Danube Elithis Tour

by Isabelle BARBOSA / 2019-06-12 11:01:10 / France / 9363 / FR

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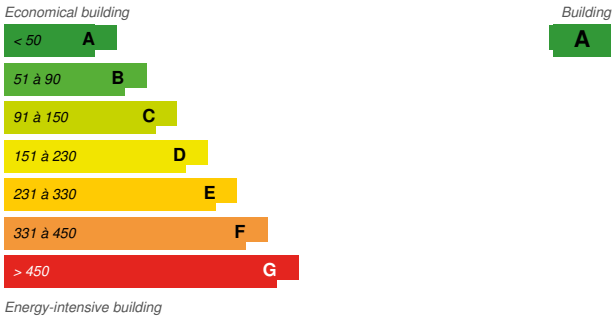
Primary energy need :

64.13 kWhep/m².an

(Calculation method :)

ENERGY CONSUMPTION



Building Type : Collective housing < 50m
Construction Year : 2018
Delivery year : 2018
Address 1 - street : 16 rue Edmond Michelet 67000 STRASBOURG, France
Climate zone : [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area : 6 350 m²
Construction/refurbishment cost : 7 200 000 €
Number of Dwelling : 63 Dwelling
Cost/m2 : 1133.86 €/m²

Certifications :

HABITAT & ENVIRONNEMENT

Bepos 2013

General information

Construction of the first all-purpose positive energy tower in the world. It consists of 67 housing units and 1233 m2 of photovoltaic panels arranged on the roof and on the facades.
With a cost not exceeding 1200 € / m2, it is an innovative but affordable concept for the world.
The Elithis Danube Tower is located at the entrance of the ZAC (joint developement zone) Danube, the advanced figure of this new emblematic district of the new Strasbourg, and the exemplary reconquest of its docks.

Sustainable development approach of the project owner

Respond to the major issues of the 21st century, in terms of:

- Fight against global warming,
- Acceleration of the energy transition,
- Growth of the purchasing power of households,
- Limitation of urban sprawl and pollution control,
- Positive integration of digital into the economy of the construction sector,
- Live better together.

Architectural description

High Architectural Quality

The spirit of the place, the memory of the ports, the soul of the river

An architecture between earth and sky

A form thought with the climate

Bright housing

Enjoy the views

A collective, social, participative adventure

Building users opinion

With an energy consumption 168 times cheaper than an average household in France, the promise made to the occupants is kept. Thus, the various testimonies are laudatory.
See the different articles and reports on this subject: http://www.elithis.fr/articles/

If you had to do it again?

The main construction principles and innovations selected for this project are the good ones. The proof is that after a year of operation the results are satisfying. Therefore, apart from the few settings at the margin, we can only be satisfied, without questioning the ambitious choices that make this project a world first.

See more details about this project

http://www.elithis.fr/2019/02/28/reportage-au-13h-de-tf1-sur-la-tour-elithis-danube/
http://www.elithis.fr/2019/01/25/reportage-au-journal-tv-de-la-rtbf-sur-la-tour-elithis-danube/

Photo credit

Crédit photos Mariusz MARCIN

Stakeholders

Contractor

Name : SCCV TED
Contact : Catherine JONIAUX Assistante du Président 03 80 43 92 26 catherine.joniaux@elithis.fr
http://www.elithis.fr

Construction Manager

Name : x-tu architectes
Contact : architects@x-tu.com
https://www.xtuarchitects.com

Stakeholders

Function : Contractor representative

Egidia

Xavier DUBEARN

Function : Thermal consultancy agency

Bénefficience

Function : Other consultancy agency

Elithis Ingénierie

BET FLUIDS

Function : Structures calculist

CTE

Function : Construction Manager

ODAXIA

Chief Execution Management - OPC

Function : Structures calculist

Acoustique France

Function : Company

SOTRAVEST

GO Company

Contracting method

Separate batches

Type of market

Table 'c21_maroc.rex_market_type' doesn't exist

Energy

Energy consumption

Primary energy need : 64,13 kWhep/m^2.an

Primary energy need for standard building : 92,60 kWhep/m^2.an

Calculation method :

Breakdown for energy consumption : Consumption according to calculation RT2012 end of construction site on the whole building (housing + offices) Heating: 31.5 kWhEP / M².an Cooling: 1.00 kWhEP / M².year (for offices only) ECS: 16.83 kWhEP / M².an Lighting: 6.0 kWhEP / M².an Auxiliary: 8.8 kWhEP / M².year Photovoltaic production: 59.2 kWhEP / M².year, that is to say 4.93 kWhEP / M².an residual

