


## Forest in the Sky

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**New Construction**



**Primary energy need :**  
kWhpe/m<sup>2</sup>.year  
(Calculation method : )

**ENERGY CONSUMPTION**

Consumption Range (kWhpe/m <sup>2</sup> .year)	Grade	Category
< 50	A	Economical building
51 à 90	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** : 2018  
**Delivery year** : 2018  
**Address 1 - street** : Dai Lai 100000 VINH PHUC, Other countries  
**Climate zone** : [Cwa] Mild, dry winter, hot and wet summer.

**Net Floor Area** : 22 838 m<sup>2</sup>  
**Number of Dwelling** : 181 Dwelling

**Certifications :**



**Proposed by :**



**General information**

Developed by Flamingo Dai Lai Joint Stock Company, Forest in the Sky is a unique real estate project with advanced green technologies located in Hanoi.

Vietnam's Cotecons served as the construction contractor for the eco-friendly complex. Forest in the Sky pioneers a new sustainability standard for Vietnam, emphasizing a visual appeal that is grounded in durability, comfort and energy and water-conserving features.

With its distinctive architecture, the four sides of Forest In The Sky are covered with over 50,000 trees, including shrubs, vines and colorful flowers. From a distance, the building resembles a tropical jungle full of vitality and brilliance. From within the building, residents can enjoy a panoramic view of Dai Lai Lagoon and Tam Dao Range.

Residents benefit from lower utility bills as all homes feature energy-efficient lighting, external window shading and high-efficiency hot water boilers, ensuring the building is as "green" on the inside as it is on the outside.

Forest in the Sky has received final EDGE certification from SGS Vietnam.

## See more details about this project

<https://www.edgebuildings.com/projects/forest-in-the-sky/>

## Photo credit

Photos Courtesy of Flamingo Group

## Stakeholders

### Contractor

Name : Vietnam's Coteccons

Contact : [contact\[at\]coteccons.vn](mailto:contact@coteccons.vn)

<http://www.coteccons.vn/?lang=en>

### Construction Manager

Name : Flamingo Dai Lai

Contact : [huydd\[at\]flamingogroup.vn](mailto:huydd[at]flamingogroup.vn)

<http://resort.flamingodailai.com/en>

### Stakeholders

Function : Contractor

NEWTECONS

[contact\[at\]newtecons.com.vn](mailto:contact@newtecons.com.vn)

<https://newtecons.vn/en/project/flamingo-dai-lai-resort/>

## Energy

### Energy consumption

Breakdown for energy consumption : Energy consumption of building Flamingo Dai Lai

4 kWh/m<sup>2</sup>/year : cooling energy

16 kWh/m<sup>2</sup>/year : home appliances

4 kWh/m<sup>2</sup>/year : common amenities

8 kWh/m<sup>2</sup>/year : Lighting

4 kWh/m<sup>2</sup>/year : Hot water

### Envelope performance

More information :

Roof U - Value : 1.73 W/m<sup>2</sup> K

Wall U - Value : 1.80 W/m<sup>2</sup> K

Glass U - Value: 5.40 W/m<sup>2</sup> K

### Real final energy consumption

Final Energy : 36,62 kWhfe/m<sup>2</sup>.year

## Renewables & systems

### Systems

Heating system :

- No heating system

#### Hot water system :

- Heat pump
- Solar Thermal

#### Cooling system :

- VRV Syst. (Variable refrigerant Volume)

#### Ventilation system :

- Natural ventilation

#### Renewable systems :

- No renewable energy systems

## Products

### Product

Reduced Window to Wall Ratio - WWR of 32.43%

Reflective Paint for External Walls -Solar Reflectivity (albedo) of 70

Air Conditioning System - COP of 4.1

Heat Pump for Hot Water - COP of 4.1

Energy-Saving Light Bulbs - Internal Spaces/ Common Areas and External Spaces

Solar Hot Water Collectors - 25% of Hot Water Demand

**Product category :** Second œuvre / Plomberie, sanitaire

Low-Flow Showerheads - 9 L/min

Low-Flow Faucets for Kitchen Sinks -6.8 L/min

Low-Flow Faucets for Washbasins - 4.9 L/min

Single Flush for Water Closets - 4.8 L/flush

**Product category :** Second œuvre / Cloisons, isolation

Insulation of Roof - U Value of 3.14

Insulation of External Walls - U Value of 1.92

Internal Walls: Cellular Light Weight Concrete Blocks

## Costs

### Construction and exploitation costs

Additional information on costs :

### Energy bill

Forecasted energy bill/year : 30 578,00 €

Real energy cost/m<sup>2</sup> : 1.34

Real energy cost/Dwelling : 168.94

## Health and comfort

### Life Cycle Analysis

**Eco-design material :**

Arch. Maria Chiara Pastore of Stefano Boeri Architetti, famous for creating the vertical forests model for sustainable residential buildings embodied by Milan's [Bosco Verticale](#) (Vertical Forest), emphasized how its vegetal system contributes to the construction of a microclimate, produces humidity, absorbs CO<sub>2</sub> and dust particles and produces oxygen.

