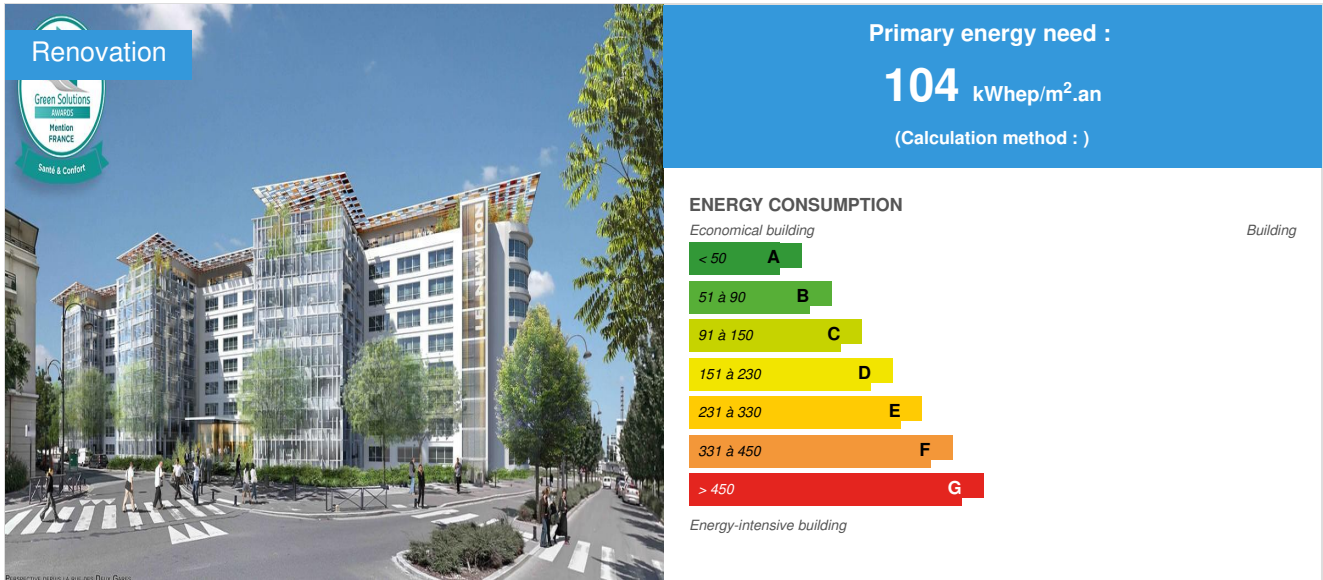


## Mosaic

by Iris PERRUCHAUD / 2018-06-01 19:08:28 / France / 8924 / FR



**Building Type :** Office building < 28m  
**Construction Year :** 1996  
**Delivery year :** 2016  
**Address 1 - street :** 21 Rue François Jacob 92500 RUEIL MALMAISON, France  
**Climate zone :** [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area :** 18 002 m<sup>2</sup>  
**Construction/refurbishment cost :** 24 000 000 €  
**Number of Work station :** 1 200 Work station  
**Cost/m<sup>2</sup> :** 1333.19 €/m<sup>2</sup>

**Certifications :**



### General information

SCI Rueil Newton c / o DTZ Investors presents its MOZAIK office building which has undergone a major restructuring between 2014 and 2016. This building of more than 18 000 m<sup>2</sup>, located in Rueil Malmaison, consists of 8 office floors in adaptable superstructure and adaptable to the needs of the occupants. The well-being and comfort of the occupants has been at the heart of the concerns both during the design and implementation of the project. Thus, many studies were carried out upstream of the project to choose the equipment and the materials allowing to combine comfort and health in the workspaces as in the spaces of relaxation.

In addition, this building benefits from a triple environmental certification, HQE, BREEAM and LEED as well as a BBC EFFINERGIE label. Obtaining these certifications ensures, in addition to the comfort of the occupants, a reduction in the environmental impact of the project.

MOZAIK was also chosen to participate in the HQE Performance test evaluating the environmental performance of buildings and its impact in terms of carbon over the entire life cycle of the building.

SCI Rueil Newton c / o DTZ Investors has chosen to carry out an exceptional operation reducing the building's environmental impact and combining comfort and health of the occupants.

