Hikari, 1st positive energy urban islet

by Guillaume de la Broise / 2017-06-16 00:00:00 / France / 16448 / FR

Address 1 - street : 69002 COURS CHARLEMAGNE LYON, France

Starting year of the project : 2013
Delivery year of the project : 2015

1.25 ha

Certifications :

ID CARD

Born from the initiative and know-how of Bouygues Immobilier and SLC Pitance, as well as the partnership between Greater Lyon and NEDO (Japan's paragovernmental agency dedicated to energy and environmental innovation), Hikari is the result of an ambition of excellence, at the crossroads of all possible: a building with positive energy mixing shops, offices and dwellings.

Designed by Japanese architect Kengo Kuma, the Hikari project ("Light", in Japanese) is based around 3 buildings along the nautical square of the new district of Lyon Confluence. Thanks to its spatial organization and the variety of its equipment, this "made in Japan" construction promotes the mix of functions and services. Hikari is composed of:

- a 5,500 m² office building, named "Higashi" ("East" in Japanese),

- 36 dwellings on 3,400 sq.m. in the "Minami" building ("South" in Japanese),
- Nishi "(" West "), comprising offices (2,600 m²) and 4 villas on the roof (700 m²),
- 1 000 m² of shops distributed on the ground floor of the 3 buildings.

Programme

- Housing
- Offices
- Businesses and services

Method used to calculate CO2 impact

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

Project progress

- Operational phase

Key points

- Governance
- Quality of life
- Mobility
- Smart city
- Energy /Climate

Approaches used

- Ecodistrict national label
- Others

Certifications

- Ecodistrict national label
- Autre

More info

https://www.bouygues-immobilier-corporate.com/en/content/hikari-lyon-confluence

Data reliability

3rd part certified

TERRITORY

Type of territory

It is on the most emblematic site of the district of Lyon Confluence that Hikari takes place: opposite to the Confluence leisure center and the Hôtel de Région, at the corner of the Charlemagne course, overlooking the new Place Nautique and on the edge of Confluence.

Climate zone

[Cfb] Marine Mild Winter, warm summer, no dry season.

KEY FIGURES

Project holder

Name : Bouygues Immobilier d'Entreprise Rhône Alpes

Type : Private company

General description :

Bouygues Immobilier, a leader in private property development in France and Europe, has 1,879 employees as of December 31, 2016, with revenues of € 2,568 million in 2016. Present in 33 locations in France and four internationally,Bouygues Immobilier, a leader in private property development in France and Europe, has 1,879 employees as of December 31, 2016, with revenues of € 2,568 million in 2016. Present in 33 locations in France and four Bouygues Immobilier has been developing residential, commercial and commercial real estate projects for over 60 years for its clients covering more than 250 cities. Committed to a voluntarist policy in terms of sustainable development and innovation, Bouygues Immobilier is committed to continuous improvement of the technical and architectural quality of its buildings and the satisfaction of its customers. Bouygues Immobilier is the first developer to be both ISO 9001 certified in France, Top Employer France 2016 and winner of Les Palmes 2016 from the French Association for the Customer Relationship. Since September 2015, Bouygues Immobilier has acquired the right to use the Construction NF Habitat brand associated with HQETM for all its new residences.Press contact: Bouygues Immobilier: Valérie Petitbon - Guillaume de la Broïse - Tel. : +33 1 55 38 26 09 - VPB@bouyguesimmobilier.com - g.delabroise@bouygues-immobilier.com

Project management

Description :

Hikari is part of the Lyon Smart Community project, the result of a partnership between Le Grand Lyon and NEDO, which brings together several projects designed to build the city of tomorrow. A special organization has been set up in the competition phase to allow proper appropriation of environmental issues and to encourage a constructive dialogue between architectural, technical and environmental project managers. Above all, the project manager has chosen to be surrounded by an Assistant Project Manager (APM)

in the field of energy and environment: Manaslu Ing. Its expertise and innovation in building energy, reinforced by its approach based on the observation of buildings actually in operation, are used to bring a "constructive criticism" to the proposals made by the BET Environment Praxice and by the engineering. Its role is also to argue the design recommendations, or the requests for rectifications made to the architects by the contracting authority, with a view to achieving the set objectives: for example in the construction of facades, depth and distribution Spaces related to natural lighting issues.

