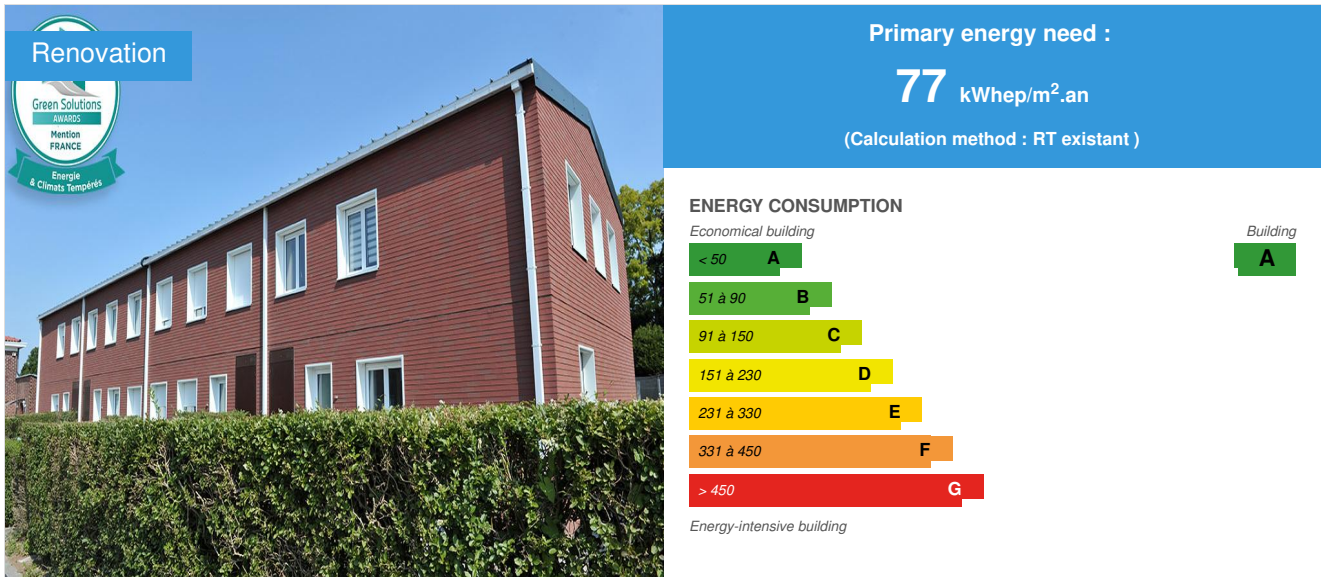


## HEM Rehabilitation ENERGIESPRONG

by Fabien LASSERRE / 2018-04-23 18:03:46 / France / 12057 / FR



**Building Type** : Terraced Individual housing  
**Construction Year** : 2018  
**Delivery year** : 2018  
**Address 1 - street** : rue Védrières 59510 HEM, France  
**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 850 m<sup>2</sup>  
**Construction/refurbishment cost** : 1 200 000 €  
**Number of Dwelling** : 10 Dwelling  
**Cost/m<sup>2</sup>** : 1411.76 €/m<sup>2</sup>

Proposed by :



### General information

The 10 houses of Hem are the first homes rehabilitated in France zero energy any form of consumption guaranteed for 25 years. The performance in rehabilitation is superior to the RT2012 and the site by house lasts only 3 weeks.

Energiesprong is an initiative initiated in the Netherlands in 2013. Vilogia tested in France the first prototypes of this approach on 10 houses built in 1950 in Hem near Lille. Vilogia aims to rehabilitate 500 homes over 5 years using the same method. The Energiesprong method is as follows: using the current technological tools (digital and industrial method) to rehabilitate a dwelling in 3 weeks at Energie 0 and guarantee this Energy 0 objective for 25 years. Thanks to this guarantee, the tenant is protected from fluctuations in energy costs and the lessor invested in the real performance of his building.

The first prototypes have made it possible to test the implementation of technical solutions (external insulation, heat pump, photovoltaic panels, factory production of the various parts) and to obtain a house with energy 0 (performance superior to the current RT2012) 25-year guarantee via a Global Performance Market (Design Realization Operation Maintenance). The next step is to offer the tenant a couple rent + guaranteed charge integrating both the energy bill, equipment

maintenance and rent.