## Sustainable development approach of the project owner

SCI Rueil Newton c / o DTZ Investors wanted to engage in a triple certification HQE Rénovation, BREEAM and LEED for:

- Greening the real estate portfolio of the institutional investor
- Developing DTZInvestors' commitment to environmental concerns
- Apply the DTZ Investors CSR Policy

This approach represents for DTZ Investors an additional experience in certifications, a better visibility on the market and fits perfectly into its environmental strategy applied to its assets in management. Indeed, the entry into certification is in line with the real estate certification policy that DTZ Investors has under management: nearly 60% of the managed real estate assets are currently certified.

SCI Rueil Newton has decided to carry out an exceptional operation, including triple certification, including the BBCEffinergie label, to promote and distinguish the Mozaïk building.

## Architectural description

### LOBBY

In order to increase the volume of the hall and to offer the users and their visitors a more generous reception area, a light glass volume projecting from the façade of the upper floors has been created from ground level to level R + 1.

At garden level, a secondary lobby has been created at the western end of the plot.

### TREATMENT OF FACADES

In order to minimize the environmental impact of the project, the majority of the façade has been retained. Constituting points of thermal weakness and corresponding to a dated architectural vocabulary, all of the glass block elements located on the facades of the stairwells have been replaced by solid insulating complexes integrating into the existing façade pattern. This allowed to significantly improve the thermal insulation of the building. These elements are clad in glazed exterior claddings in opaque white glass which is embedded in the façade unit and allows the natural lighting of these areas to be preserved.

To control the solar gains, on the three protruding volumes of the rue François Jacob, a second skin, detached from the facade acting as a solar filter was implemented. It consists of a tubular structure in white steel, which supports a stainless steel mesh (placed on the inside of the structure), to protect the glass facade from direct radiation.

### THE REQUALIFICATION OF ATTIC AND ROOFING VOLVUI

The Attic level (level R + 8) is completely requalified and made available to the occupants. The terrace, initially used as a raceway for cleaning nacelles, is transformed into outdoor lounges accessible to users. To complete the approval of this terrace, a pergola to protect users from rain and sunshine is implemented. It consists of a horizontal structure in clear lacquered steel tubes forming a square and partly filled with clear lacquered steel plates. We thus find, on the horizontal plane, the effect of shimmer and disintegration produced by the second skin on the façades. Architecturally, this over-roof also allows to give a real crowning to the building. In addition to its functional role and its architectural role, it has a technical role with its surface equipped with solar panels participating in the production of domestic hot water.

## Stakeholders

### Contractor

Name : SCI RUEIL NEWTON c/o DTZ Investors

Contact : Christophe BARTHEL-LORCY

<https://www.dtzinvestors.com/en>

### Construction Manager

Name : Sahuc & Katchoura

Contact : Pierre DAYDIE

<http://www.sahuc-katchoura.com/>

### Stakeholders

Function : Designer

Sahuc & Katchoura

Pierre DAYDIE

<http://www.sahuc-katchoura.com/>

Function : Assistance to the Contracting Authority

MANEXI

Iris PERRUCHAUD

<http://www.manexi.com>

AMO Environment

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Function : Thermal consultancy agency

SNC LAVALLIN

<http://www.snclavalin.com/fr/>

BET Fluids

## Contracting method

Separate batches

## Type of market

Table 'c21\_maroc.rex\_market\_type' doesn't exist

## Energy

### Energy consumption

Primary energy need : 104,00 kWhep/m<sup>2</sup>.an

Primary energy need for standard building : 182,00 kWhep/m<sup>2</sup>.an

Calculation method :

Breakdown for energy consumption : electric heating: 4144.008 kWhef Cooling: 64596.132 kWhef Electric DHW: 9818.223 kWhef ventilation: 191053.279k Whef lighting: 77473.135 kWhef

Initial consumption : 231,00 kWhep/m<sup>2</sup>.an

### Real final energy consumption

Final Energy : 25,00 kWhef/m<sup>2</sup>.an

### Envelope performance

Envelope U-Value : 1,39 W.m<sup>-2</sup>.K<sup>-1</sup>

More information :

Exterior walls: 0,25 W / (m<sup>2</sup>.K)

Low floor: 0,28 W / (m<sup>2</sup>.K)

Exterior joinery: 2,74 W / (m<sup>2</sup>.K)

