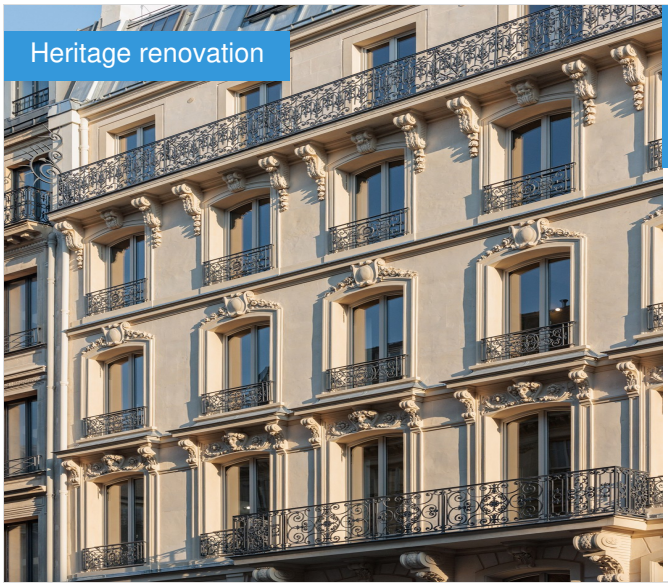
43 rue de chateaudun - transformation of an office building into housing

by virginie marechal / 2023-03-13 00:00:00 / France / 2820 / FR



Primary energy need :

68.76 kWhep/m².an

(Calculation method : RT existant)

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 : 1864
Delivery year : 2022
Address 1 - street : 43 rue de Chateaudun 75009 PARIS, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 765 m²
Construction/refurbishment cost : 1 627 818 €
Number of Dwelling : 6 Dwelling
Cost/m2 : 2127.87 €/m²

Certifications :

General information

The building at 43 rue de Châteaudun in Paris 9th is located in the so-called "Chaussée d'Antin" district, between the Trinité d'Estienne d'Orves and ND de Lorette metro stations (line 12), with high tertiary activity.

The building, built in 1864, is edified on a plot of 170 m², raised on a basement level, in G+5+C and comprising 2 courtyards. Transformed for office use in the 1960s, it had entirely commercial status, housing office floors on the upper floors, 2 shops on the ground floor, and housing.

The works project consists of the heavy rehabilitation of a Haussmannian building, supplemented by a redistribution of the office floors into 6 family social housing units: the building thus regains its original residential use.

This project, integrating a double environmental certification, includes the reuse of salvageable heritage elements (parquet floors, cast iron radiators, etc.).

Certification: NF HABITAT HQE (CERQUAL)

Energy label : BBC Renovation

BDF Silver level recognition - Achievement phase issued by Ekopolis

Building users opinion

Tenants are satisfied with the housing in terms of functionality and thermal and acoustic comfort.

If you had to do it again?

Frame the life cycle analysis and reuse component for the DCE to allow ex-situ reuse.

Photo credit

MOSTEFAOUI SALEM

Stakeholders

Contractor

Name : ELOGIE-SIEMP
Contact : Virginie MARECHAL
https://elogie-siemp.paris/

Construction Manager

Name : ATELIER RAMDAM
Contact : Franck Dibon & Olivier Misischi, info[a]atelier-ramdam.com, 01 44 61 44 24
https://www.atelier-ramdam.com/

Stakeholders

Function :

EVP

https://www.evp-ingenierie.com/
Co-contractor project manager & thermal consultancy structure

---

Function : Thermal consultancy agency

SUNSQUARE

Function : Other consultancy agency

ICTEC

Isabelle CASALIS

https://ictec.fr/
Co-contractor MOE Economist

Function : Structures calculist

AVA

https://www.acoustique-vivie.fr/
Acoustic engineering

Function : Company

OSIRIS BATIMENT

Ibrahim AHMED

TCE company

Function : Company

AIGLE COUVERTURE

https://www.aiglecouverture.com/
Hedging batch subcontractor

Function : Company

METALOSUD

Locksmith metalwork subcontractor

Function : Company

GRIMAUD FONDATIONS

https://www.grimaud-fondations.fr/
Shell lot

Function : Company

EUROPAMIANTE

https://europamiante.fr/
Asbestos removal subcontractor

Function : Company

KONE

https://www.kone.fr/
Elevator lot

Function : Assistance to the Contracting Authority

QCS Service

Lydia Ouabdesselam

https://www.qcsservices.fr/
AMOE NF Habitat HQE certification and clean site monitoring

Function : Certification company

QIOS

https://qios.fr/
NF HABITAT HQE environmental certification assessment

Function : Certification company

EKOPOLIS

Camille Perez

https://www.ekopolis.fr/
BDF certification follow-up

Function : Others

RISK CONTROL

https://risk-control.fr/
Technical control office

Function : Others

Coordination Management

SPS Coordinator

Contracting method

Other methods

Type of market

Realization

Allocation of works contracts

Macro packages

Energy

Energy consumption

Primary energy need : 68,76 kWhep/m^2.an

Calculation method : RT existant

Breakdown for energy consumption :

- Primary energy consumption before works: 269 kWhep/m2.year
- Primary energy consumption: 68.76 kWhep/m2.year

Distribution :

- Heating: 39 kWhep/m2.year;
- DHW: 21 kWhep/m2.year;
- Ventilation: 2 kWhep/m2.year;
- Lighting: 6 kWhep/m2.year;
- Aux: 1 kWhep/m^2.year.