The production of renewable energy by photovoltaic panels located on the roof is 6,000 kWh guaranteed per year. The consumption of housing for cooking, hot water, heating, ventilation is 3000 kWh guaranteed per year. The tenant therefore has an annual "energy package" of 3000 kWh / year to cover his domestic needs (TV, ironing, internet, lighting, ...). The dwellings are delivered in May 2018. For the 10 housing units the construction lasted 3 months. From the delivery, a monthly point is organized to evaluate the energy production, the energy consumption and the level of support necessary for the tenants. An annual point makes it possible to evaluate the achievement of the objective Energy 0 on average over the year.

## Sustainable development approach of the project owner

Vilogia is part of the three pillars of sustainable development:

At the environmental level, Vilogia is the social landlord who develops the most passivhaus certified projects in France (600 homes by 2020). Vilogia is committed to renovating by the year 2022 500 standard Energiesprong homes.

At the economic level, Vilogia has developed internal tools to optimize construction costs and integrates the overall cost into its financial matrices. Vilogia also studies the impact of the overall cost in its investments.

At the social level, Vilogia launched 10 social innovation projects throughout France (participative housing, shared gardens, circular economy, urban agriculture, ...)

## Architectural description

The residential site of Hem consists of sets of houses in R + 1, structured by small islands of 2 to 4 houses. These islands are largely surrounded by gardens at the front and at the back, and are composed of brick facades and four-sided tile blankets. The project retains this spirit by backing a new facade with a brick cladding, new white PVC joinery, while bringing a dose of modernity to the roofs, breaking the two sides in gable. These roofs are completely covered with photovoltaic panels. The interior of the accommodation is improved by small touches of use, thanks to the wood hugging in the rooms which are occasionally expanded to become an office.

## See more details about this project

<https://www.vilogia.fr/premier-demonstrateur-francais-energiesprong>

## Stakeholders

### Contractor

**Name :** VILOGIA

**Contact :** Fabien LASSERRE responsable pôle ingénierie et R&D

<http://www.vilogia.fr>

### Construction Manager

**Name :** RABOT DUTILLEUL CONSTRUCTION

**Contact :** RODOLPHE DEBORRE

<http://rabotdutilleul.com/fr>

### Stakeholders

**Function :** Construction Manager

REDCAT

EDOUARD ROBIC

<http://redcat-architecture.com/>

ARCHITECT

**Function :** Construction Manager

SYMOE

VICTOR JUMEZ

<http://www.symoe.fr/>

BET ENERGY

**Function :** Construction Manager

NORTEC

BENOIT PETIT

<https://www.nortecbet.com/>

GENERALIST BET

Function : Manufacturer

SMART MODULE CONCEPT

THIBAUT LEROY

<http://www.smartmoduleconcept.com/>

INDUSTRIAL WOOD

Function : Environmental consultancy

POUCHAIN

FRANCK SPRECHER

<http://www.pouchain.fr/>

MAINTAINER

## Contracting method

Other methods

[CONCEPTION REALISATION EXPLOITATION MAINTENANCE](#)

## Energy

### Energy consumption

Primary energy need : 77,00 kWhep/m<sup>2</sup>.an

Primary energy need for standard building : 151,00 kWhep/m<sup>2</sup>.an

Calculation method : RT existant

CEEB : 0.0001

Breakdown for energy consumption : Heating: 1,550 kwh / year ECS: 1,100 kwh / year Ventilation: 550 kwh / year Household appliances: 1,200 kwh / year Other uses: 1,600 kwh / year

Initial consumption : 315,00 kWhep/m<sup>2</sup>.an

### Real final energy consumption

Final Energy : 70,00 kWh<sub>ef</sub>/m<sup>2</sup>.an

Year of the real energy consumption : 2 018

### Envelope performance

Envelope U-Value : 0,44 W.m<sup>-2</sup>.K<sup>-1</sup>

More information :

Exterior insulation with wood frame panels R = 6.6

Triple glazed joinery Uw = 0.9

Insulation of the cellar underside R = 4

Roof insulation R = 8.7

Indicator : n50

Air Tightness Value : 0,60

### More information

The photovoltaic production of 6000 kWh / year / housing covers all housing needs.

## Renewables & systems

### Systems

Heating system :

- Heat pump

#### Hot water system :

- Heat pump

#### Cooling system :

- No cooling system

#### Ventilation system :

- Double flow heat exchanger

#### Renewable systems :

- Solar photovoltaic

Renewable energy production : 100,00 %

#### Other information on HVAC :

We use a thermal tower that provides the 3 uses of ventilation, heating and DHW production. All this via an AIR / AIR exchange. Additional local productions are also present in the living room and bathroom via electric convectors or dry towels.

