

Nishi, villas suspended on an office building

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Building Type : Office building < 28m
Construction Year : 2013
Delivery year : 2015
Address 1 - street : 69002 LYON, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 2 800 m² SHON
Number of Work station : 500 Work station

General information

Nishi is one of the 3 buildings that make up the Hikari block of the confluence district in Lyon. On the edge of the Place Nautique, facing the Saône, the building with an area of 2246 m² of offices on 5 levels houses 4 roof villas, exceptional residences, which take place on the last two levels.

Find the case studies of the other 2 buildings (Minami & Higashi) in our database "Buildings". Find the case study of the entire Hikari project in our "Neighborhoods" database.

Sustainable development approach of the project owner

The project is fully in line with Lyon Confluence's sustainable development policy, in line with the 5 axes of Agenda 21 in Lyon and meets the very high energy performance level set by the specifications: it must be BEPOS all-purpose considered. Designing a positive energy building in a densely populated urban area, on the block scale and not in the neighborhood, is a challenge that is essentially addressed by: • an architecture favoring the implementation of passive devices • maximum use of renewable energies present in situ • the judicious integration of façade surfaces with photovoltaic panels • storage and energy transfer favored by the diversity of the program. However, limiting the reasoning to a "positive energy" criterion can be reductive if the design does not fit into a more global logic, taking into account criteria such as carbon balance, gray energy or notions of use And maintenance and operation.

Architectural description

Nishi, a mixed office, commercial and residential building, combines light with nicks that sculpt the facades to bring natural light to the heart of the interior spaces. At the heart of the island, the courtyard seems to extend into the interior of the building. This work on the depth reinforces the visual transparency of the ground floor and brings the inner courtyard closer to the street. This space resumes the tradition of the Lyons places in "stabilized", planted with trees and shrubs. The terrain rises to form dunes protecting the wind and allow the planting of trees with tall stems. Wooden benches are inserted along the dunes and vegetated areas. At night, the lighting integrated into the façade highlights the faults. The inner courtyard is also illuminated in order to delineate the pedestrian walkways and illuminate the plants. On its two upper levels, Nishi accommodate 4 villas on the roof, jewels of HIKARI. Fruits of a particularly well-designed design, the villas aim at the maximum well-being of its inhabitants. Spaces bathed in light, exceptional view on the Darse of La Confluence, optimized acoustic and thermal comfort; These duplexes T3 and T4 / 5 of exception consist of a part day with vast salons and extended kitchens of terraces, and a part night on the floor, with the rooms and bathrooms, also extended of terraces . Some houses are designed with elegant interior patios.

If you had to do it again?

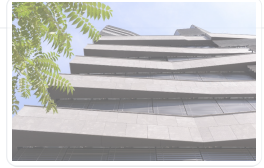
The demonstration and monitoring phase, which will follow the delivery of the building, will cover and analyze all available parameters in order to adjust the technical factors of the island and its equipment to make it actor, as a living being, its behavior And its energy strategies, in the service of control and the economy of consumption.

See more details about this project

<http://www.construction21.org/france/city/fr/hikari-premier-ilot-urbain-a-energie-positive.html>

<https://www.construction21.org/france/case-studies/fr/minami-32-logements-contemporains-faconnes-pour-la-vie-des-familles.html>

<https://www.construction21.org/france/case-studies/fr/higashi-image-de-marque-et-confort-de-travail.html>



Stakeholders

Contractor

Name : Bouygues Immobilier/ SLC Pitance

Contact : v.nether@bouygues-immobilier.com - 04 72 68 28 33

<http://www.bouygues-immobilier.com>

Construction Manager

Name : Kengo Kuma & associates

Contact : 16 rue Martel - 75010 Paris (0144889490)

<http://kkaa.co.jp>

Stakeholders

Function : Others

Toshiba

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

Created by a partnership between BOUYGUES IMMOBILIER / SLC and the Japanese architect Kengo Kuma, HIKARI is the symbol of the universal human challenge of the third millennium: finding a balance between nature and human needs

Function : Construction company

NEDO (New Energy and Industrial Technology Development Organization)

Architect and engineer, Kengo Kuma is a graduate of the University of Tokyo. After a degree at Columbia University, he founded his architecture firm, Kengo Kuma & Associates in 1990.

Function : Assistance to the Contracting Authority

Manaslu Ing

<http://manaslu-ing.com/>

MANASLU Ing. Is an engineering and consulting company with a strong technical expertise in the fields of building energy and based on an original methodology developed by the CEA INES.

Function : Others

NEDO is a Japanese public agency, equivalent to Ademe in France, responsible for supporting innovation and R & D in new forms of energy and environmental and industrial technologies.

