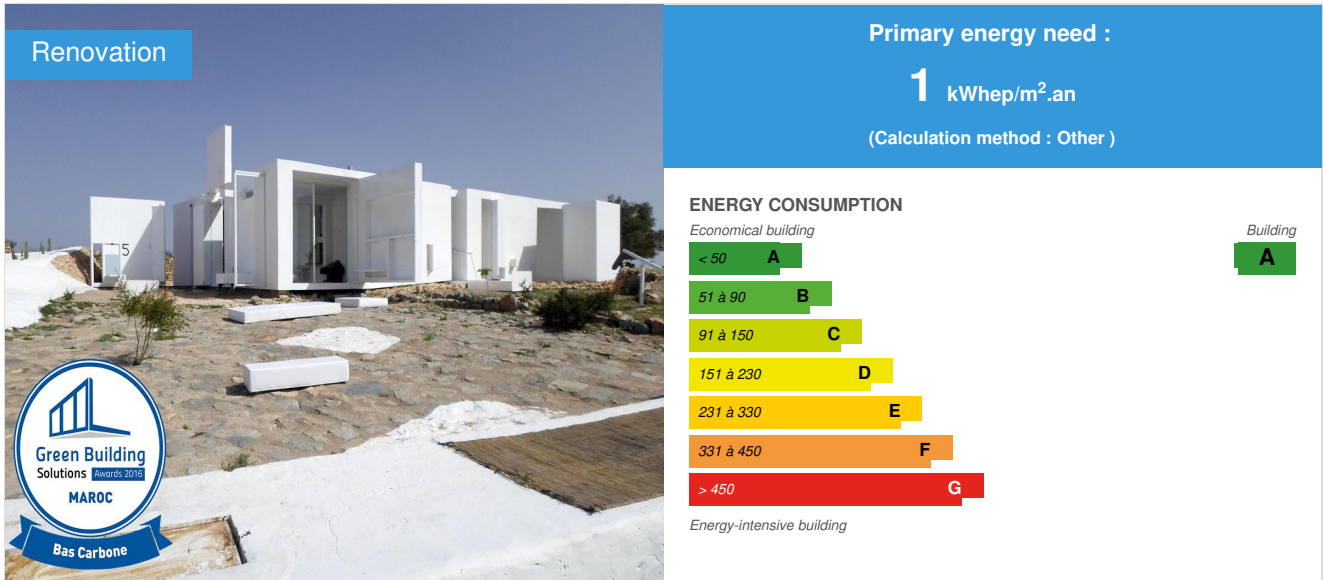


## FELFLA, small independent hotel

by Myriam Soussan / 2016-06-09 19:04:23 / Maroc / 15329 / FR



**Building Type :** Hotel, boarding house  
**Construction Year :** 2014  
**Delivery year :** 2014  
**Address 1 - street :** Felfla Lodge TAMANAR, Maroc  
**Climate zone :** [Bwk] Mid-latitude Dry Arid (Desert)

**Net Floor Area :** 200 m<sup>2</sup> Autre type de surface nette  
**Construction/refurbishment cost :** 50 000 €  
**Cost/m<sup>2</sup> :** 250 €/m<sup>2</sup>

**Proposed by :**



### General information

Located in a unique ecosystem in the heart of the argan tree Tamanar, this small hotel operates autonomously (water, energy, waste, vegetable garden) .A originally a white cube ... drilled, dug and processed, it now offers a fun and flexible architecture, inspired by the Land Art and Berber habitat. It demonstrates that autonomy is possible everywhere, even in desert climates where water is scarce.

In a region that did not follow the stages of development, as defined by the World Bank, but rather poor or people live in relative autonomy, we decided to try a "global and local" project, based and around a standard country house, which would allow a real improvement in the quality of life by maintaining the factors of autonomy, the various facets of local culture and the existing social structure. Skip a former lifestyle became somewhat adapted to modern requirements (due to migration of young people to big cities) to a new model respectful of what characterizes the "culture" local and incorporating less arduous and practices that respect the ecosystem of the region. We tried to preserve the ancestral strengths of local architecture by grafting "attributes" technology and architecture allows complete independence (water, energy, waste management, vegetable production, access to information), reduction and optimization of daily tasks (often falling to women). All of course adapted financially to the investment capabilities of the inhabitants of the region.

## See more details about this project

- [http://telquel.ma/2014/07/23/myriam-soussan-laurent-moulin-architectes-engages\\_1410960](http://telquel.ma/2014/07/23/myriam-soussan-laurent-moulin-architectes-engages_1410960)
- <http://actus.cazeco.com/post/2013/08/02/ARCHIBIONIC-Myriam-Soussan-et-Laurent-Moulin-Architectes>
- <https://www.lafargehoicim-foundation.org/Projects/ecological-dwelling-in-semidesert-zone>
- <http://archimedia.ma/AMCollector/detail.php?arch=48>
- <http://virtualconnect-dev.com/dev1/amedition/architecture-ou-design-la-preeminence-de-lusage-sur-lobjet/>

