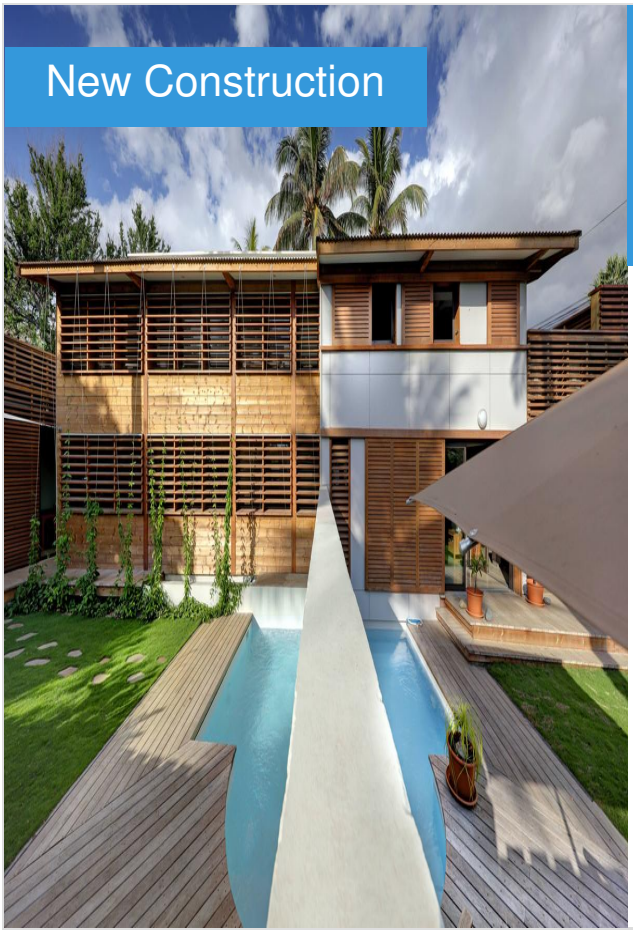
# Coconeo

by vincent de menthière / 2020-06-09 17:36:25 / France / 10080 / FR




**Primary energy need :**

**330** kWhep/m$^2$.an

**(Calculation method : RTAA DOM 2012 )**

**ENERGY CONSUMPTION**

*Economical building* *Building*

- *< 50* **A**
- *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** : Office building < 28m
**Construction Year** : 2016
**Delivery year** : 2016
**Address 1 - street** : 74 ter route du trou d'eau 97434 LA SALINE LES BAINS, France
**Climate zone** : [Aw] Tropical Wet & Dry with dry winter.

**Net Floor Area** : 160 m$^2$
**Construction/refurbishment cost** : 280 000 €
**Cost/m2** : 1750 €/m$^2$

## General informations

Mixed building consisting of a detached house and offices on one floor.

The set is entirely made of wood frame. An existing pool on the plot has been divided into 3 parts: two identical on both sides of the joint ownership benefits the house on one side and the offices of the other. The third part is used as an archive under the office building. The whole is raised about 1.00 ml above natural ground to limit the risk of flooding or surges of sea level, located nearby. A common relaxation area on the terrace, to the right of the meeting room, enjoys an outdoor kitchen for the enjoyment of the staff at the coffee break or lunch.

## Sustainable development approach of the project owner

Building offices in the tropics along the seafront requires a singular reflection for its integration. The orientation of the building to protect against bad weather, solar radiation but also take advantage of thermal breezes is essential.

Thus the large facades are oriented perpendicular to the main flows: they consist of jalousies across the width to optimize ventilation. Wooden picture boards and sunshades help protect the sun from UV radiation on the glazing. The roof scoop, by promoting the evacuation of hot air at a high point, is an element that completes the device. The broad roof overhangs too.

The West (sunset) facade is protected by a network of creepers ("Star of Australia"), which provide shading and significant additional refreshment.

The thermal and acoustic insulation consists of low inertia wood cladding and a thickness of 90mm cellulose wadding roofing and facade panel. The entire timber frame construction including the floor (Kerto) contributes favorably to a low carbon footprint.

Ventilation through is completed by fans for each isolated office and the "open space" which is brewed at any time and benefits from opening ridge.

Centralized air conditioning for the hottest hours of summer completes the comfort of thermal comfort. Solar hot water consists of a panel separated from the cumulus for a better integration to the cover.

LED luminaires are installed in outdoor common areas to limit energy consumption.

The light color used on fiber cladding of the North gable (zenithal sun) also contributes to the lack of transmission of calories in offices. The meeting room, an independent space separated from the rest, is covered with a reflective sheet and surmounted by a terrace covered with hardwood grating also insulating this workspace.

