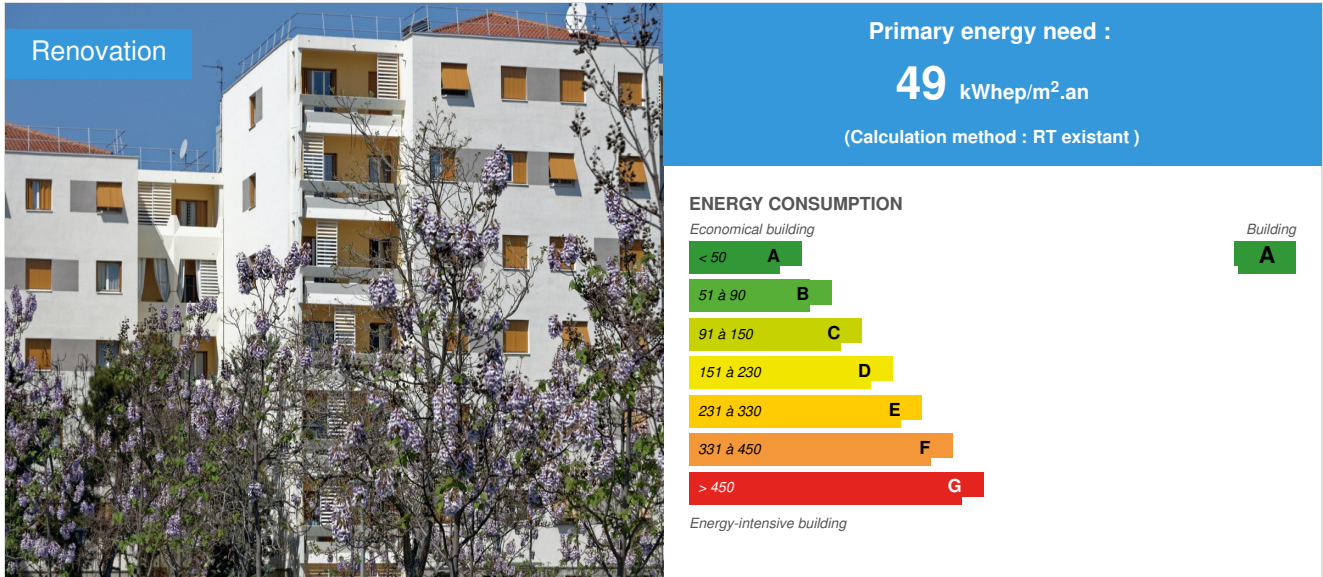


Sustainable renovation of 733 housing units in Aix-en-Provence (France)

by [Gabrielle Raynal](#) / 2022-03-11 11:09:36 / France / 1403 / FR



Building Type : Collective housing < 50m
Construction Year : 1975
Delivery year : 2019
Address 1 - street : Route de Galice 13100 AIX EN PROVENCE, France
Climate zone : [Csa] Interior Mediterranean - Mild with dry, hot summer.

Net Floor Area : 56 000 m²
Construction/refurbishment cost : 19 130 000 €
Cost/m² : 341.61 €/m²

Certifications :



Proposed by :



General information

The **rehabilitation operation of 10 residences belonging to Famille & Provence in the Jas de Bouffan district in Aix-en-Provence** was initiated in 2011 as part of the Strategic Energy Plan of the city's social landlord.

These 733 dwellings grouped together in residences, ranging from R+4 to R+7 and built between 1974 and 1976, were in a moderately degraded state with an initial energy level of 98 kWh/m² SHAB per year for heating.

The operation carried out within the framework of a design-build contract integrating an energy performance commitment on the energy gains measured for heating and consumption of the common areas (ventilation and lighting) has led to **an overall energy gain greater than 60% at the end of the 2 years of follow-up.**

Parameters of comfort and quality of life have been favored in the overall approach of the project by **developing principles of bioclimatic equity between the different dwellings** (treatment of the ground floor, common floors and differentiated roofed dwellings).

In the end, the accommodations on the ground floor remain the biggest heating consumers, but they are the most comfortable in summer. The standard floors are almost passive in measured final energy, the spaces under the roof show savings of more than 75% on their heating consumption.

A very thorough follow-up of the tenants, their support and the consideration of feelings and uses, was initiated from the start of the program and densely carried out during the construction works. This monitoring has contributed to the sustainability of energy gains even during periods of confinement.

The redesigned real estate complexes, the exterior spaces reworked around an axis open to the rest of the district and conviviality gardens, contribute to a regeneration of the perceptions of the inhabitants and the residents vis-à-vis this large-scale district at the entrance of town.

Building users opinion

Strong overall appreciation confirmed by survey

If you had to do it again?

