auxiliaries: 1.3 kWh_{EP}/m²/year

Real final energy consumption

Real final energy consumption/m² : 38,60 kWh_{ef}/m².an

Renewables & systems

Systems

Heating system :

- Individual gas boiler
- Electric radiator
- Water radiator

Hot water system :

- Individual gas boiler

Cooling system :

- No cooling system

Ventilation system :

- Single flow
- Humidity sensitive Air Handling Unit (Hygro B)

Renewable systems :

- Solar photovoltaic

Renewable energy production : 71,23 %

100 photovoltaic panels are installed, facing south

Environment

Urban environment

Land plot area : 11 667,00 m²

Green space : 1 500,00

The Opalescence program is located at the heart of a residential and heavily wooded area of Bayonne between the La Nive and Adour rivers. It revolves around a tree-lined central island, reserved for gentle paths since all the car parks are in the basement. This green space includes rest areas, plant and mineral scenographies or even shared gardens. Like the entire architectural project, this central island is based on the interaction between intimacy and sharing.

The buildings are set up in such a way as to open up angles of view on the wooded environment located at the back of the program: these visual breakaways bring a dynamic and breath to the built environment.

Colorist experts have carried out chromatic studies of the surrounding natural and architectural environment in order to identify a range of colors allowing the Opalescence project to integrate as well as possible into the existing building.

Products

Product

Thermedia 0.6 and 0.45

Lafarge

<https://www.lafarge.fr>

Product category : Structural work / Structure - Masonry - Facade

The daring architectural choice of the Opalescence project, namely to offer large continuous balconies, poses a major thermal problem. Indeed, balconies are a source of high heat loss through thermal bridges. To overcome this, high-performance concrete was used throughout the building. Thermedia 0.6 and 0.45 concretes from the Lafarge company were used, because these formulations are 3 to 4 times more insulating than that of a standard concrete and have the advantage of being able to be implemented in a traditional way, without even the need to use thermal breaks. The thermal conductivity of these concretes is then $\lambda=0.54\text{W/m}\cdot\text{K}$ or $\lambda=0.45\text{W/m}\cdot\text{K}$, much lower than that of a standard reinforced concrete which is of the order of $\lambda=1,5\text{W/m}\cdot\text{K}$. The use of this concrete therefore allows greater architectural freedom, key word of the Opalescence project since it can be associated with thermal insulation only from the inside.

Participatory approach - Care design

Product category : Management / Stakeholders involvement

Eager to weave social ties between its inhabitants, the Opalescence project is built around a 170m² sharing space promoting activities, meetings and exchanges inside but also outside the residence. The development of this sharing space was done in a participatory design approach aimed at all the inhabitants so that they are actors and creators of their shared living space.

This approach took place in four stages:

- A phase of chromatic study (color duplicates) and light (light characterization) of the project environment. This study, carried out by colorist experts, aims to create a chromatic identity that best fits into the existing architectural landscape. In addition, an initial consultation of experts made it possible to define the main lines of the shared space in terms of costs, management, maintenance, etc.
- A phase of participatory workshops bringing together 51% of the future inhabitants in the form of questionnaires in order to create a first link between the stakeholders and to collect a maximum of ideas, wishes, proposals relating to the sharing space

- A stage of analysis of the wishes of the inhabitants in order to define, on the one hand, the administrative framework relating to the management of this space and, on the other hand, the design itself, both from the point of view of characterization and the distribution of the different rooms than that of the atmosphere created in terms of texture, materials and colors.
- A last phase of restitution meeting with the inhabitants who participated in order to present the shared space project as a whole. Two proposals were made and submitted to a final vote of the inhabitants.

Costs

Contest

Reasons for participating in the competition(s)

- Etiquette énergétique A avec une consommation d'énergie primaire de 43,10 kWhep/m².an. En consommation réelle, le gain énergétique est prouvé : 38,60 kWh_{ef}/m².an !
- Néanmoins, les logements bénéficient d'apports en lumière importants et de balcons.
- Une démarche participative a été initiée de manière à co-construire le projet avec les résidents.
- Un essai à la densification dans une région marquée par l'étalement.
- Intégration de 1500 m² d'espaces verts.

Building candidate in the category



Prix du public

