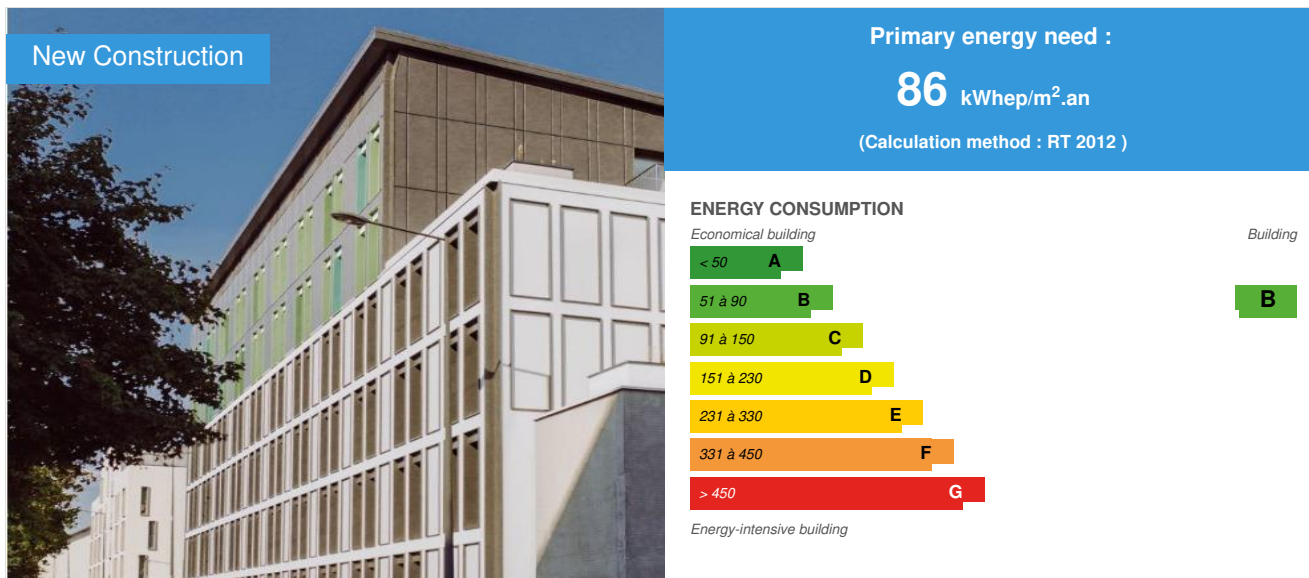


## Bio3 student residence

by Jean-Pierre Moreau / 2017-06-15 09:10:14 / Frankreich / 5958 / FR



**Building Type** : Student residence  
**Construction Year** : 2017  
**Delivery year** : 2017  
**Address 1 - street** : 11 rue de plat d'Etain 37926 TOURS, France  
**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 3 870 m<sup>2</sup>  
**Construction/refurbishment cost** : 5 760 000 €  
**Number of Dwelling** : 160 Dwelling  
**Cost/m2** : 1488.37 €/m<sup>2</sup>

**Certifications :**



**Proposed by :**



### General information

In July 2014, SCIC HLM Gambetta and Patriarch won the competition launched by the CROUS Orléans-Tours for the realization of a residence for students of the Institute of Biomedicines and Cosmetics Bio3, on the site of the Plat d Etain in the Beaumont-Chauveau ZAC in Tours. The cost of the 9.5 million euro operation is financed by a subsidy from social rental loans of 5.5 M € and 4 M € from the investment project for the future, from the Caisse des Deposits and Consignations. The building comprises two wings of 5 floors connected at an angle of 115 degrees. The residence consists of 160 studios from 8 to 20 m<sup>2</sup>, equipped with a kitchen and a bathroom. It also integrates the administrative offices of the Downtown CROUS Residence Management Service. The residence benefits from the PLS approval of the State allowing the APL to be approved for housing. The interior of the "Rabelais" residence has been carefully imagined. The functionality of the building was thought upstream and the volumes optimized, to provide a comfort of life to students. The residence also includes many services to meet the needs of student life: multimedia rooms, launderette, weight room, parking spaces and 2-wheel garages. The residence was delivered in March 2017 after 16 months of work.

## Sustainable development approach of the project owner

The objectives of the project were to design a student building with higher energy performance than the RT2012 regulation and which could have a diversified energy supply, if possible not using the wood industry.

The objectives have been met, the student residence has a wood boiler that can meet 100% of heating and domestic hot water needs. This boiler works with a natural gas backup.

The performances are reached, the RT2012 calculation figures are very favorable:

- Bbio 53% lower than Bbio Max (bioclimatic design quality coefficient)
- Cep 23% lower than Cep Max (Primary Energy Coefficient)

## Architectural description

The building has two 5-storey wings connected at an angle of 115 degrees. The residence consists of 160 studios of 18 m<sup>2</sup>, equipped with a kitchen and a bathroom. It also integrates the administrative offices of the Downtown CROUS Residence Management Service. The residence benefits from the PLS approval of the State allowing the agreement to the APL of the housing. The interior of the residence "Rabelais" has been carefully imagined. The functionality of the building was thought upstream and the volumes optimized, to provide a comfort of life to students. The residence also includes many services that meet the needs of student life: multimedia rooms, launderette, weight room, parking spaces and 2-wheel garages.