Less intrusive metrology for residents

Photo credit

Véronique Paul for BBSE

Stakeholders

Contractor

Name : ESH Famille & Provence

<https://www.familleprovence.fr>

Construction Manager

Name : BALDASSARI SIBOURG ARCHITECTES

Stakeholders

Function : Assistance to the Contracting Authority

DOMENE scop

equipe@domenescop.fr

<http://www.domenescop.fr>

Programming studies, assistance with competitive dialogue, monitoring of studies, construction, verification of the energy performance commitment, monitoring of comfort and consumption, BDM support

Function : Thermal consultancy agency

TPFi

Regulatory and dynamic thermal study, TCE studies, energy evaluation on metrology

Function : Company

BOUYGUES BATIMENT SUD EST

T. Mais

Metrology and management of the energy performance commitment

Function : Others

ROBERT CELAIRE CONSULTANT

Architectural audit, global energy

Contracting method

Other methods

Energy consumption

Primary energy need : 49,00 kWh/m².an

Primary energy need for standard building : 80,00 kWh/m².an

Calculation method : RT existant

Breakdown for energy consumption : RT: 50% heating - 25% DHW - 15% lighting - 7.5% ventilation - 2.5% auxiliaries Actual: initial heating 99 kWh/m² - After work: 33.5 kWh/m² on average The majority of dwellings are located on the intermediate floors and have an average real consumption of less than 15kWh/m²

Initial consumption : 154,00 kWh/m².an

Real final energy consumption

Final Energy : 41,00 kWh/m².an

Real final energy consumption/m² : 62,00 kWh/m².an

Year of the real energy consumption : 2 019

Envelope performance

Envelope U-Value : 0,62 W.m⁻².K⁻¹

More information :

ITE 16 cm EPS under coating

insulation for flat roofs 12 cm PUR + parts under roof tiles 24 cm LM blown

Low floor insulation on VS: 12 cm rock wool flocking

Uw 2.1 double glazing PVC joinery already in place

Indicator : I4

Air Tightness Value : 1,33

More information

Monitoring of actual consumption before and after works with instrumentation of a panel of 54 dwellings over 4 heating seasons and compilation on 10 other dwellings of consumption on invoice before/after works

Renewables & systems

Systems

Heating system :

- Condensing gas boiler

Hot water system :

- Condensing gas boiler

Cooling system :

- No cooling system

Ventilation system :

- Humidity sensitive Air Handling Unit (Hygro B)

Renewable systems :

- No renewable energy systems

Environment

Urban environment

A large complex at the entrance to the city of Aix-en-Provence, the Jas de Bouffan residences have a compact geometry bordered by large open spaces. The district had to remain permeable and a connection with the BHLS and the commercial center of the district was reinforced around a green space under a pergola. The parking lots and all the hydraulic facilities have been redesigned by a landscape designer, keeping cars at a distance, freeing up quality spaces for common facilities (sports, shared gardens, public driveway, etc.).

Desimpermeabilization of more than 10% of free spaces.

Creation of retention valleys for 122 m3. Planting of more than 300 new trees and conservation of existing ones.

Products

Product

CPIE Pays d'Aix

<https://cpie-paysdaix.com/>

Product category : Management / Stakeholders involvement

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Costs

Construction and exploitation costs

Total cost of the building : 19 130 000 €

Circular Economy

Social economy

Social economy and professional integration :

26,800 hours of integration in support of the local platform

inclusion and associative development project: sports, shared gardens, crèche

very in-depth socio-energetic monitoring

festive and convivial activities (thermal walks, days of exchanges and games, etc.)

cooperatives among project stakeholders

Contest

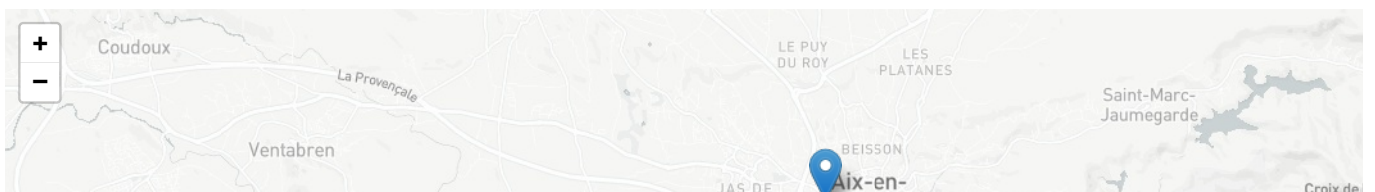
Reasons for participating in the competition(s)

Nous souhaitons valoriser cette opération pour partager le retour d'expérience de l'ensemble de l'opération et notamment le suivi des consommations, des conforts thermiques, y compris en période caniculaire et les volets socio-énergétiques du projet.

Building candidate in the category



Prix du public





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