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30 ZERO ENERGY DWELLINGS

NANTES GRAND CARCOUET ENERGY POSITIVE RESIDENTIAL

« Le Grand Carcouet » is the first apartment building positive energy (Zero Energy Buidling) in the west of France. Located in the district Dervalières / Chézine, Nantes, he has 30 social housing rental, from T2 to T6.

The Grand Carcouet has a double ambition:

- ***Technical:*** *make a ZEB building and check its usage and consumption over time.*
- ***Social:*** *designing housing, common areas and an accompaniment that develop and promote community life.*

KEY DATA

- 30 Housing
- 3,276 m² SHON
- Positive Energy Label BEPOS
- Delivery: 2014
- € 1,800 / m²hab (excluding PV)

INNOVATIONS

- The project involves the construction of 30 multi-family housing in two buildings low consumption certified buildings (BBC), and Level Building in Energy POSitive (BEPOS). The operation was launched as part of a tender for building design.
- The uniqueness of this project is that it was designed on a direct electrical heating base while achieving an extraordinary level of energy performance.
- The construction method of this project uses timber frame walls.
- The heating of the hot water is produced by a Thermodynamic Solar System (Heliopac).
- Heating is recovered in waste water through Power pipe system.

STAKEHOLDERS

- **Bouygues Construction**

Major stakeholder in sustainable construction and services, the Group and its 53,500 employees design, build and operate the structures that improve everyday part of life and work: public and private buildings, transport infrastructure, energy networks and communication.

- **Nantes Habitat**

Private social landlord in Nantes region.

- **Architecte IN SITU Architecture & Environnement**

Architect specializing in environmental and sustainable design.

- **Pouget Consultants**

Technical Design Office specialized in environmental engineering.

- **CMB**

Company specialized in wood and wood modular construction.

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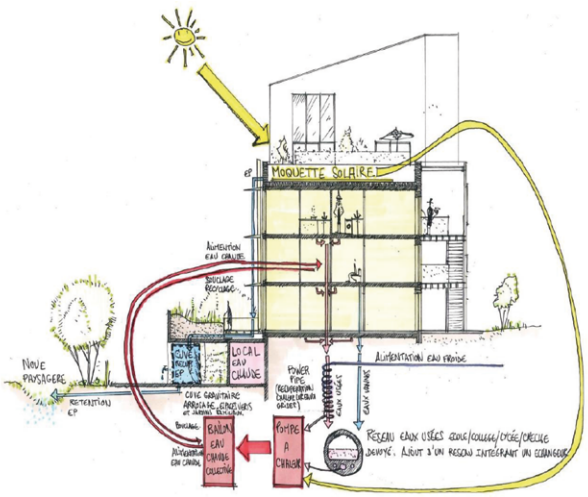
IMPLEMENTATION

▶ The project, directed by Nantes Habitat design-build by the Bouygues group Great West Building, CMB, In Situ, Pouget offers a generous response to the issues raised by the issue of sustainable living. This response is illustrated by the quality of the building by the committed advocacy approach.

▶ Moreover, habitat Nantes wanted for some time realize an innovative project anticipating future thermal regulations in 2020 and develop a return of experiences on techniques and uses (instrumentation housing for performance monitoring and guidance as good practice for tenants and maintenance services of Nantes Habitat).



RESULTS

/// The Grand Carcouet has a double ambition

- **Technique:** make a BEPOS building and check its use and consumption over time.
- **Social:** designing housing, common areas and an accompaniment that develop and promote community life.

/// Quality of use

Definition of additional housing space to accommodate a usually untreated uses in collective housing (workshop, storage, music area, laundry room, office, multimedia center...).
All accommodations are equipped with a loggia (~ 25m²) very glazed south and merges access to housing and laundry area.

FINANCIAL OUTCOMES

/// The total price of the transaction cost is 2,100 €/m² (total cost of operation) or 20% higher than the overall costs recognized in conventional operations.

/// **The land belonged to the city: the land charge is substantially identical to other social housing projects Nantes Habitat**

KEY FIGURES

- → Regulated energy ~ 40 kWhep/(m²GFA.yr)
- → Regulated energy ~– 1 kWhep/(m² GFA.yr) with Photovoltaique
- → Power pipe System: 2 kWhEP/(m²GFA.yr)
- → Global building Uvalue ~ 0,4W/m²
- → CO_2 < 2 kgEqCO_2/m².yr