Real final energy consumption

Real final energy consumption/m2 : 41,05 kWhef/m^2.an

Year of the real energy consumption : 2 018

Envelope performance

Envelope U-Value : 0,62 $W.m^{-2}.K^{-1}$

More information :
Outside wall: concrete + 200mm glass wool under ventilated cladding (Up = 0.22)
Roof terrace: concrete + 240mm polyurethane foam under seal (Up = 0.09)
Floor on solid ground: concrete + 135mm of PSE (Up = 0.19)
Aluminum joinery with thermal break + extra-clear double glazing (Uw = 1.40) + blackout Motorized sunshade
Glazed surface = 27% of living space (vs 1/6 for RT2012)
Heavy inertia
Air tightness measured at 0.38 m3 / h.m2 (vs 1.00 m3 / h.m2 for RT2012)

Building Compactness Coefficient : 0,40

Indicator : EN 13829 - n50 » (en 1/h-1)

Air Tightness Value : 0,87

More information

Actual consumption on the housing perimeter: -11 kWhEP per m² / year Average annual invoice per household and per year: 10 € Annual renewable energy production: 110% of needs CO2 emissions: 3 kg m².an / 15 times less than the existing fleet 12 tons of CO2 saved per year thanks to photovoltaics

Renewables & systems

Systems

Heating system :
- Urban network
- Fan coil
- Others

Hot water system :
- Urban network

Cooling system :
- Water chiller
- Fan coil

Ventilation system :
- compensated Air Handling Unit
- Double flow heat exchanger

Renewable systems :
- Solar photovoltaic

Renewable energy production : 114,00 %

Roof R + 17: 329m ² high efficiency PV module (69.7kWc)
Intermezzo roof: 114m² high performance PV module (24.15kWc)
SOUTH FACING: 405m² customized PV module (73.7kWc)
East facade: 385m² customized PV module (51.6kWc)

Smart Building

BMS :
ADHUN
PERSONAL DIGITAL ASSISTANT AT HOME

Users' opinion on the Smart Building functions :

Incentive and intuitive, the tool has created a real emulation between tenants.

At the social heart of the tower, conversations often revolve around the performances of each other. The most virtuous Dulociate competition is "unofficially" open!

Environment

Urban environment

Land plot area : 600,00 m^2

Built-up area : 100,00 %

The Elithis Danube Tower is located at the entrance of the ZAC Danube, the advanced figure of this new emblematic district of the new Strasbourg, and the exemplary reconquest of its docks.

The building is bounded by the Dusuzeau Basin and its quay to the north and Edmond Michelet Street to the west, which extends to the north by the Winston Churchill bridge.

The main access is in the West, Rue Edmond Michelet and its Tramway station, or by the few steps that lead to the Quai du Bassin Dusuzeau.

A secondary access is located in the east, along the "urban ramp west of the ZAC".

Near the center and perfectly served by public transport, the Elithis Danube Tower in the heart of the Eco District Danube allows its inhabitants to approach the mobility from a new angle.

The Elithis Danube Tower profits from excellent connections: it is located in the immediate vicinity of a bus stop and the Winston Churchill tram station (lines C and E) and is included in a very dense network of cycle paths. is also served by three major roads.

Walking is THE universal mode of transport! The ZAC Danube has an almost flat altimetry conducive to pedestrian movement and ballads along the Quays.

In order to ensure good walking conditions, the implementation of the Elithis Danube Tower was considered in perfect coherence and connection with the public space. For the transport of young children, La Tour provides families with a local pushchair located on the ground floor of the building.

The Strasbourg urban area has the largest tramway network in France, with 71.8 km of commercial length, 7 meshed lines including a cross-border line to Kehl (6 tram lines and 1 BHNS line) and 90 stations.

The site is advantageously served in particular by lines C and E of the tramway. The Winston Churchill stop is located at the foot of the Elithis Danube Tower.