Building Compactness Coefficient : 0,74

Indicator :

### More information

An energy performance contract has been put in place during the appointment of the site maintainer

## Renewables & systems

### Systems

Heating system :

- Gas boiler
- Radiant ceiling

Hot water system :

- Individual electric boiler
- Solar Thermal

Cooling system :

- Water chiller

- Chilled Beam

#### Ventilation system :

- Double flow heat exchanger

#### Renewable systems :

- Solar Thermal

Renewable energy production : 3,00 %

## Environment

### Urban environment

Land plot area : 3 589,00 m<sup>2</sup>

Built-up area : 75,00 %

Green space : 369,00

MOZAIK is located north of the town of Rueil Malmaison, in the ZAC Reuil-2000-Extension, near the RER A. This building fits well in the neighborhood that is dedicated to the tertiary sector, in which many companies have established their headquarters. The site is served by line A of the RER (building located 700m from the Rueil Malmaison station) and 10 bus lines within 800m of the entrance of the building. Line 159 is located at 200m from the entrance of the building. Indeed, MOZAIK is located near the mobipole (700m from the building) which includes:

- 450 secure bike pitches
- 40 secure two-wheeled motorized spaces
- 325 parking spaces including 14 equipped with charging stations
- 1 taxi station

Bike paths and gentle paths are present near the site. They allow easy access for cyclists. Close to the site pedestrian flows are secured by sidewalks and pedestrian crosswalks securing the exterior of the building and access from public transport. The site is located in an area with shops varied proximity: pharmacies, supermarkets, banks, etc. Many restaurants are located near the site. A corporate restaurant and a cafeteria are also present on the site and allow users to alternate eating places.

## Products

### Product

Solar DHW production

VAILLANT

<https://www.vaillant.fr/accueil/service-support/vous-avez-une-question/>

<https://www.vaillant.fr/accueil/>

Product category : Génie climatique, électricité / Chauffage, eau chaude



## Costs

### Construction and exploitation costs

Renewable energy systems cost : 50 000,00 €

Total cost of the building : 24 000 000 €

## Health and comfort

### Water management

Consumption from water network : 3 624,00 m<sup>3</sup>

Water Consumption/m<sup>2</sup> : 0.2

Water Consumption/Work station : 3.02

Low flow equipment:  
Sanitary 2,5 / 4 L / hunt  
Faucets 1.9 L / min  
Showers 6L / min  
Urinals 1L / hunting

The calculation method used is that of the BREEAM Europe Commercial 2009 reference system

## Indoor Air quality

Measurements of the indoor air quality were made at VOC reception:

- Benzene: Between 0.7 and 1.1  $\mu\text{g} / \text{m}^3$  - Total VOCs: 157  $\mu\text{g} / \text{m}^3$
- Formaldehydes: 8.3  $\mu\text{g} / \text{m}^3$ - Particles: (results a little worse, because work was still in progress on the day of measurement)
- PM2.5: 10  $\mu\text{g} / \text{m}^3$ -PM10: 13  $\mu\text{g} / \text{m}^3$
- NO2: 10.3  $\mu\text{g} / \text{m}^3$

## Comfort

### Health & comfort :

All equipment has been designed to meet the needs of occupants:

- Regulation of the ambient temperature and the ventilation by the occupants (1 remote control for 4 people maximum)
- Lighting via presence sensor, sunshine and possibility of remote control
- Blinds managed by a weather probe and the occupants.
- CO2 sensor in meeting rooms subject to ventilation
- Building entirely divisible into 24 lots (3 lots per floor) and systems adaptable to reclouisonnement
- Nearby public transport, charging stations for electric vehicles, parking places and bike room
- RIE, cafeteria and concierge service in the building.
- Class A + interior coatings with indoor air emissions
- No smoking on the entire plot to avoid nuisance to other occupants.

In addition, numerous studies and measurements have been carried out to ensure the comfort and sanitary quality of the building (acoustic measurements, indoor air quality measurements, artificial lighting measurements, natural lighting air, water quality). Finally, a commissioning process has been put in place to ensure the proper functioning of the equipment on reception and thus the satisfaction of the occupants.