Envelope performance

Envelope U-Value : 0,64 $W.m^{-2}.K^{-1}$

More information :

The heritage preservation of the street facade and the interior walls on the main facade led to limiting the interior insulation to the dividing walls between common areas and housing and the rear facade. The replacement of all the windows with wooden exterior joinery with double glazing coupled with the installation of an individual gas condensing heating system and the initial inertia of the building ensured satisfactory thermal comfort.

Air Tightness Value : 1,39

Renewables & systems

Systems

Heating system :

- Individual gas boiler
- Water radiator

Hot water system :

- Individual gas boiler

Cooling system :

- No cooling system

Ventilation system :

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

Renewable systems :

- No renewable energy systems

Environment

Urban environment

The project is located in a dense urban area, right in the heart of the 9th arrondissement of Paris. Many services and transport are close to the building. The area is made up of office buildings. The building at 43 rue de Chateaudun has been transformed from office use into housing. The accommodations are through and benefit from a beautiful natural light as well as the calm of the heart of the island.

Land plot area : 170,00 m^2

Built-up area : 100,00 %

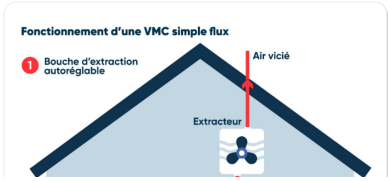
Products

Product

Ventilation VMC hygro B

Product category : HVAC, électricité / ventilation, cooling

To renew the air in a home, the installation of controlled mechanical ventilation (VMC) is ideal. Type B hygro-adjustable (also called “hygro”) VMC models regulate the inlet and outlet flows according to the ambient humidity.



Costs

Construction and exploitation costs

Cost of studies : 120 400 €

Total cost of the building : 1 670 821 €

Subsidies : 2 949 852 €

Additional information on costs :

The overall cost of the project including the land share is €3,604,280

Circular Economy

Circular economy strategy

Phase in which reuse has been integrated : Preliminary design studies

Type of circular economy strategy implemented :

- Targeting a few diversified products for testing
- Maximization of the mass of waste avoided

Type of circular economy strategy implemented :

Lot 00 provided for the possibility of reusing certain equipment and materials on the site. The the consultation file also included a detailed inventory of materials by floor.

Integration of reuse into the written contract documents : Integration of the approach in the general clauses

Validation protocol for reused materials : No

Deposit validation form : No

Reuse : same function or different function

Batches concerned by reuse :

- Locksmithing-Metalwork
- Indoor joineries
- Floorings
- Heating ventilation air conditioning
- others...

For each batch : Reused Materials / Products / Equipments :

In-situ reuse:

- Wooden floors: 100 m²
- Cast iron radiators: 31
- Marble trays replaced on the floor of the removed fireplaces: 8
- Fireplace mirrors: 4
- Interior doors: 20
- Hardware (door handles): 30
- Conservation of moldings on walls and ceilings and reuse in situ
- Reusing stone steps existing staircase for new staircase to ground floor

Recovery of elements for ex-situ reuse:

- 8 exterior joinery on G+6 and 8 doors, 4 mirrors, old staircase locksmith elements: 100kg

Reused materials rate :

- The cast iron radiators in place were checked, stripped and repainted in the workshop.
- Storage and sorting work on the parquet floors to respect the layout of the parquet in herringbone pattern.

Field of use and material origin :

In situ reuse

Logistics

Rehabilitation and reconditioning operations (if project concerned by a cleaning/demolition stage) : Yes

Storage of materials for reuse in situ (if project concerned by a cleaning/demolition stage) :

- On site, on a dedicated area in a covered location

Insurance

Consultation of the technical controller : No

Insurance broker on the project : Yes

Consultation of the broker : No

Insurer : SMA

Consultation insurer : No

Discussion with the insurer :

No discussions with the insurer

Additional premium :

Non

Environmental assessment

Impacts avoided : water, waste, CO2 :

