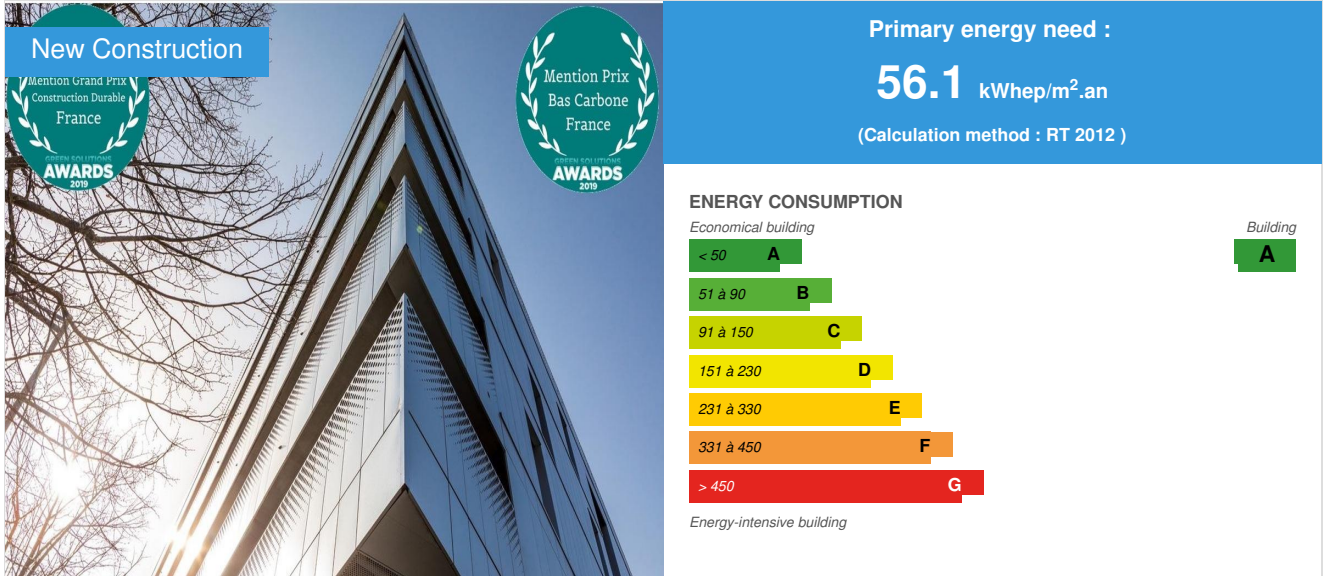


## Florestine Residence

by Fanny Luque / 2020-07-15 11:30:28 / Francia / 11715 / FR



**Building Type** : Collective housing > 50m  
**Construction Year** : 2017  
**Delivery year** : 2018  
**Address 1 - street** : rue Emile Counord 33000 BORDEAUX, France  
**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 5 870 m<sup>2</sup>  
**Construction/refurbishment cost** : 10 510 000 €  
**Number of Dwelling** : 49 Dwelling  
**Cost/m<sup>2</sup>** : 1790.46 €/m<sup>2</sup>

**Certifications :**



**Proposed by :**



### General information

#### FLORESTINE RESIDENCE

The project is oriented and highlights a future place that will be created in connection with the urban project of the Grand Parc in Bordeaux. It occupies a central place in redefining the neighborhood. It also has an identity vocation because it constitutes a visual catch from the perspective created by the plot where it is located. The volume, simple but slightly decomposed, expresses the public and private vocations of the building and highlights a forecourt that opens on the urban project of the Grand Parc.

A language common to both uses allows a sober, simple and effective reading of the building. The treatment of the CACIS and Territorial Pole of Solidarity entries, in withdrawal, allows to give them an urban reading and enrich the public space. The floors, treated in continuity with the ground floor, define a housing program in relation to the public spaces that surround it. The accommodations are served by two vegetated exterior corridors located in the heart of islet. Les apartments are

through and offer guidance on public spaces. Balconies, terraces and loggias provide privileged, diverse and intimate outdoor spaces for residents.