## Data reliability

Assessor

## Stakeholders

### Stakeholders

Function : Designer

Myriam Soussan et Laurent Moulin, email : archibionik@gmail.com, tel : +212 6 61 22 20 85

<http://www.archibionik.com>

### Contracting method

Other methods

### Owner approach of sustainability

This project is a continuation of our research on autonomy. After the city autonomy (self Urban Habitat, medina of Rabat), we wanted to test the rural and autonomy through a hotel structure and allow the public to become familiar with different methods autonomy. We chose this time a very dry environment to show that autonomy can be achieved anywhere, if we integrate the logic of local natural cycles. In a region that did not follow the stages of development, as defined by the World Bank, rather poor but where people live in relative autonomy, we decided to try a "global and local" project, based and around a standard country house, which would allow a real improvement in the quality of life by maintaining the factors of autonomy, the various facets of local culture and the existing social structure. Skip a former lifestyle became somewhat adapted to modern requirements (due to migration of young people to big cities) to a new model respectful of what characterizes the "culture" local and incorporating less arduous and practices that respect the ecosystem of the region. We tried to preserve the ancestral strengths of local architecture by grafting "attributes" technology and architecture allows complete independence (water, energy, waste management, market garden produce, access to information), reduction and optimization of daily tasks (often falling to women). All of course adapted financially to the investment capabilities of the inhabitants of the region.

### Architectural description

This small hotel in the argan forest, is isolated in a very arid ecosystem (200mm rainfall). The hotel includes 5 bedrooms, a communal space, a kitchen, 2 dry toilets, 2 shower areas, a patio and a pool. An adjoining kitchen garden provides vegetables. The water table is located at 300m depth, the entire water supply comes from the recovery of rain water in two tanks dug in the ground. The treated gray water is fully recycled in garden watering water by automated drip system. Compost (product of dry toilets and all organic kitchen waste) is the only fertilizer garden. Architecturally, the building closed, resembles the traditional houses of the area, sleek white cube, but gradually unfolds when it reveals always different facades. It works as a great piece of furniture with multiple drawers thick shutters, canopies or toilet cubicles, drawbridge, office or sitting: all these elements rotate, move or tilt to create multiple spatial configurations. At a certain degree of mobility is the same architecture that is not identifiable: it changes constantly to match the mood of the occupant. It becomes a representation not of herself, frozen in the unique vision of its creator, but really the user's time. Fun and functional, this architecture does more than hosting the user, it calls him, questions him, reacts and ultimately makes him feel alive. Methods for autonomy: -Walls very high thermal inertia (earth and stone) -Isolation of cork roof insulation - Presence large removable flaps (the wall thickness) for each opening -Recovery rainwater in 2 tanks (90 m3) to power the entire building after filtration and UV treatment Ultra microfiltration for drinking water. -Phytoépuration (Reeds, rushes) for the treatment of gray water. Water reuse treated for automatic irrigation (drip) from the garden. automatic dry -Toilets (production of compost). low consumption -Robinetterie infrared water. -tri And reduction of waste ensuring -Potager consumption -Production vegetables with olive oil for the annual PV power -Power consumption (5200w / h / d) -Chauffe solar water 200L -Plate of induction cooking (low consumption) -Washing machine powered by solar hot water (2/3 reduction in power consumption) -Fridge high energy performance (300 w / h / d). fully -Lighting LED. roof insulation -Volet for the pool to avoid evaporation.

### If you had to do it again?

The project located in isolated site, after a 7km track and away from an urban center, the site has not been easy. It was not easy to bring in business locally. We had to do a lot of things ourselves and work with local workers. But the result is above expectations. All systems, autonomy and total comfort in the depths of corn! ... And Felfla offers us everyday architectural emotions.

### Building users opinion

All people who have stayed at Felfla leave generally enthusiastic and convinced of this approach. Many are surprised the indoor thermal comfort during heavy summer heat (40 ° C).

## Energy

## Energy consumption

Primary energy need : 1,00 kWhep/m<sup>2</sup>.an

Primary energy need for standard building : 70,00 kWhep/m<sup>2</sup>.an

Calculation method : Other

CEEB : 0.0014

Initial consumption : 1,00 kWhep/m<sup>2</sup>.an

## Envelope performance

Envelope U-Value : 0,75 W.m<sup>-2</sup>.K<sup>-1</sup>

More information :

All walls are built of mud and stone, the roof is insulated with cork, doors / wooden shutters, the thickness of the walls are insulated.

## Renewables & systems

### Systems

Heating system :

- Others
- No heating system

Hot water system :

- Solar Thermal

Cooling system :

- No cooling system

Ventilation system :

- Natural ventilation

Renewable systems :

- Solar photovoltaic
- Solar Thermal

Renewable energy production : 100,00 %

1075Wc photovoltaic panels, a regulator 150V / 70A Max, a 5 kVA UPS (220V), 6 batteries totaling 1320 Ah, solar water heater 200L thermo-siphon without electrical resistance.

Solutions enhancing nature free gains :

All lights are LED, all appliances are of very low consumption.

## Environment

### Life Cycle Analysis

Eco-design material : earth walls / stone, wood shutters, cork insulation Morocco.