Function : Others

Toshiba was selected by NEDO as an industrial partner for the coordination of the various projects constituting the demonstrator Lyon Smart Community

Energy

Energy consumption

Primary energy need : 14,00 kWh/m².an

Primary energy need for standard building : 28,00 kWh/m².an

Calculation method : RT 2012

Breakdown for energy consumption : /!\ The energy consumption is calculated for the entire HIKARI island! The HIKARI assembly should consume between 50 and 60% less than the standards of the current thermal regulation.

Envelope performance

More information :

Structure: Concrete elements that are judiciously sized and positioned have the capacity to store and restore in a controlled manner the free heat or cold energy, in coordination with the natural ventilation of the premises.

The facades are largely glazed with wood / aluminum structures on the ground floor, with exterior insulation.

Joinery: wood or aluminum with thermal bridge cutters.

More information

HIKARI is designed to consume approximately 1400 MWh and produce about 0.2% more.

Renewables & systems

Systems

Heating system :

- Combined Heat and Power
- Solar thermal

Hot water system :

- Solar Thermal

Cooling system :

- Gas absorption chiller
- Canadian well

Ventilation system :

- Canadian well

Renewable systems :

- Solar photovoltaic
- Heat pump (geothermal)
- Biomass boiler

On-site energy production:

- A cogeneration plant in vegetable oil and a photovoltaic plant. Total production of 476 MWh, equivalent to the consumption of approximately 160 households. It covers 80% of the electrical requirements and more than 90% of the heating needs.
- Photovoltaic panels: they transform the solar energy into electricity. They cover the balance of the electrical needs of the island.
- Absorption machine: production of chilled water, from the heat of cogeneration and the cold of the water table. It covers 80% of the cold needs of offices and shops.
- Geothermal: draws freshness in the waters of the Saône and participates in cooling.

Smart Building

BMS :

Centralized management of building parameters: BEMS (Building Energy Management System)

Users' opinion on the Smart Building functions : Cf. product

Environment

Urban environment

Land plot area : 15 000,00 m²

The Hikari islet is at the crossroads between the first development phase of Lyon Confluence and the new district of the Marché Gare developed by the architects Herzog & de Meuron. Located at the corner of Charlemagne and Place Nautique, Hikari benefits from the very high quality environment of the Sainte-Foy-Lès-Lyon hill.

Products

Product

BEMS (Building Energy Management System)

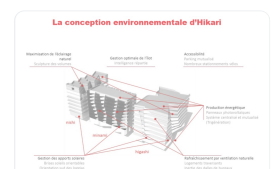
Toshiba

Jessica Boillot (JBoillot@toshiba-tsfc.com)

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

Product category :

The BEMS (Building Energy Management System) is the centralized management of the building's parameters,



which allows to regulate the production of hot or cold, as necessary, in a synergetic way with the optimized use of point energy overproductions (Cogeneration, energy storage, energy recovery, etc.).

This BEMS, which favors the use of biomass (rapeseed oil) and therefore the economy of primary energy consumption, restores a statistical profile of the whole island over the year synthesizing production and consumption.

The demonstration and monitoring phase which will follow the delivery of the building will cover and analyze all available parameters in order to adjust the technical factors of the island and its equipment to make it actor of its behavior and its energy strategies, And this in the service of the control of energy and the economy of consumption.

Costs

Health and comfort

Water management

The rainwater evacuated from the roofs is recovered in a tarpaulin in the basement for reuse for watering green areas and in the toilets of the offices.

Comfort

Health & comfort : The comfort of the users was conceived from the design through the search for an island of houses / offices / businesses, positive energy, functional and spacious. The comfort of the user is based on the availability of a service of home automation (innovation developed by our partner TOSHIBA). Thus users have the possibility to control the comfort and safety equipment and to benefit from a centralized management of heating and lighting but also to have an instrument of control and energy management.

Carbon

GHG emissions

GHG in use : 1,80 KgCO₂/m²/an

Methodology used :

The overall objective is a reduction in the carbon footprint. In order to do this, HIKARI proposes a low-carbon performance by establishing a carbon pre-balance sheet that has allowed two labels to be established: gray energy label, climate label.

GHG Cradle to Grave : 1,80 KgCO₂ /m²

Studies show that HIKARI is classified in Category A in CO₂ emission according to BEPOS (1.8 kg-eq CO₂ / m².an <5 kg-eq CO₂ / m².an)

Life Cycle Analysis

Eco-design material : The choice of materials and the durability of the envelope, aimed at the energy efficiency of the building Specific reflection on architectural choices (design, mobility) and positioning of buildings in order to minimize energy consumption and CO₂ emissions A particular attachment to the choice of materials was made in a logic of "Cradle to cradle" in order to minimize the carbon footprint of the operation and allow the recycling as long as possible of the materials used.

Contest

Building candidate in the category



Smart Building





Coup de Cœur des Internautes



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