Coming from the triangular plot, a game of bias creates different orientations and gives a dynamic to the project. A duo of materials animates the building: the volume is covered with Aluzinc cassettes and a vertical douglas cladding is found in the recessed areas (entrances, loggias, balconies and passageways). Railings in Aluzinc are dematerialized thanks to a variable perforation.

The project is subject to **strict environmental specifications, demanding in particular compliance with the Agenda 21 régional and Aquitaine Plan Climat** .

He obtained Habitat & Environment certification (Certification H & E 2012MAJ 03-2014 Profile A):

- 1> Environmental management of the operation
- 2> Own site
- 3> Energy - Reducing the greenhouse effect (G-RAD digital radiators)
- 4> Structural sector - Choice of materials (use of recycled aggregates concrete)
- 5> Water
- 6> Comfort and Health
- 7> Green gestures

A subsidy from ADEME allowed us to set up a **free and innovative heating system** throughout the building. Designed by Qarnot Computing, the Qrads are computer radios, using the **heat generated by the cores of processors making calculations to heat homes and offices** (energy fatally produced). A world first on a new building. We obtained a title V for the use of Q-RAD connected radiators.

This project serves as a **Ready 2 Services label pilot** for connected buildings communicating with their environment. It has been conceptualized with BIM technology.

## Sustainable development approach of the project owner

The new Territorial Solidary Pole of Bordeaux in the Grand Parc district, is an exceptional construction project based on two aspects, innovation and collaborative design. The Department has entrusted Gironde Habitat with the construction of its new Department House in the form of a Sale in the future state of completion (VEFA). The Gironde Habitat project integrates the premises of the Maison du Département and the construction of 49 social housing units, thus making the VEFA possible. The Department wanted the Territorial Pole of Solidarity to be a Positive Energy Building (BEPOS), a building that produces more energy (electricity, heat) than it consumes for its operation. It was also a key point for the social landlord, Gironde Habitat, who wanted to reduce the energy costs of tenants. To enable the development of innovation in housing, the Department in 2015 created the financing of the Habitat © Manufacturers that tested in particular on the residence Florestine carried by Gironde Habitat the use of "I" energy "in order to reduce to zero the bill" electric heating "for the tenant. This policy of Fabriqu'Coeur © allows, in an experimental setting, the realization of operations of rehabilitation or construction of innovative social housing which if they are conclusive can be transposed and or generalized.

## Architectural description

The project is oriented and highlights the future place that will be created in connection with the urban project of the Grand Parc. The volume, simple but slightly decomposed, expresses the public and private vocations of the building. The treatment of the ground floor, set back, marks the entrance to the MDSI and give it an urban reading. The entrance marks the northern corner of the parcel and enriches the public space while affirming its presence on the Counord Avenue. This same treatment is used for the entrance of CACIS, located at the south end of the field. A language common to both uses allows a sober, simple and effective reading of the building. The floors, treated in continuity with the ground floor, define a housing program in relation to the public spaces that surround it. The diversity of the outdoor spaces and the perforations of the facades individualizes each apartment and accentuates the desired effect of lightness. The accommodations are served by two external corridors located in the heart of islet. Each apartment is through and offers an orientation on public spaces to limit the vis-à-vis with the built environment. Balconies, terraces and loggias provide privileged, diverse and intimate outdoor spaces for residents.

## Building users opinion

The first feedback from the occupants is very positive: they appreciate the quality of life offered by the Residence Florestine. The delivery of the building was very recent, it is still too early to have more complete feedback on the strengths and weaknesses that will be detected by users.