### Water management

Consumption of grey water : 60,00 m<sup>3</sup>

Consumption of harvested rainwater : 90,00 m<sup>3</sup>

Rainwater is stored in two underground tanks. The first existing, recovers rainwater on the roof of the house (160 m<sup>2</sup>) and a paved area of 150 sqm. The second has been added as well as 600 m<sup>2</sup> collection surface. A year may pass without rain, we had to scale the tank in order to have a water reserve of 2 years, in case of drought.

### Indoor Air quality

Multiple walls opening combinations allow a renewal of air as needed.

## Comfort

**Health & comfort :** In this region where the climate is harsh (the summer very hot, cold night, windy ...) you realize how the inertia of the building is important. As soon as one enters the house, thermal comfort one feels, it's cold or hot outside, it is inside. The shutters systems / gates of the same thickness as the walls (40cm) enable many light input combinations thanks to their adjustable positioning. The openings and openings offer views and horizons constantly changing.

## Products

### Product

violet multo

Biolet Headquarters

Biolet Toilet Systems, 830 West State Street, Newcomerstown, Sweden; Tel : 1 800 524 6538

<http://www.biolet.com>

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

dry composting toilets with electric mechanized system. The peculiarity of these toilets is that they compost the materials within the same toilet without addition of chemicals and water. The result of composting is a gift to nature.

We were already accustomed to these toilets as they were installed in our old house. Occasional users are initially a bit surprised by this "machine" and do not always read the user guide!



Tempomatic Mix Pro

Delabie

SIEGE SOCIAL ET SITE DE PRODUCTION 18 rue du Maréchal Foch 80130 Friville FRANCE - Telephone France Nord : 03 22 60 22 75 Fax 03 22 24 02 70

<http://www.Delabie.fr>

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

Electronic mixer Mains with anti shock infrared detector.

The dishes are made naturally without turning off the tap without stopping because water flows only when needed!



Solar water heater Junkers 200L

Junkers

Junkers - Bosch Thermotechnology nv Kontichsesteenweg 60 2630 Aartselaar, België Tel.: 03 887 20 60 Fax: 03 877 01 29

<http://www.junkers.be>

**Product category :** Génie climatique, électricité / Chauffage, eau chaude

Solar panels SKC (comfort) of Junkers represent a revolution in the range of solar panels high efficiency due to their ability to achieve high performance even in harsh weather conditions. The quality of the glass, the copper surface treatment with selective paint, aluminum structure, the ultrasonic weld (Bosch patent) at the absorber and other components to provide benefits in terms of comfortable hot water the user. The SKC comfort model requires only a panel with superior performance for a storage 200L.

Perfect. He never lack of hot water!

## Costs

### Construction and exploitation costs

Global cost : 50 000,00 €

Renewable energy systems cost : 10 000,00 €

Global cost/Bedroom : 10000

Total cost of the building : 60 000 €

## Urban environment

This hotel is located in secluded site in a unique ecosystem in the middle of the argan forest.

## Building Environmental Quality

### Building Environmental Quality

- Building flexibility
- indoor air quality and health
- biodiversity
- comfort (visual, olfactive, thermal)
- waste management (related to activity)
- water management
- energy efficiency
- renewable energies
- integration in the land
- mobility
- building process
- products and materials

## Contest

### Building candidate in the category



Bas Carbone



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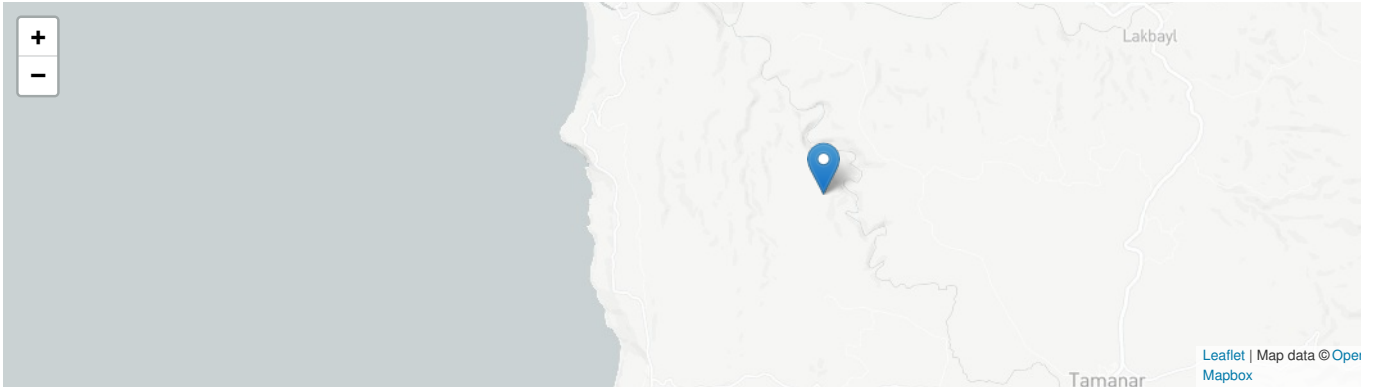




Energie & Climats Chauds



Coup de Coeur des Internautes



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