The intervention of the design office Manaslu Ing. in the competition phase continued throughout the life of the project, during the phases of studies (ODA, PRO, DCE) and construction, where he carried out follow-up missions of singing and training in order to sensitize the Companies to the particular thermal of the air-tight buildings. Manslu Ing. Was also in charge of monitoring and operating the Hikari buildings during the two years following their delivery. In general, Manaslu Ing has been the privileged interlocutor of the Tribu firm for all questions related to environmental management. In order to guarantee the success and quality of the project, by initiating a dialogue with the Herzog and Meuron Agency and the HQE APMs of the SPLA Lyon Confluence, Bouygues Immobilier / SLC promised to entrust a mission Complete of project management to the team made up of the architect and the design offices. The team's representative is KUMA & Associates, and the mission has integrated all the phases of the project, from the development of the building permit to the reception of the works.

Project stakeholders

Function : Architecture agency

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. Professor emeritus at the Faculty of Environmental Studies at the Keio University and then at the Faculty of Science and Technology of This same university. In 2008, he created "Kengo Kuma & Associates Europe" in Paris. In 2009, he became a professor at the Graduate School of Architecture at the University of Tokyo. Kendo's work, marked by the synthesis of oriental and western cultures, particular control of transparency and light, includes the Ando Hiroshige Museum, Bato, Tochig Prefecture, the Stone Museum, , Nasu, Tochig Prefecture, Sakushin Gakuin University Utsunomiya, Tochigi Prefecture, Plastic House, Tokyo Center, Bamboo Wall, SOHO Village, Badaling, China, LVMH Building, Osaka, Nagasaki Prefecture Art Museum, Suntory Museum of Art Mintao-ku, Tokyo, Water Block House.

16 rue Martel - 75010 Paris (0144889490)

Construction21 company page :

http://kkaa.co.jp/

MANASLU Ing.

Function : Assistance to the contracting authority

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

http://manaslu-ing.com/

Construction21 company page :

NEDO (New Energy and Industrial Technonology Development Organization)

Function : Other

Partnership for Home Automation and NICT: NEDO, Toshiba NEDO is a Japanese public agency responsible for supporting innovation and R & D in new forms of energy and environmental and industrial technologies.

Construction21 company page :

http://www.nedo.go.jp/

TOSHIBA

Function : Other

Toshiba has been selected by NEDO as an industrial partner for the coordination of the various projects constituting the Lyon Smart Community demonstrator. For Hikari, Toshiba contributes to innovation "positive energy" by bringing Japanese technologies and especially the main energy systems of the island.

jboillot@toshiba-tsf.com

Construction21 company page :

COBALT

Function : Technical consultancy agency

Light designer

http://www.cobalt-lumiere.com/fr/

Construction21 company page :

INGELUX

Function : Technical consultancy agency

Lighting Engineering

http://www.ingelux.com/

Construction21 company page :

SETEC BATIMENT

Function : Other

Civil projects engineering

Construction21 company page :

PRAXICE

Function : Environmental consultancy agency

Environmental and sustainable engineering

Construction21 company page :

VOXOA

Function : Other

Economy of construction

Construction21 company page :

TECSOL

Function : Environmental consultancy agency

Photovoltaic Engineering

http://www.tecsol.fr/

Construction21 company page :

SOLUTIONS

Company :

Company :

QUALITY OF LIFE

Quality of life / density

HIKARI benefits from the Confluence's main assets, facing the Recreation Center and the Hôtel de Région: the banks of the Saône, the green hills of Ste Foy and Oullins, the breathing of the Place Nautique, the vast pool open on the Saône welcomes pleasure boats. The spacing between the different volumes allows a transparency towards the heart of the islet, offering to the public space views on the interior garden. On the North side it opens completely towards the city, and

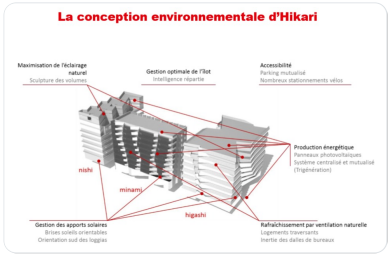
the plot of the ice rink.