## If you had to do it again?

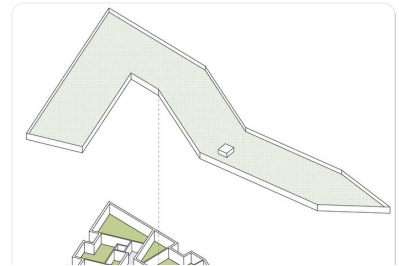
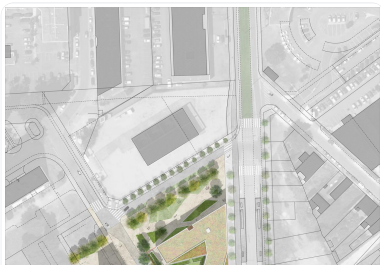
We are very pleased to have put in place an innovative energy solution, and proud to have been the first to offer this technology to meet the expectations of the owner, a world first. Free heating also helps to fight against fuel poverty that affects more and more users. We can always go further in our search for sustainable materials that must complement methods of construction thought to be the least impacting possible on the environmental level: the Residence Florestine is for us an experiment that will allow us to go further in our architectures for rethink the city of tomorrow.

## See more details about this project

<http://www.moonsafari.archi/49-logements-et-pts/>

## Photo credit

©  
Benjamin  
Guénault



## Stakeholders

### Contractor

Name : GIRONDE HABITAT  
Contact : Thierry MAHÉ  
<https://www.gironde-habitat.fr/>

### Construction Manager

Name : MOON SAFARI, architecte mandataire  
Contact : bordeaux[at]moonsafari.archi  
<http://www.moonsafari.archi/>

### Stakeholders

Function : Other consultancy agency  
VERDI

Adnane AOUAMI / 05.56.00.12.72  
<http://www.verdi-ingenierie.fr/contact/>

Function :  
EMACOUSTIC  
05 56 85 96 89

<https://www.emacoustic.fr/>  
Acoustical design office

Function : Environmental consultancy  
OOK. ATELIER DE PAYSAGE GASTEL  
Hervé GASTEL / 05 56 96 61 16

<http://www.ook-paysagistes.com/contact.htm?ob=c>

Function : Other consultancy agency  
LESS IS MORE  
Yael LARROZE / 06 88 37 64 39  
Project Manager BET HQE

Function : Construction company  
GCC AQUITAINE  
Juline DEOORT / David BRAGA

## Contracting method

Other methods

## Energy

### Energy consumption

Primary energy need : 56,10 kWh/m<sup>2</sup>.an

Primary energy need for standard building : 151,00 kWh/m<sup>2</sup>.an

Calculation method : RT 2012

Breakdown for energy consumption : . heating: 58 400 kWh

. ECS: 2500 kWh

. lighting: 19,000 kWh

. auxiliaries: 9000 kWh

. process: 19 200 kWh

. parking: 3176 kWh

(study based on an analytical work of real consumptions of the building and not on estimations of computation RT 2012)

### Real final energy consumption

Final Energy : 111 276,00 kWh/m<sup>2</sup>.an

### Envelope performance

More information :

The envelope, is wood frame walls. Prefabricated by the company Arbonis in its plant in Péguilhan located in the South-West, these modules have reduced the carbon impact by the quality of assembly, saving time of implementation and reducing waste on site . The facades have been designed to protect themselves from the sun in summer and naturally ventilate the building. The envelope contains perforated parts, behind which are the joinery. These openings give the hand to users to manage their comfort. Air brewers are installed in the meeting rooms and relax to offer a better ambient temperature during warm periods.

Air Tightness Value : 0,48

Users' control system opinion :

Very good feedback from users on home automation systems.

### More information

Thanks to Q-RAD, auxiliary consumption drops by 20%. Heating costs are fully covered. The Q-RAD maintenance is part of the investment (the Q-RAD will be replaced every 3 years), a package was also kept for the ECS balloons and the CTAs.

## Renewables & systems

### Systems

Heating system :

- o Others

Hot water system :

- o Other hot water system

Cooling system :

- o No cooling system

Ventilation system :

- o Single flow

Renewable systems :

- o Other, specify

Other information on HVAC :

The radiators installed in the building are "Q.rad": computer radiators-computers whose dissipated heat is used to heat the premises of the PTS and housing. Not

only these Q.rad offer free heating but they also offer services such as wifi (which removes any additional equipment) and feedback on the comfort and consumption of the building. This innovation is developed by a French company, it offers a real technical simplification of the building: no water, no valves, no leaks, no external maintenance. It is possible to connect PCs directly to the Q-RAD using RJ45 outputs.