### Acoustic comfort :

Shock noise - vertical: nT, w = 35 dB- diagonal: nT, w = 49 dB- horizontal: nT, w = 43 dB insulation between rooms - vertical: DnT, A = 47 dB - horizontal : DnT, A = 36 dB Equipment noises: - individual: LnAT = 44 dB - collective: LnAT = 38 dB Equivalent absorption area: 100% Equivalent continuous pressure level: - Offices: LAeq, T- Cafet: LAeq, T = 38 dB-RIE: LAeq, T = 35 dB

## Carbon

## GHG emissions

### Methodology used :

Method according to HQE renovation and HQE performance reference (via Elodie software)

Building lifetime : 50,00 année(s)

GHG Cradle to Grave : 889,00  $\text{KgCO}_2 / \text{m}^2$

The life cycle analysis was carried out using the Elodie software, in accordance with the methodology detailed in the HQE renovation and HQE Performance standards. The data and FDES and PEP used come from the INIES database. A detailed calculation was don

## Life Cycle Analysis

Les données ci-dessous sont en  $\text{kgeqCO}_2/\text{m}^2 \text{SDP}$  et en  $\text{kWh}/\text{m}^2\text{SDP}$

Material impact on GHG emissions :

447

Material impact on energy consumption : 1 790,00 kWhEP

Eco-design material :

100% of the wood used is labeled FSC or PEFC

The conservation of materials has been favored 90% of recovery of waste site (with 80% material recovery)

## Contest

### Reasons for participating in the competition(s)

MOZAIK is a building that combines health and comfort of occupants, in accordance with the environmental policy of SCI Rueil Newton c / o DTZ Investors. Indeed, all equipment has been studied to meet the needs of occupants:

- Regulation of the ambient temperature and the ventilation by the occupants (1 remote control for 4 people maximum)
- Lighting via presence sensor, sunshine and possibility of remote control
- Blinds managed by a weather probe and the occupants.
- CO2 sensor in meeting rooms subject to ventilation
- Building entirely divisible in 24 lots (3 lots per floor) and systems adaptable to re-partitioning
- Nearby public transportation, charging stations for electric vehicles, parking places and bike room
- RIE, cafeteria and concierge service in the building.
- Indoor Class A + coatings with indoor air emissions
- No smoking on the entire plot to avoid nuisance to other occupants

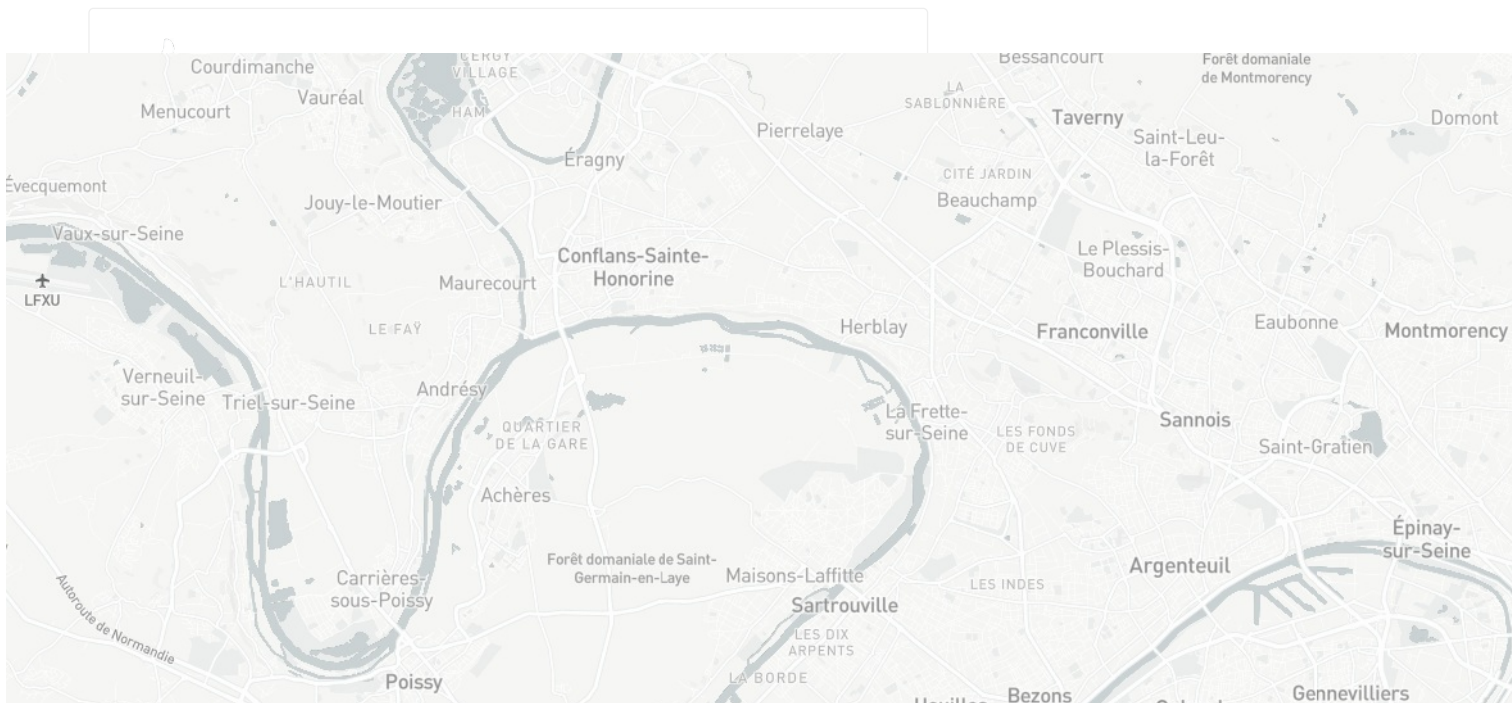
In addition, numerous studies and measurements have been carried out to ensure the comfort and sanitary quality of the building (acoustic measurements, indoor air quality measurements, artificial lighting measurements, natural lighting air, water quality) Finally, a commissioning process has been put in place to ensure the proper functioning of the equipment on reception and thus the satisfaction of the occupants.