Materials	Categories	Quantites	Fonctional units	CO2 avoided (kg)	Water consumption avoided (kg)	Waste avoided (kg)
Traditional parquet	Interior joinery	100	m²	277,3333333	6,222816667	468,7156902
Interior door wood	Interior joinery	20	U	2099,779176	1956,246161	2612,763473
Handles, door closers, bumpers,...	Interior joinery	30	U	312,405	4,749037	426,8252721
Marble wall covering attached	Wall covering	4	m²	71,06693438	28,17248181	209,9903647
Cast iron radiator emitter	Plumbing	20	kW	4233,32024	29,77359725	4190,963981
Mirror	Furniture	4	m²	56,772	0,129232	42,408582

CO2 avoided (kg)	Water consumption avoided (m3)	Waste avoided (kg)
7050,676684	2025,293325	7951,667363

The reuse operation saved the equivalent of 56,405 kilometers traveled by a small car, i.e. 64 Paris-Nice journeys, 13,502 rectangular bathtubs filled with water and 16 years of household waste for a Frenchman

Economic assessment

Reuse quantified in the companies' offers? : No

Communication

Communication on the process : Yes

If so, please specify :

BDF approach supported by EKOPOLIS, Implementation phase, Silver level, RAMDAM Workshop: project support and management

Additional information (PDF documents)

Health and comfort

Indoor Air quality

Natural ventilation and VMC hygro B

Comfort

Temperature level :

- Carrying out airtightness tests
- Motorized roof window on the top floor

Acoustic comfort :

Acoustic insulation: installation of high-performance wooden joinery with double glazing

Carbon

General infos

The LCA was not carried out on this building, but a reuse approach was prepared in studies by the project manager and implemented during the construction site

GHG emissions

GHG in use : 14,00 $KgCO_2/m^2/an$

GHG before use : 59,00 $KgCO_2/m^2$

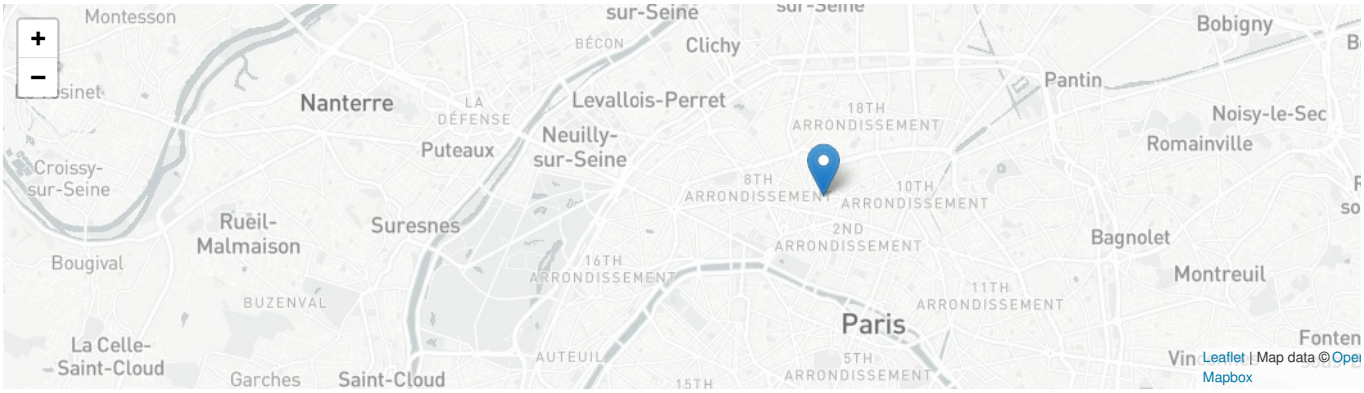
, ie xx in use years : 4.21

Contest

Reasons for participating in the competition(s)

Ce projet de transformation de bureaux en logements s'inscrit dans une démarche de "déjà-là" qui conduit à améliorer le bâtiment en conjuguant contraintes techniques, environnementales et patrimoniales. Les qualités techniques du bâtiment ont permis sa réversibilité, l'immeuble retrouvant son usage d'origine. Les façades et les modénatures intérieures ont été préservées. Le traitement des planchers a pu être effectué en prenant en compte le sujet acoustique (rue très passante et proximité du métro sous le bâtiment), en isolant "mais pas trop", afin de ne pas dégrader les conditions acoustiques entre logements, à l'intérieur du bâtiment. Dans cette démarche de "préservation" et de possible réemploi, un inventaire a été réalisé de manière empirique. Ce projet lancé en 2016, fait figure de prémisses aux démarches d'économie circulaire. Il a également fait partie des projets pilotes de la démarche Bâtiment Durable Francilien (BDF) en 2017.

Ce changement d'usage contribue à la mixité urbaine dans Paris, mais également à la mixité sociale puisque ce sont 6 logements sociaux familiaux (T4) qui ont été créés. Le logement du 1er étage a été également été conçu pour faciliter l'accueil d'une personne à mobilité réduite (douche à l'italienne, barres de maintien et de relevage).



Date Export : 20230804072534