The Department wanted the Territorial Pole of Solidarity to be a Positive Energy Building (BEPOS), an ambition to which was added a large number of performance constraints on the part of Gironde Habitat, including the significant reduction in the energy bill for tenants. The project management team then took a proactive approach to find an economical and innovative solution. Instead of a conventional photovoltaic installation that did not make sense in terms of the complex environment of the site, we thoroughly analyzed the operation and consumption of existing achievements of the department before proposing a relevant heating technology. Thus was proposed the Qarnot Computing system, Q.rad radiators that generate energy called "fatal", that is to say the energy produced by a process whose purpose is not the production of this same energy which, if it is not recovered and / or recovered, is lost. This technology is a world first on a new building, implemented by a French company and whose maintenance will generate local job creation. All the actors of the Department (energy, IT, heritage services) have been deeply involved in understanding this new technology and its business model, the beginnings of the connected building of tomorrow. As for housing in Gironde Habitat, this technology will provide tenants with free heating and internet access; a step forward in the fight against energy and digital poverty. But this technological and innovative choice was not a technical answer alone. It served as a lever to change the way we designed and built a building. Concretely, this one was conceived around its heating system and not the opposite. In close consultation with the Department, the designers used the Q.rad machine to make the pole more technically frugal and therefore easier to maintain and evolve over time.

Several actors in building and environmental performance are involved in the project:

- ADEME New Aquitaine by providing investment support and CSTB by granting a 2012 RT V RT to the operation. In return, the operation will be monitored and monitored for 2 years by the project management team to assess the performance and relevance.

By its connected appearance, the Q.rad system also offers a true digital skeleton to the Territorial Pole of Solidarity. The latter is part of a pilot operation to obtain the brand new READY 2 SERVICES digital label.

[Solutions enhancing nature free gains :](#)

Radiateurs numériques Q-RAD : énergie fatale

## Smart Building

[BMS :](#)

The quality of the building is generally improved through the various analyzes and simulations carried out at an early stage of the project, before the costs of the modifications have too much impact. The collaborative work around the model also made possible a real projection of the teams in the exploitation and the life of the building. Based on the digital skeleton and sensors offered by the Q.rad, it is possible to better monitor and control building consumption, the indoor air quality of the premises and the occupancy of meeting rooms; tools to improve the quality of use of the building and provide more comfort to users. The SYMBIOSE application centralizes this information and is made available to users in common areas. The Territorial Pole of Solidarity is conceived in a global approach of improvement of the quality of life of the users and reduction of the carbon impact. The superstructure of the building is concrete, 30% of the volume of which is recycled concrete, a first French. No less than 4,000 m3 of this recycled concrete were poured over 7 levels, an innovation developed by the company LAFARGE HOLCIM from the residues of concrete tops of local sites and implemented by the company GCC . The façades offer a particular modénature, thought to protect oneself from the sun the summer and ventilate naturally the building. The envelope contains perforated parts behind which are the joinery. These openings give the hand to users to manage their comfort. Air brewers installed in the meeting and relaxation rooms also offer a better ambient temperature during warm periods. The envelope, meanwhile, is wood frame walls. Prefabricated by the company ARBONIS in its plant in Péguilhan (south-west), these modules have reduced the carbon impact by the quality of assembly, saving time of implementation and reducing waste on site. Air quality is the central topic of tomorrow's building. For this reason, PMI's children's wards, children's wards and relaxation rooms will be equipped with air purifiers that will provide high filtration of ambient and outdoor air, eliminating pollutants, viruses and other bacteria, sources of discomfort and disease. The Florestine Residence project is piloting the Ready 2 Services label for connected buildings communicating with their environment.