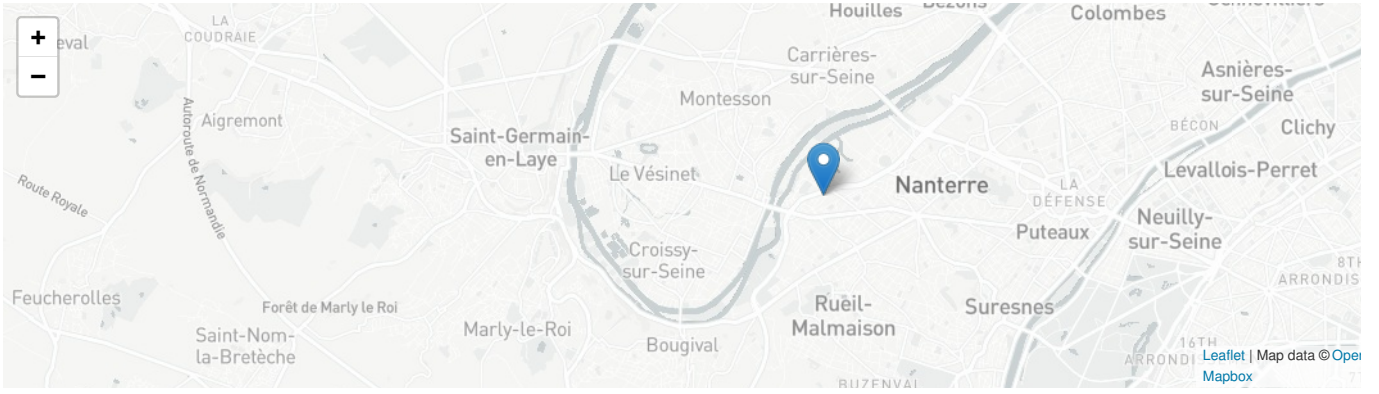
The restructuring project favored the conservation of a maximum of elements still usable on the site to reduce its impact in terms of carbon emissions. Indeed, the stone facade, the concrete structure of the building as well as the aluminum joinery were preserved. The gas boiler and the cold units that were not at the end of their life were kept and restarted as well as a few ACTs. All wood materials in the project are PEFC or FSC certified. The domestic hot water of the RIE is produced by photovoltaic panels located on the roof. No new parking has been created. 90% of site wastes were recovered (80% material recovery). MOZAIK participated in the HQE Performance test evaluating the environmental performance of buildings and its impact in terms of carbon over the entire life cycle of the building, by contributor and component.

### Building candidate in the category



Santé & Confort





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