## See more details about this project

<https://www.patriarche.fr/projets/residence-bio3/>

## Stakeholders

### Contractor

Name : Crous Tours  
Contact : X  
<http://www.crous-orleans-tours.fr/>

### Construction Manager

Name : PATRIARCHE & Co + SCIC d'HLM Gambetta  
Contact : Antoine SERVAN - 04.79.25.37.30 - a.servan@patriarche.fr  
<http://www.patriarche.fr>

### Stakeholders

Function : Thermal consultancy agency  
PATRIARCHE & Co  
Antoine SERVAN - 04.79.25.37.30 - a.servan@patriarche.fr  
<https://www.patriarche.fr/>

Function : Others  
Connectibat  
jp.moreau@connectibat.com  
<http://www.connectibat.com>  
Subcontracting BMS

Function : Company  
Engie  
/  
<https://www.engie.com/>  
General contractor

### Contracting method

General Contractor

### Type of market

## Energy

### Energy consumption

Primary energy need : 86,00 kWhep/m<sup>2</sup>.an

Primary energy need for standard building : 111,60 kWhep/m<sup>2</sup>.an

Calculation method : RT 2012

Breakdown for energy consumption : Details primary energy consumption (kWhep / m<sup>2</sup> / year) - domestic hot water: 50.8 - Heating: 15.2

### Real final energy consumption

Real final energy consumption/m<sup>2</sup> : 73,70 kWhfep/m<sup>2</sup>.an

### More information

Details final energy consumption (kWhfep / m<sup>2</sup> / year) - domestic hot water: 50.7 - Heating: 15.2

## Renewables & systems

### Systems

Heating system :

- Gas boiler
- Wood boiler

Hot water system :

- Gas boiler
- Wood boiler

Cooling system :

- No cooling system

Ventilation system :

- Double flow heat exchanger

Renewable systems :

- Wood boiler

Other information on HVAC :

Collective wood boiler with booster city gas that provides heating and production of domestic hot water, equipped with:

- wood boiler that will cover the needs for heating and hot water
- wood storage tank
- gas boiler to ensure additional heating and hot water production sanitaire
- two hot water storage tanks

Hot water

DHW requirements: rooms + showers ground floor: 4860 L per day (160 rooms +2 showers, 30L per occupant)

- 2 storage tanks type CORHYDRO 2500 L, constant cooling 0.036 Wh / (24h.I.K)
- insulation class 3 ECS insulation
- circulation pump circulating

### Smart Building

BMS :

KNX TP and IP, ModBus RTU. HAGER Sisto. 750 Pts of measurements, 3150 Pts GTB. Detection of lighting in the blind rooms with notification by email if in operation after 22H. Constant brightness by detection in DALI.

Measurement of student housing and commons consumption with Hager Energy.

Three electrical domains are measured per housing via induction toruses (IT).

Lighting management

- In case of detection, the lighting switches on and regulates on a pre-defined threshold at the GTB. The default threshold is 350 Lux.
- At the end of the detection, the lighting goes off after 5 min. The room returns to automatic mode if the manual mode was engaged.

### Monitoring of blind parts

All blind parts (attics, bookshelves, workshop ...) with a traditional ignition have a KNX input to know and visualize the state of lighting on the GTB. GTB can not act on these lights.

In case of ON state after a certain time (Ex: 22H), an email is sent to the site manager and archived in the tracking file.

### Central extinguishment

A button allows the general extinction of all rooms whose lighting is controllable. This button has no influence on the blind premises.

### Heating regulation

Some rooms (offices, workroom) have an individual KNX controlled regulation, provided by a control thermostat TX410 associated with one or more TX501 valves.

No management performed by the GTC for domestic hot water and air handling unit.

## Environment

### Urban environment

Downtown

## Products

### Product

Hager Energy

Hager

/

<https://hager-energy.com/>

**Product category :** Table 'c21\_germany.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 = '27'

The infrastructure used as the basis of the system ensures the scalability of the hager-energy solution. Based on the KNX protocol, it allows the addition of functions over time such as heating management, centralization of shutters and still lighting. A building equipped with hager-energy can therefore offer à la carte services, depending on the needs and budget of the occupants.



LogicMachine

Embedded Systems

info@openrb.com

<http://openrb.com/>

**Product category :** Table 'c21\_germany.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 = '27'

LogicMachine acts as an inter-standard gateway, a cloud services integrator, a complex network logic engine, an easy-to-create visualization platform, an IP router and more. In addition, it supports iOS Siri and Google Voice Control via native apps available in the App Store and Google Play.



## Costs

## Carbon

### GHG emissions

GHG in use : 1,00 KgCO<sub>2</sub>/m<sup>2</sup>/an

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

Measurement of electrical consumption of 160 student rooms in the center of Tours near the university center. Tertiary tray of offices, meeting rooms, technical rooms with management of lighting, heating, monitoring and maintenance.

Transversality of the Smart Solution: Lighting Management, VMC, Heating, Refreshment, Measurements

### Building candidate in the category



Smart Building



Coup de Cœur des Internautes



Prix des Etudiants