Ambient air quality and health

The comfort of the users was conceived from the design through the search for an island housing / offices / businesses, with positive energy, functional and spacious. The comfort of the user is based on the provision of a service of home automation (innovation developed by TOSHIBA). 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.

SOLUTIONS

Technical management of buildings



Description :

Optimization of comfort: maintenance of the ambient comfort, control of the radiators of the housing directly via the user interface of the HEMS (Home Energy Management System).

Semi-automatic control of devices according to the user's lifestyle (or "Omotenashi Concept"): the system defines several scenarios that the user can choose from a specific list, allowing him to pre-programmed control The appliances of its housing such as radiators or lighting.

Obtain detailed energy information and control of the main devices with the Smart Plug and electrical distribution panel: allows the user to monitor the individual energy consumption of the main appliances of his housing.

Immediate visualization of the user's energy consumption: this makes possible to visualize, through a simple application of usage, the consumption of electricity, heating, water and domestic hot water in the dwelling; with the generation of alerts in the event of a threshold being exceeded or drift in relation to the previous period.

All these functionalities are ensured by a large distribution of sensors (and detectors), in particular: windows opening controls, motion detectors, but also temperature and humidity sensors in rooms.

Company :

ECONOMIC DEVELOPMENT

Functional diversity

The architecture in the HIKARI program is at the service of the mix. Indeed, it is articulated according to the destination of the spaces (tertiary, shops and housing). This functional mix is a real asset for the islet since it will bring a continuous activity, as well as a phase shift over time of the energy needs (basis of the energy strategy). It is therefore at the origin of the development of the project and the design of its volumes.

TRANSPORT

Mobility strategy

Bouygues Immobilier wanted to give users the opportunity to favor soft mobility modes by setting up numerous cycling sites at the bottom of each building, including a covered area.

SMART CITY

Smart City strategy

Achieving excellence through controlled technical management

Each building system has been designed to minimize energy wastage :

Control of the common: automatic lighting on presence detection Office trays: automatic illumination on presence detection with light intensity control with manual control possible Automatic management of thermal and visual comfort conditions with possibility of manual control: heating, cooling and positioning of motorized sunscreens Control of the meeting rooms: lighting with manual control of the desired luminous intensity

SOLUTIONS

Lyon Confluence: smart-grid experimental ground unique in Europe

Description :

Hikari is located in the district of Lyon Confluence, the emblem of the Metropole of Lyon, which hosts a smart-grid experiment unique in Europe: the project Lyon Smart Community.

The project is a partnership between the Metropole de Lyon and the Nedo (Japanese public agency responsible for supporting innovation in renewable energies and environmental and industrial technologies). This project aims to provide Confluence with a particularly ambitious demonstration project in Energy efficiency. It integrates at the same time the problems of production and consumption of energy, multimodality, the role of the user and related management tools. Lyon Community is based on 4 pillars:

The realization of Hikari, a set of buildings with positive energy The commissioning of a fleet of electric vehicles in car-sharing (SunMoov), intended for inhabitants and professionals of the neighborhood The installation of energy monitoring tablets in the dwellings in a residential complex of 275 dwellings dating back to the 1930s (La Cité Perrache) The setting up of a system of analysis of data related to the consumption and the production of energy of the assembly of demonstrator.

RESOURCES

Water management

The rainwater evacuated from the roofs has been recovered in a basement tarpaulin for reuse for watering green spaces and in the sanitary facilities of the offices.

Waste management

A sensitization of the manager and the occupants with a view to a selective sorting is put in place:

- Containers for sorting glass, packing boxes, paper, aluminum from other waste in each garbage room in each building.
- Selective sorting area accessible at each level

BIODIVERSITY

Biodiversity and natural areas

The green spaces are in harmony with the building. The drawing, of the court resumes and supports the geometry of the writing project architecture, composed of folds, bias inside a set space. The space of the court is not limited to the volume generated by the extrusion of the buildings, it comes to dig each building to the right of the accesses of the glazed halls to expose to the city. To the north the courtyard opens on the skating rink. A specific landscaped treatment of the interior garden accompanies the management of views and volumes of architecture. The car parks of the light vehicles are all located in the basement, accessible thanks to a protected ramp. A lighting of the plants to the right of the transparencies from the street will project the garden towards the public space lifting makes possible to shelter from the wind, and to give the layer of earth necessary (1.5m) to plant large trees stem. Plant species were specifically chosen for their colors, heights, calibrated to guide the upward visual impact of this yard, and finally their ability to participate in the environmental choices of the project thanks to their property of storage of moisture and freshne

