Rehabilitation of the TEYTU factory and the St Martin II residence

by Emilie ARCELLI / 2021-01-12 09:01:32 / France / 6771 / FR

Primary energy need :

74 kWhep/m².an

(Calculation method : RT 2012)

ENERGY CONSUMPTION

Economical building *Building*

< 50	A	
51 à 90	B	B
91 à 150	C	
151 à 230	D	
231 à 330	E	
331 à 450	F	
> 450	G	

Energy-intensive building

Building Type : Collective housing < 50m
Construction Year : 1870
Delivery year : 2021
Address 1 - street : 1 place St Martin 38200 VIENNE, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 7 537 m²
Construction/refurbishment cost : 4 100 000 €
Number of Dwelling : 106 Dwelling
Cost/m2 : 543.98 €/m²

General information

The operation involves the rehabilitation of 106 housing units in Vienna (38).

An operation constrained by the heritage aspect

This renovation is energy and heritage. It concerns 82 dwellings of the Saint-Martin II residence (built from 1976 to 1983) and 24 dwellings of the TEYTU factory built in 1870. The latter's building is a perfect rectangle of approximately 85m by 11m. This project is one of the emblematic rehabilitations of the 80s in the region. In 1987, its change of use was indeed recorded. Under the leadership of the architect Paul Chemetov, it is now low-rent housing that occupies the building.

An energy issue, but also a human one

This operation is a design / construction on an occupied site. This therefore involved working with tenants living on the premises. An aspect that requires working with trained employees who are aware of their work environment.
However, this approach does not prevent a strong energy commitment. Our objective is to achieve the QEB Region benchmarks, the Effinergie label and 30% energy savings.

Architectural description

The “Teytu-St Martin 2” district is located in the heart of the ZP2-Vallée de la Gère sector, identified in the ZPPAUP de VIENNE regulations.

The TEYTU factory is one of the most remarkable elements of the industrial heritage of the 19th century: its restructuring / conversion into housing in the 1980s was certainly an architectural and technical challenge, to accommodate 24 housing units in a volume that would seem unsuitable, and in a site with a steep topography.

Operation Saint Martin 2, was built in the continuity of a slightly older ensemble (Saint Martin 1) with the same architect (AUA-team Paul Chemetov), in a spirit of rediscovering the spirit and the complexity of the medieval buildings which preexisted.

In the case of the industrial heritage of the XIXth century, the elongated and rhythmic massing imposes itself on us, with its large openings of worked bricks: the Regulations of the ZPPAUP clearly provide to include joinery in these existing bays, to ban the chests. protruding, and only allow wood, steel or lacquered aluminum. For this building, the whole challenge of the rehabilitation lies in the renewal of the exterior joinery, with today's performances:

Building users opinion

Tenants satisfied overall with the operation and more particularly with the thermal comfort inside their accommodation.

If you had to do it again?

We could go even further in terms of energy performance objectives (energy label) but the project owner's budgetary objectives are limited. Also, we would like to "support the change" tenants in the use of their "new" accommodation in order to make the rehabilitation fully effective.

Photo credit

Aymeric DILLIES

Stakeholders

Contractor

Name : ADVIVO
Contact : Directeur Général Nicolas BERTHON
https://www.advivo.fr/

Construction Manager

Name : ATELIER PARIS & Associés
Contact : Roland DELORD
http://www.atparis.fr/agence/

Stakeholders

Function : Construction company

GCC - Jean NALLET CONSTRUCTION

Directrice du Département Réhabilitation - Emilie ARCELLI

http://www.gcc-groupe.com/fr/page/construction.html
Steering, coordination, social support, work in own production

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Function : Thermal consultancy agency

BETREC

Cyril VUYLSTEKE

http://www.betrec.com
Thermal engineering, fluids, Structure

Function : Environmental consultancy

POLY'GONES consultants

Lucinda DOS SANTOS

www.poly-gones.fr
Social science research and consultancy office

Contracting method

General Contractor

Type of market

Realization

Energy

Energy consumption

Primary energy need : 74,00 kWhep/m^2.an

Primary energy need for standard building : 108,00 kWhep/m^2.an

Calculation method : RT 2012

Breakdown for energy consumption : Heating: 34.6 DHW: 29.5 Housing lighting: 23.5 Ventilation auxiliaries: 11.3 Distribution auxiliary: 2.2 Individual electrical use: 24.6 Common electrical uses: 2.6