This is not only instrumental in curbing climate change but also utilises accessible building materials for large-scale construction projects. Compared to concrete, steel, cement and glass, wood requires less energy to produce and stores – rather than emits - carbon.

Dr Michael Ramage, Director of the Centre for Natural Material Innovation at the University of Cambridge, instrumental in the design of the "The Toothpick" (a wooden skyscraper set to become the second tallest building in London), discussed "super-tall timber". He explained how wood construction involves cross-laminated timber, a material made of many sheets of wood glued and compressed together, is stronger than steel and a viable candidate for building skyscrapers

## Water management

Consumption from water network : 16 769,00 m<sup>3</sup>

Water Consumption/m<sup>2</sup> : 0.73

Water Consumption/Dwelling : 92.65

39 kL/unit/year: shower

21 kL/unit/year: kitchen

16 kL/unit/year: water faucets

20 kL/unit/year: water closets

38 kL/unit/year: washing and cleaning

## Indoor Air quality

Integrating urban forests into architecture leads to breathtaking results. Sometimes referred to as treescrapers, these buildings have plenty to offer beyond their unique architecture. Implementing sustainable principles, they are a breath of fresh air in high density cities — literally. Urban forests provide us with better air quality by increasing the available oxygen. Also, they ensure a safe habitat for animals that in most cases wouldn't survive the harsh conditions of crowded cities.

## Carbon

### GHG emissions

GHG in use : 29,34 KgCO<sub>2</sub>/m<sup>2</sup>/year

CO2 Emissions g/kWh of Electricity: 815 g/kWh

## Contest

### Reasons for participating in the competition(s)

**Energy** (42% less energy): Reduced window to wall ratio; reflective paint for external walls; insulation of roof and external walls; energy-efficient air conditioning system; energy-efficient heat pump for hot water; solar hot water collectors; and energy-saving lighting for internal spaces, common areas and external spaces.

**Water** (22% water savings) : Low-flow plumbing fixtures for washbasins and kitchens and water-conserving water closets.

**Materials** (36 % less embodied energy in materials): Cellular lightweight concrete blocks and a thinner, in-situ reinforced concrete slab for floor slabs and roof construction

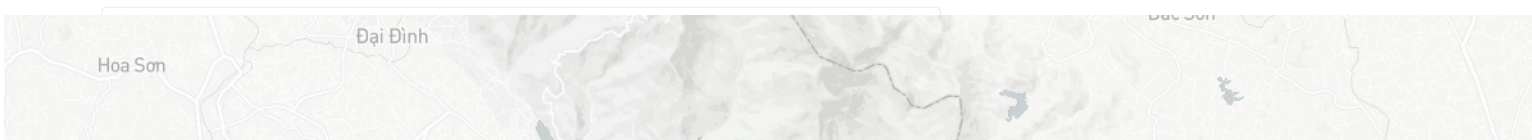
### Building candidate in the category



Energy & Hot Climates

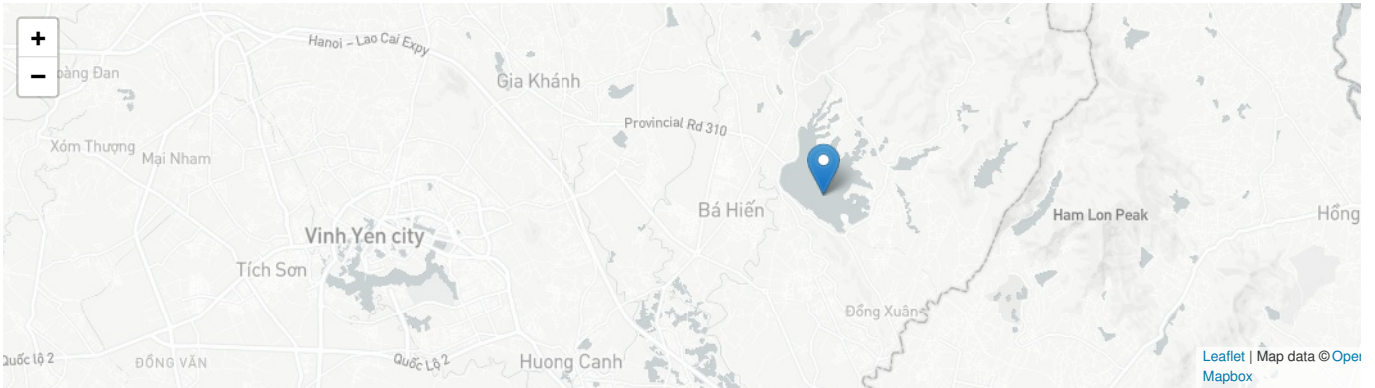


Health & Comfort





Users' Choice



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