ENERGY/CLIMATE

Climate adaptation, resources conservation, GHG emissions

The islet is the Phare plot of the WWF district "Lyon confluence sustainable neighborhood", and this is one of the reasons that gave its name to the project: HIKARI Lyon Confluence. Indeed, located at the corner of Charlemagne and Quai Riboud, in front of the Jean-Paul Viguier (shopping center) and Christian de Portzamparc (Hôtel de Région) projects, it occupies a particularly sensitive urban position: the old quarter and the new, completion of the alignment on the canal, dialogue with neighboring contemporary architectures; It will be perfectly visible from the tram line. The project is entirely in line with Lyon Confluence's sustainable development policy, according to the 5 axes of the Lyon Agenda 21 and meets the very high energy performance level set by the specifications: it must be all-purpose BEPos considered. Designing a positive energy building in a densely populated urban area, at the block scale and not in the neighborhood, is a real challenge that is mainly 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. Today, the responsible architectural and technical response must take into account provisions that are not only able to limit fossil fuel expenditure at the time of delivery but also allow for a virtuous environmental assessment over time. The inscription in "long time" is one of the cardinal steps of the conception of HIKARI Lyon Confluence

Energy sobriety

Hikari produces more than it consumes

Hikari islet stands out for its energy efficiency lead. All energy consumption of the island is produced from renewable sources. **Buildings include 3 renewable energy sources:**

- Photovoltaic panels, integrated into the roof and front of the dwellings, produce the equivalent of the consumption of about 160 households,

- A geothermal system,
- A cogeneration plant based on vegetable oil from the Rhône-Alpes region.

The consumption and energy production of the 3 buildings is shared through an energy communication network. A battery storage system can also be used to respond to power outages or consumption peaks. This device allows the building to consume between 50 and 60% less than the standards of the current thermal regulation.

Energy mix

The energy and environmental performances sought for HIKARI come from a bioclimatic architecture design and a systematic search for very low energy consumption. A bioclimatic architectural design with, in particular, optimization of natural light (role of faults in the façade).

On-site power generation

- **A cogeneration plant in vegetable oil and a photovoltaic plant**. Total production of 476 MWh, equivalent to the consumption of about 160 households. It covers 80% of electrical requirements and more than 90% of heating needs.
- **Photovoltaic panels:** they transform solar energy into electricity. They cover the balance of the island's electrical requirements.
- **Absorption machine:** production of chilled water, from the heat of cogeneration and the cold of the water table. It covers 80% of the cooling needs of offices and shops.
- **Geothermal energy:** draws freshness from the waters of the Saône and contributes to cooling Storage and pooling of the energy produced to cover the needs of the various buildings: the HIKARI assembly should consume between 50 and 60% less than the standards of the current thermal regulation.
- **Optimization of production and consumption management** HIKARI can achieve its objectives by taking careful consideration of individual consumption and by optimizing the production of renewable energies. The energy and assembly management is controlled and managed by a BEMS (Building Energy Management System), which collects and disseminates energy data.

This system allows:

Measure continuous consumption by tray or half tray: refreshment, lighting, ventilation, computer systems and other equipment on the sector To continuously measure the consumption of the common: elevators, lighting, auxiliaries useful for the operation of the installations Identify breakdowns or discrepancies with plant productivity provisions To inform the users of the performances on their zone of occupancy and on the whole of the building or buildings, to adapt the behaviors in an eco-responsible approach

Total electricity needs of the project area /year

Total electricity needs of the project area /year : 1 500,00 kWh

Total electricity production of the project area /year

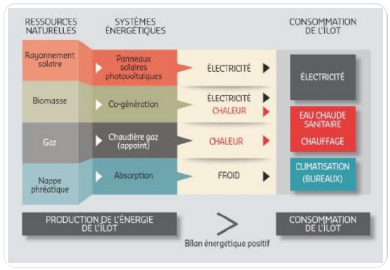
Total electricity production of the project area /year : 1 800,00 kWh

SOLUTIONS

Hikari, Europe's first positive energy island

Description :

HIKARI's energy production is higher than its consumption thanks to the energy mix and the use of natural resources (see diagram).