Real final energy consumption

Final Energy : 128,30 kWhef/m^2.an

Real final energy consumption/m2 : 141,00 kWhef/m^2.an

Real final energy consumption/functional unit : 5,37 kWhef/m^2.an

Year of the real energy consumption : 2 020

Envelope performance

Envelope U-Value : 0,55 $W.m^{-2}.K^{-1}$

Building Compactness Coefficient : 0,60

Indicator : I4

Air Tightness Value : 1,70

Renewables & systems

Systems

Heating system :

- Gas boiler
- Water radiator

Hot water system :

- Condensing gas boiler

Cooling system :

- No cooling system

Ventilation system :

- Single flow
- Humidity sensitive Air Handling Unit (Hygro B

Renewable systems :

- No renewable energy systems

Solutions enhancing nature free gains :

Fermetures de balcons en loggias et installations d'occultations solaires + facteur solaire des vitrages

Costs

Construction and exploitation costs

Cost of studies : 300 000 €

Total cost of the building : 4 100 000 €

Subsidies : 260 000 €

Energy bill

Forecasted energy bill/year : 45 841,00 €

Real energy cost/m2 : 6.08

Real energy cost/Dwelling : 432.46

Health and comfort

Water management

Consumption from water network : 16 148,00 m^3

Water Consumption/m2 : 2.14

Water Consumption/Dwelling : 152.34

Indoor Air quality

Compliance with regulations for installed products.

Water-based paint.

Single flow ventilation

Comfort

Calculated indoor CO2 concentration :
non simulée

Measured indoor CO2 concentration :
non mesuré

Calculated thermal comfort : été 24.13°C / hiver 19°C

Measured thermal comfort : non mesuré

Daylight factor : non calculé

Carbon

GHG emissions

Methodology used :
Building in rehabilitation. Cycle study not performed.

Building lifetime : 50,00 année(s)

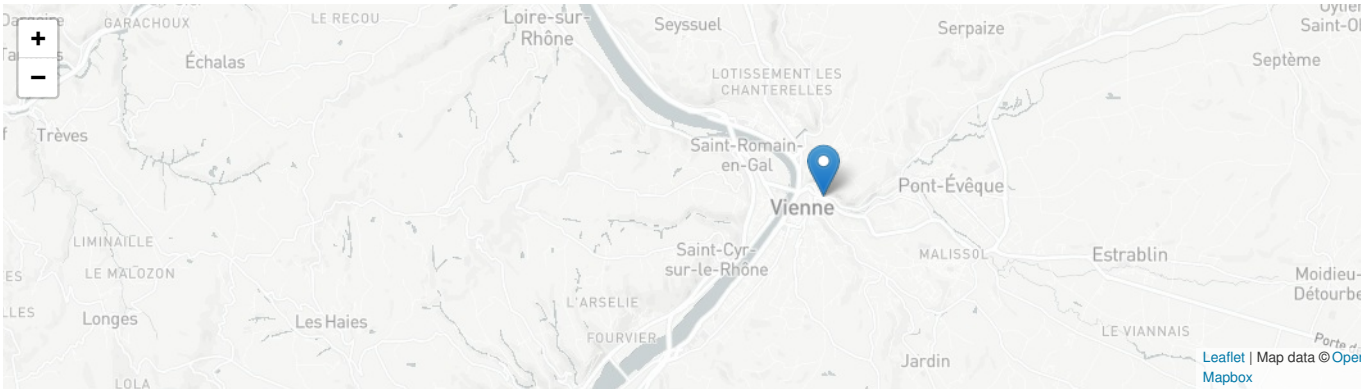
Contest

Reasons for participating in the competition(s)

Bâtiment historique (ancienne usine textile) transformé en bâtiment d'habitation. La réhabilitation énergétique vise des objectifs ambitieux à travers cette contrainte patrimoniale.

Building candidate in the category

Energie & Climats Tempérés



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