The installed panels are monocrystalline cells, allowing annual production on the 53 kwc project, with a module efficiency of 19.5%

## Smart Building

#### BMS :

All consumption items (heating, ventilation, DHW, household appliances, set temperature, ...) are monitored in the dwellings, in order to communicate to the occupants their consumption compared to a normal use of their home.

## Environment

### Urban environment

Land plot area : 2 513,00 m<sup>2</sup>

Built-up area : 500,00 %

The project is located in a residential area of the city of HEM, in a housing complex consisting of a hundred houses. These houses in R + 1 are assembled to compose sets of 2 or 4 houses, all in a wooded setting consisting of many gardens at the front and back of houses.

## Products

### Product

COMPACT S

NILAN

HERVE CALOZ

<http://www.nilan.dk>

Product category : Table 'c21\_china.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '18'

This equipment allows to have in a single machine all the uses of housing: Heating, Ventilation and production of Hot Water Sanitary. Easily accessible directly from the outside, it ensures easy maintenance by the operator.



NeON2 Photovoltaic Panels

LG

<http://www.lg-solar.com/fr/support/contact.jsp>

<http://www.lg-solar.com/fr>

Product category : Table 'c21\_china.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '29'

Photovoltaic panels.

The installed panels are monocrystalline cells, allowing annual production on the 53 kwc project, with a module efficiency of 19.5%



## Costs

### Construction and exploitation costs

Global cost : 1 200 000,00 €

Renewable energy systems cost : 112 000,00 €

Global cost/Dwelling : 120000

Cost of studies : 159 419 €

Total cost of the building : 1 200 000 €

Subsidies : 56 000 €

### Energy bill

Forecasted energy bill/year : 680,00 €

Real energy cost/m2 : 0.8

Real energy cost/Dwelling : 68

## Carbon

### GHG emissions

GHG in use : 4,00 KgCO<sub>2</sub>/m<sup>2</sup>/an

Building lifetime : 50,00 année(s)

DPE calculation method

## Contest

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

A global approach to renovation that addresses both: lower consumption, renewable energy production, performance guarantee and tenant support.

A rehabilitation of 10 houses of the 50s realized in 3 weeks by house.

Houses once renovated to energy 0: the production of photovoltaic energy is equal to the total consumption of housing

A guarantee of energy performance 0 over 25 years

A support of tenants the first year to reduce their energy consumption

### Building candidate in the category



Energie & Climats Tempérés





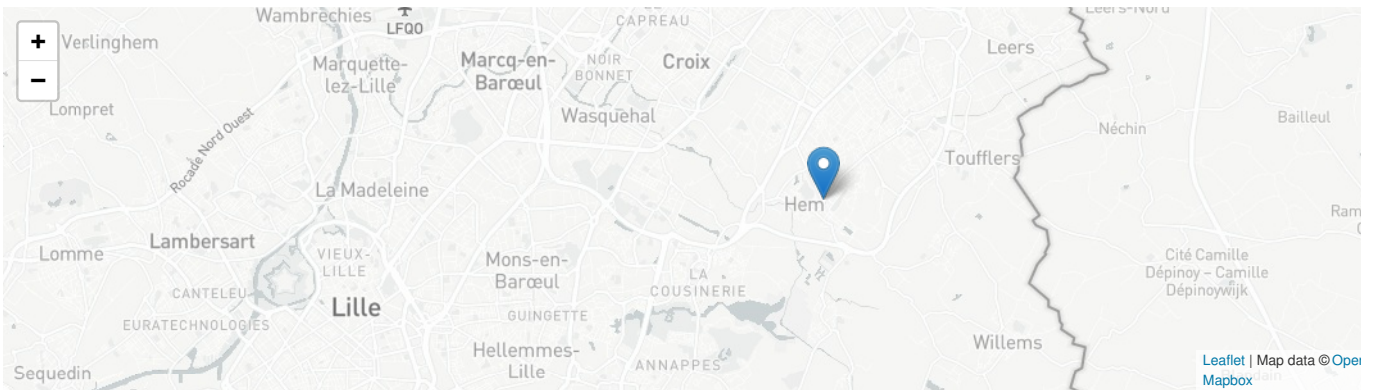
Coup de Cœur des Internautes



Grand Prix Rénovation Durable



Prix des Etudiants



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