- Climate adaptation
- Renewable energies
- Urban Lighting
- Low-carbon materials/ infrastructure

Company :

Company :

- Climate adaptation
- Renewable energies
- Urban Lighting
- Low-carbon materials/ infrastructure

BUILDINGS

Buildings

The architect Kengo Kuma scrupulously respected the urban plan of Herzog & de Meuron. He imagined how to "sculpt" the buildings through triangular cuts leading the natural light into the interior.

Bioclimatic architecture

The development of HIKARI Lyon Confluence is the result of the collaboration between a multidisciplinary and Franco-Japanese design team led by the architect

KENGO KUMA and a leading and innovative promoter Bouygues Immobilier / SLC bringing its vision of the market. The envelope of the buildings of HIKARI Lyon Confluence was the subject of a bioclimatic approach through which architects, thermicists, energy specialists, lighting engineers and environmentalists tried to passively treat most of the comfort and Reduction in energy requirements. The "user comfort" of HIKARI Lyon Confluence, a skilful balance between the many parameters that contribute to the quality of the spaces (orientation, light, atmosphere, use, ...), has been the permanent focus of the " Project team in order to make the program mix attractive and its positioning relevant to the market.

Attachment to the choice of materials in a logic "C to C"

The elaboration of a project with a demonstration objective implies a definition of the choice of materials, systems and equipment, down to the smallest details. On HIKARI Lyon Confl uence, these choices were made in a "Cradle to Cradle" logic, in order to minimize the carbon footprint of the operation and allow recycling for as long as possible of the materials used. The 3 buildings on HIKARI : Higashi: 5236 m² of tertiary surface on 7 levels Nishi: 2246 m² of offices on 5 levels and 4 villas on the roof Minami: 32 Properties - 3400 m² -> Find these 3 buildings in the Construction Buildings database21 !

Link to Buildings of the area in Construction21 database

Link to Buildings of the area in Construction21 database :)

Minami: 32 contemporary homes designed for families

Construction Neuve
Logement collectif < 50m

Contest

Building candidate in the category

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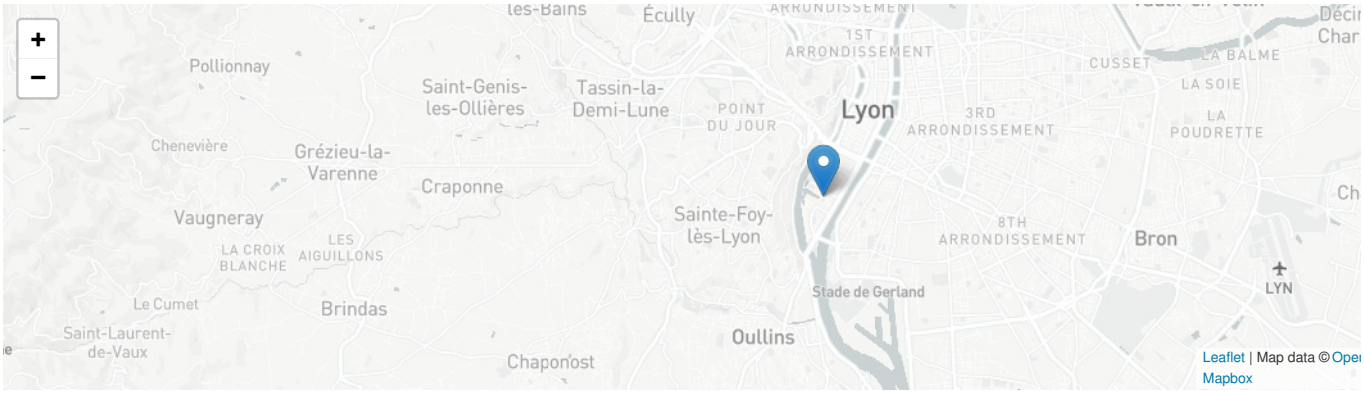

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