## Environment

### Urban environment

[Land plot area :](#) 3 852,00 m<sup>2</sup>

[Built-up area :](#) 38,00 %

[Green space :](#) 2 200,00

The project located on rue François Levêque, develops a large outdoor area in the heart of the island. By creating this decline, the project reduces the physical and visual impact of the residential bar in R + 13. The facade in the heart of islet unfolds on several levels in order to move away from the strict and linear volumetry of housing the large park. This cut-out facade makes it possible to flare the island core while creating outdoor spaces offering multiple uses. By creating a green island heart, green spaces mingle with the trees preserved along the rue Lévêque. In the center of the plot, in a more discreet space, comes a garden, separated from the outdoor spaces to housing by vegetated limits. This islet heart can be seen as an extension of the green flow of the large park. Through this space, a "vegetal" walk is proposed to access the hall 2 of housing, common outdoor spaces and semi-underground containers. In the continuity of this axis lined with parking, access to the underground car park is at the end of this street, away from the public square located north of the parcel.

## Products

### Product

Heaters Q-RAD

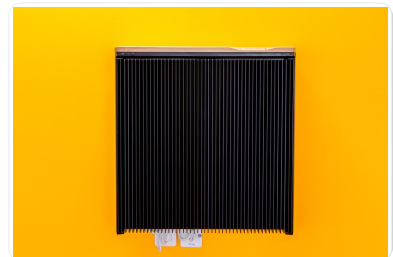
Qarnot computing

contact@qarnot.com

<https://www.qarnot.com/fr/home-fr/>

**Product category :** Table 'c21\_spain.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '18'

Designed by the company Qarnot Computing, the Qrads are radiators-computers, using the heat released by the cores of processors carrying out calculations to heat homes and offices. Thanks to this intelligent heating system, the fatal energy produced is free for its users. The heating solution offered by these computers significantly reduces the carbon footprint of computer calculations.



The joint desire of the Department and Gironde Habitat to offer low-cost heating for users and which is respectful of the environment has led us to this energy solution that are the Q-RAD. This solution was enthusiastically received by all project stakeholders as well as building users. This heating makes it possible to fight effectively against fuel poverty while adapting to current environmental issues. True technical innovation in the energy field, we are happy to have been able to set up this system, the world's first in the design of a building.

Concrete made from recycled aggregates

AGGNEO

<https://www.lafarge.fr/contactez-nous>

<https://www.lafarge.fr/aggneo>

**Product category :** Table 'c21\_spain.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '6'

Aggneo® Bâtiment offers, through its network of concrete plants, a range of concretes produced with recycled aggregates for all types of applications. Aggregates are collected through rigorous control of inert waste and mastery of specific recycling techniques. The waste used is concretes, bricks, tiles and ceramics that do not contain dangerous substances, earth and pebbles, non-recyclable glass, bituminous mixtures without tar or asbestos.



Recycled aggregate concrete has been validated by project stakeholders, on-site workers and building users, who have been able to feel like responsible actors participating in the flow of a local circular economy. In addition, this concrete is a quality product that was completely adapted to the use of the project. It seemed interesting to all, that this product could advance the recycling sector towards a more responsible concrete, knowing that it is one of the raw materials most used in the construction of architectural projects.

Mineral wool of glass

Knaufinsulation

01 41 27 90 60

<https://www.knaufinsulation.fr/>

**Product category :** Table 'c21\_spain.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '9'

Knaufinsulation mineral glass wools are products that use up to 80% recycled glass. This material is very resistant over time thanks to a very specific binder: ECOSE®Technology, a binder based on renewable materials.



Thanks to the structure of its entangled glass fibers and the immobile air trapped in its pores, the glass wool has a high insulating power with a minimum of material. This makes it a lightweight insulating product with thermal performance ranging from 0.030 W / (m.K) to 0.040 W / (m.K), certified by ACERMI.

Its composition based on recycled glass and sand gives the mineral wool of non-surfaced glass (bare) size advantages: it does not fuel the fire, does not spread the flames and does not release toxic fumes. Glass wool is certified Euroclasse A1, the highest certification, improves the fire resistance of buildings. The elastic structure of mineral glass wool ensures a reduction or absorption of sound and improves the sound quality from one room to another. Naturally non-hygroscopic, glass wool does not absorb moisture from the air.

Glass wool is labeled A +, the highest classification of health labeling indicating the level of emissions of volatile substances. It is also certified EUCEB and EUROFINS, guaranteeing that it does not present a danger to health.