Products

Product

YZENTIS EVOLUTION FLOOR

FRANCE AIR

thierry.jehl@france-air.com

https://www.france-air.com/

Product category : Génie climatique, électricité / Ventilation, rafraîchissement

• Compact technical closet suitable for housing, the "all in one" module brings together the three elements necessary for DHW production and comfort climate:
- a high efficiency double flow recuperator,
- individual hot water batteries,
- an air treatment unit for the boost.
• Frame and support frame
• Plenum, air grating, multizone control

First project to have installed this innovation
Support of the manufacturer with the installer for the implementation and adjustment
Very good regulation of thermal comfort and acceptance / appropriation of occupants

Costs

Construction and exploitation costs

Renewable energy systems cost : 689 000,00 €

Total cost of the building : 20 500 000 €

Energy bill

Forecasted energy bill/year : 659,00 €

Real energy cost/m2 : 0.1
Real energy cost/Dwelling : 10.46

Health and comfort

Water management

Consumption from water network : 9 984,00 m^3

Water Consumption/m2 : 1.57
Water Consumption/Dwelling : 158.48
Methodology E + C-

Indoor Air quality

We spend about **80%** of the time in closed places, especially in housing.

The air we breathe there may be of lower quality than the outside air, sometimes very clearly because the outside air is added to pollutants from the indoor air.

Floor and wall coverings represent most of the surfaces of a room. Their composition and their implementation largely contribute to the quality of the habitat and more particularly the indoor air.

In order to ensure healthy indoor air, all interior linings have been chosen to limit the emission of pollutants into the air and are all labeled "indoor air emissions" .

The Indoor Air Emissions label is a simple and readable indicator of the level of volatile organic compound (VOC) emissions, known as new pollutants from interior coating products (partitions, panels, carpets, wallpapers, paintings ...).

The emission level is indicated on a scale from **A + (low emissions) to C (high emissions)**

All floor coverings in dwellings are labeled **B minimum.**

Each unit is equipped with a high-performance ventilation system that guarantees fresh air supply at the level of the joinery in the living rooms and rooms adapted to the use. The "polluted" air is mechanically aspirated by extracting mouths in the wet rooms (washrooms, toilets, kitchen). Their dimensioning has been optimized to ensure sufficient air quality, low noise and easy maintenance, while reducing associated energy consumption.

Carbon

GHG emissions

GHG in use : 4,70 $KgCO_2/m^2/an$

Methodology used :
Methodology E + C-

GHG before use : 1 009,00 $KgCO_2$ $/m^2$

Building lifetime : 50,00 année(s)

, ie xx in use years : 214.68

GHG Cradle to Grave : 1 300,00 $KgCO_2$ $/m^2$

the EGES result includes the 4 contributors (PCE, construction site, water and energy)

Life Cycle Analysis

Material impact on GHG emissions :
1009

Contest

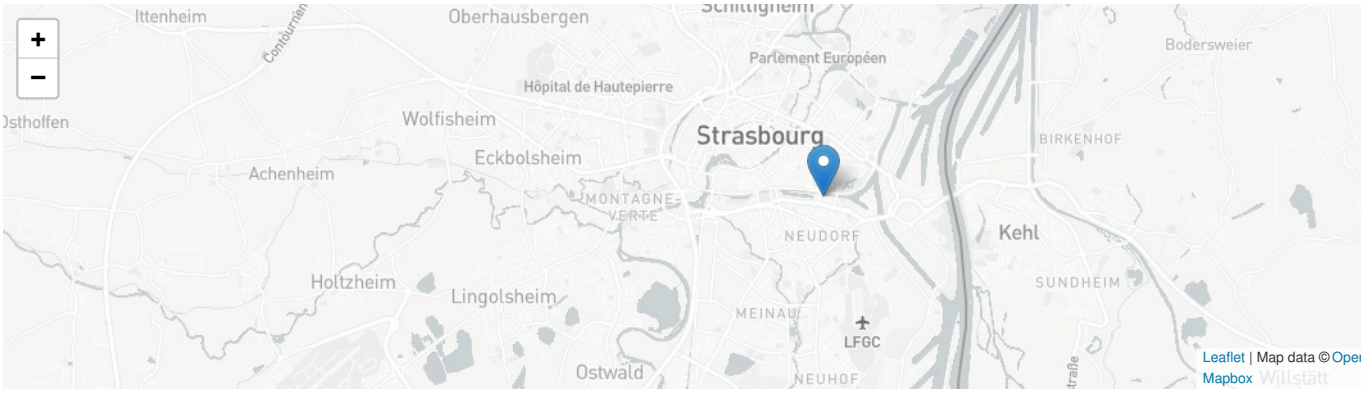
Reasons for participating in the competition(s)

- Reduced energy consumption
- Photovoltaic generation

Building candidate in the category

Energie & Climats Tempérés

Prix des Etudiants



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