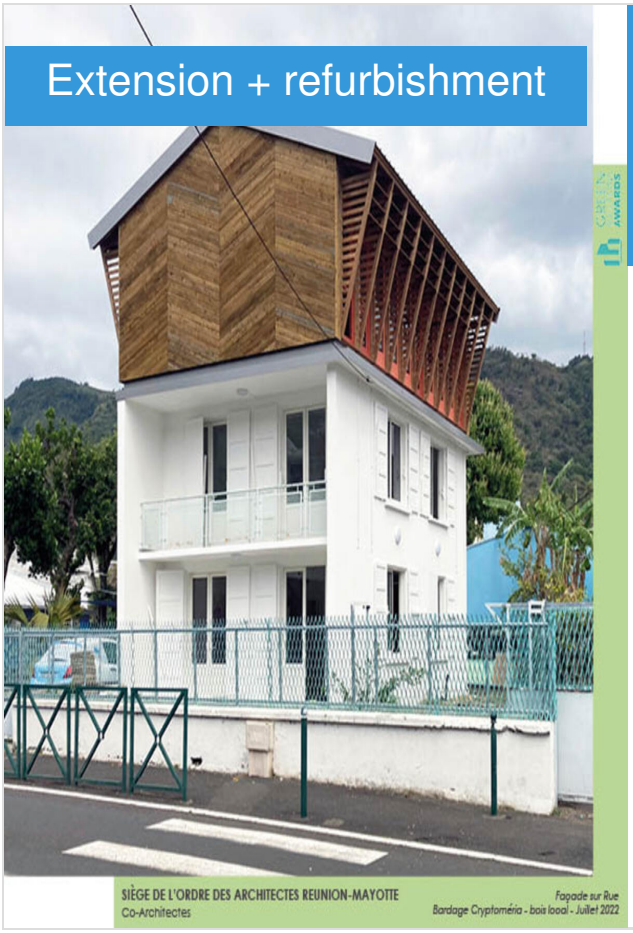
Headquarters of the Order of Architects Réunion / Mayotte

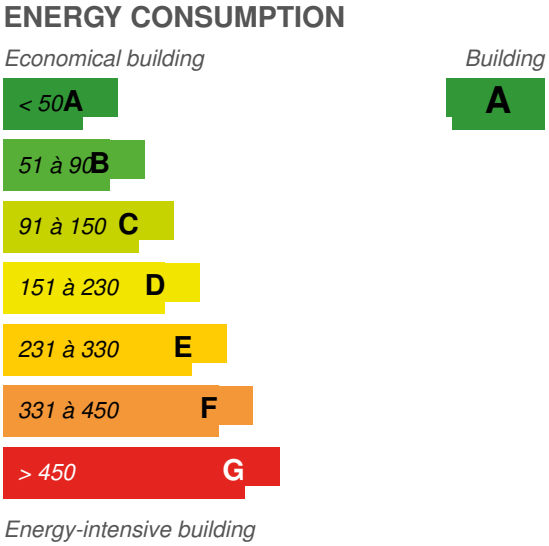
by clémentine thenot / 2022-05-30 00:00:00 / France / 1756 / FR



Primary energy need :

85 kWhep/m^2.an

(Calculation method : RTAA DOM 2016)



Building Type : Office building < 28m
Construction Year : 2022
Delivery year : 2022
Address 1 - street : 92 rue de la république 97400 SAINT DENIS, France
Climate zone : [Af] Tropical Wet. No dry season.

Net Floor Area : 110 m^2 SHON
Construction/refurbishment cost : 247 350 €
Cost/m2 : 2248.64 €/m^2

General information

This project won the Grand Prize in the "Tertiary Buildings" category of the Circular Buildings Trophies 2022.

On the occasion of the competition for the restructuring of the Headquarters of the Order of Architects, we choose to present not a project, but an approach. That of reuse. The opportunity is perfect, a small scale, perfect for trying out the practice, and a project management more than well placed to support the concept. Taking into account the many riches of the island, we specify our **commitment to ethical architecture** : what will not be reused will at least come from raw materials from Reunion Island. Using word of mouth, we set foot in a network of actors already well engaged in the process.

The project involves renovating and raising a "concrete hut" typical of 21st century Reunionese architecture.

Building users opinion

Not occupied so far.

If you had to do it again?

We would do it again! Even if the pioneering approach in Reunion makes the realization of this small operation fragile, constantly on the wire: resources to be secured every day, financial balance and deadline difficult to meet in the event of disappearance of resources or difficulty of implementation requiring adaptations of supply. Adherence to the approach with all stakeholders is to be reminded daily. The reuse sector being non-existent on the island, we underestimated the time spent searching for resources and securing them: - Provide a "reservation" position for resources during the study phase (delivery and carrier) to ensure the resource. We had a possible storage in the existing house to be rehabilitated, we under-exploited it for financial reasons (work budget not released during the studies and study contract not having provided for this item); - Impose the visit of the site and therefore of the recovered materials to the companies subject to the reuse operations for financial optimization and anticipation; - Check the storage of deposited materials.