All the devices implemented in this project contribute to the thermal comfort and the approval of a work space in the tropics.

## Architectural description

The project concerns the construction of a new building comprising a housing part and an office part. This building is partly based on the existing pool, which remains the trace of the past of the place and serves as a local archive.

The projected premises are located on the ground floor (1,00ml above ground level) and R + 1, under crawling roof.

The main building consists of a single volume double-pan roof parallel to the road and scoop ridge. It is divided in two by a split, to delimit the parts offices and housing.

All volumes are made of wood. Some parts are covered with a natural wood cladding, others (gables) are covered with fiber cladding (less protected from the weather) for more durability.

The roof is made of corrugated and insulating sheet steel (complex made of aluminum sheet, bitumen sheet, inner steel sheet).

The windows are gray in color, the shutters, frame of bays, guards and accessories of external woodwork are in dark exotic wood (Moabi), in order to slice between horizontal and vertical.

The terraces are made of natural wood lath on plots, leaving the soil permeable.

The establishment allows to create a garden "back", side road, and a garden "before", sea side, surrounding the building in a green setting. Coupled with a thick façade (wide roof edges, large recessed windows, vertical screen on cables), the building tends to maximize a fresh and natural ventilation for a working environment in relation to the climate and the landscape of Reunion.

# Stakeholders

## Contractor

Name : Neoinvest

## Construction Manager

Name : Neo Architectes
Contact : 74 Ter rte Trou d'Eau, St Gilles Les Bains, 97434 SAINT PAUL

# Energy

## Energy consumption

Primary energy need : 330,00 kWhep/$m^2$.an

Primary energy need for standard building : 330,00 kWhep/$m^2$.an

Calculation method : RTAA DOM 2012

## Envelope performance

More information :

U walls = 0.296

# Renewables & systems

## Systems

Heating system :

- No heating system

Hot water system :

- Solar Thermal

Cooling system :

- Tape

Ventilation system :

- Natural ventilation

Renewable systems :

- Solar Thermal

Other information on HVAC :

Fans

Cooling of the air by air conditioning in addition to the through ventilation (limited to hot summer hours)

The coverage of the energy needs of the building by renewable energies is certainly small but

useful to feed the kitchen and the shower

## Environment

### Urban environment

The project is located on the west coast of Reunion Island, facing leeward and close to the sea. An old national road borders the eastern facade while a sandy parking area shaded by acacia trees. frangipani and badamier brings freshness and a nocturnal sound atmosphere when the birds roar.

The ocean and the nearby flood zone required a rise of 1.00 ml of the ground floor to overcome the risk of submersion. The main facades are positioned perpendicular to the thermal breezes to benefit from their flow. The existing vegetation has been partly preserved on the site: coconut trees numbering 5 brings their batch of refreshing coconut. Peripheral green spaces reduce albedo and participate in the approval of the plot. The building at R + 1 integrates into its environment or dominates the houses in a residential area. The strong presence of wood for construction, in this seaside area, is an additional asset to blend in with nature.

## Products

### Product

Wood siding

Fibres

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 = '6'

Scots pine (PEFC and FSC) class 4 from Fibers. The company that implemented it is Bioclimatik.

# Costs

## Construction and exploitation costs

Total cost of the building : 280 000 €

# Carbon

## GHG emissions

GHG in use : 70 930,00 $KgCO_2/m^2/an$

## Life Cycle Analysis

Eco-design material :

- Walls of the building envelope in framework and cladding wood (pine class 4)
- Insulation of the walls by cellulose wadding on 9 cm thick

# CONTEST

## Reasons for participating in the competition(s)

It is a mixed building, offices and home, wood frame in R + 1 fully ventilated naturally and crossing to reduce energy consumption in summer. The air conditioning is reduced at specific times of the austral summer (the hottest hours) and in the context of a necessary acoustic comfort. The rest of the time, the wide openings of the facades and the scoop on the roof supported by the fans, allow to be satisfied with natural ventilation. The fully glazed facades protected by large wooden lamellae provide enough light for office hours while protecting the jalousies from the sun's rays. The low inertia wood construction complete with a projected cellulose wadding insulation and a blanket Ondulit, contributes to the good insulation of the whole. A trellis support climbing creepers (honeysuckle) provides additional shading on the facade oriented at sunset.Le housing is not air-conditioned and also benefits from natural ventilation through and solar protection, on the one hand by a wide overflow roofing, but also by blind shutters in naturally sustainable tropical wood. The ubiquity of wood contributes to a low carbon footprint. The office linoleum flooring complements the presence of natural

materials in the ensemble.

## Building candidate in the category

Prix tertiaire & industriel

Date Export : 20230314184451