This glass mineral wool has the advantage of offering very good technical performances praised by the users of the building. Being flexible and manageable, the insertion of this insulating product in prefabricated wood frame walls by the ARBONIS company has been made easier. Beyond its technical performance, this material has excellent results in the measurement of VOC emissions and thus ensures indoor air quality optimized for building users.

Autodesk

+33 (0)1 86 76 11 17

<https://www.autodesk.fr/>

**Product category :** Table 'c21\_spain.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '29'

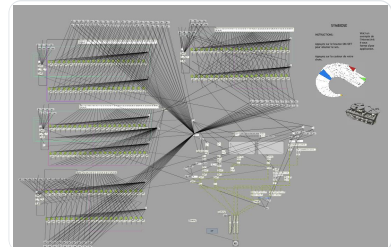


Symbiose

<https://www.symbiose.immo/>

<https://www.symbiose.immo/>

Product category : Table 'c21\_spain.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '29'



## Costs

### Construction and exploitation costs

Renewable energy systems cost : 1 140 000,00 €

Cost of studies : 825 614 €

Total cost of the building : 10 510 000 €

Subsidies : 396 097 €

## Health and comfort

### Water management

Water recuperators: 2 rooms at R + 5 with 3 rainwater tanks each. On each corridor and at each level, a tap allows residents to water vegetable planters with the rainwater recovered. "Tank roofs" have been designed to store part of the water and avoid gridlock.

### Indoor Air quality

Air quality is the central topic of tomorrow's building. This is why the nursery and childcare rooms as well as the relaxation rooms are equipped with air purifiers which ensure a high filtration of the ambient air and the outside air, thus eliminating the pollutants, viruses and other bacteria, sources of discomfort and disease. In the dwellings, it is a natural ventilation that is proposed and no CMV, according to the wish of the occupant, daytime and night, with joineries protected by perforated cassettes (intrusion) and mosquito nets

### Comfort

Health & comfort :

R-RAD connected radiators have individual and collective settings that make it possible to adapt to different temperatures, thanks to an application. In addition, the Q-RADs are equipped with CO2 detectors: a led lights up in red to indicate to users when the CO2 level is too high. Another led indicates whether it is warmer outside than inside. The natural ventilation of the building allows a good air circulation within the housing, it is completed by anti-intrusion grills and mosquito nets that protect the occupants from any external aggressions.

Acoustic comfort :

The facades have been designed with acoustic comfort of 35 Db.

## Carbon



## Life Cycle Analysis

### Eco-design material :

The superstructure of the building is concrete, 30% of the volume is recycled concrete, a first French. No less than 4,000 m<sup>3</sup> of this recycled concrete were poured over 7 levels, an innovation developed by Lafarge Holcim, from the residue of concrete rotors of local sites, and implemented by the company. GCC. The envelope, meanwhile, is wood frame walls. Prefabricated by the company Arbonis in its plant in Péguilhan located in the South-West, these modules have reduced the carbon impact by the quality of assembly, saving time of implementation and reducing waste on site. The facades have been designed to protect themselves from the sun in summer and naturally ventilate the building. The envelope contains perforated parts, behind which are the joinery. These openings will give the hand to the users to manage their comfort. Air brewers will be installed in the rooms of meeting and relaxation to offer there also a better ambient temperature during the warm periods.

## Contest

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

- Energy efficiency through efficient insulation and use of connected radiators Q-RAD: clean, free energy, using the heat generated by cores of processors performing calculations for heating homes and offices (energy fatal).
- Indoor air quality through air purifiers, combined with natural ventilation and CO<sub>2</sub> detectors.
- Own site
- Concerted project
- Wood frame and recycled concrete
- Water collectors & roof tanks: EP recovery for watering
- Shared planters
- Façades and green roof R + 2
- Optimal thermal and sound insulation (glass wool in recycled glass and vegetable binder, with high thermal performance)
- Habitat & Environment Certification
- Building monitoring via the SYMBIOSE application

### Building candidate in the category



Bâtiment neuf / grand projet