See more details about this project

https://issuu.com/co-architectes/docs/coa-mati_re_p_i-edito_1
https://issuu.com/co-architectes/docs/croazine-edito_2
https://chroniques-architecture.com/chasse-aux-tresors-pour-le-nouveau-siege-du-coarm-a-la-reunion/
https://librairie.ademe.fr/dechets-economie-circulaire/5547-economie-circulaire-reversibilite-9791029719684.html

Photo credit

Co-architects

Stakeholders

Contractor

Name : Ordre des architectes Réunion Mayotte
Contact : ordre.architectes-reunion.mayotte@orange.fr
http://www.architectes.org

Construction Manager

Name : Co-architectes
Contact : Marine Martineau, martineau@co-architectes.com
https://co-architectes.com/

Stakeholders

Function : Other consultancy agency

EMCI

emci.ericmichel[a]emci.re

Structural design office

Function : Environmental consultancy

ADHOC

t.irasque[a]ad-hoc.re

Landscaper

Function : Company

EBOI

espritboismercier[a]hotmail.fr

Charpentier

Function : Company

S2R

clementine.thenot[a]vinci-construction.com

Rehabilitation / Structural work

Function : Company

Paysages

contact[a]paysages.re

Green spaces

Type of market

Design and implementation

Allocation of works contracts

Separate batches

Energy

Energy consumption

Primary energy need : 85,00 kWhep/m^2.an

Primary energy need for standard building : 85,00 kWhep/m^2.an

Calculation method : RTAA DOM 2016

Breakdown for energy consumption : final energy breakdown: ceiling fans (4.5), interior lighting (7), computer workstations and various power outlets (20), exterior lighting (1.5)

Initial consumption : 140,00 kWhep/m^2.an

Real final energy consumption

Final Energy : 33,00 kWhef/m^2.an

Real final energy consumption/m2 : 33,00 kWhef/m^2.an

Year of the real energy consumption : 2 022

Envelope performance

Users' control system opinion :

No home automation system is installed.

Renewables & systems

Systems

Heating system :

- No heating system

Hot water system :

- No domestic hot water system

Cooling system :

- No cooling system

Ventilation system :

- Natural ventilation
- Free-cooling

Renewable systems :

- No renewable energy systems

Solutions enhancing nature free gains :

Le projet a été conçu en ventilation naturelle, tirant profit des brises thermiques traversant le territoire. Les façades largement poreuses permettent le passage de l'air et le ressenti d'une température diminuée.
Ce dispositif est complété par des protections solaires efficaces.
De plus, les façades Ouest et Est sont pensées en pignon opaque, limitant ainsi la surchauffe lié à l'ensoleillement (à la Réunion, ce sont ces façades qu'il faut protéger au maximum). Les façades nord et sud, elles, bénéficient de larges ouvertures protégées par des brises soleil horizontaux complétés au sud par des joues de protection solaires.

Environment

Urban environment

Land plot area : 328,00 m^2

Built-up area : 27,00 %

Green space : 180,00

The project is located in the Bas de la Rivière district in Saint Denis, the capital of the island. It is a historic district that has left its mark on the City and still includes historic facilities and buildings such as the “Turtle Fountain” erected in 1937 on the Place Fontaine Tortue, at the foot of the Ti Quat' Sous 1 staircase. This place appears in the sketches of the Creole poet Georges Fourcade.

The project is located on Rue de la République opposite the former Collège Reydellet, previously "Jardin du Roy" (then the Governor's). A little further, we find the rue de la boulangerie, where a bakery (also royal) and a mill fed by a diversion of water from the river were established for a long time, the remains of which remain.

This district is particular in its topography: it is indeed fully disbursed in relation to the city center. Old arrangements of ramps and stairs remain. But in order to effectively connect these two parts of the city for everyone, a vertical layout of traffic and parking lots has been built to revitalize the Lower River district. Thus, from the panoramic lift, we can observe the remains of the mill canal.

The project is therefore located in a lively residential area composed mainly of individual dwellings or small collectives, local shops and school facilities such as primary and nursery schools.

It takes advantage of the particular microclimate created by the Saint Denis River flowing into the ocean.

Products

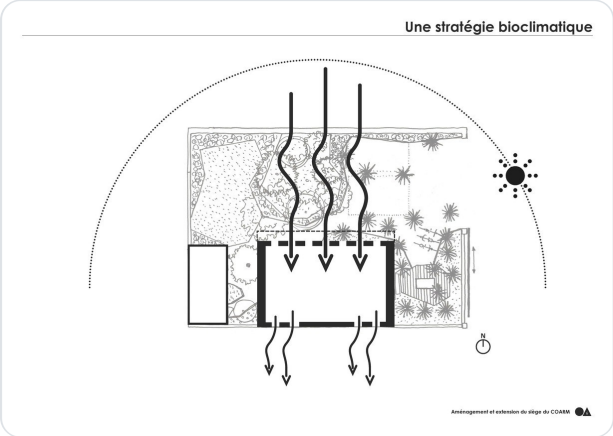
Product

Passive cooling solution: natural ventilation

Product category : Gros œuvre / Système passif

The project works passively: in fact, no installation or system is planned to provide thermal

comfort to users.
The design is based on the foundations of tropical bioclimatic architecture: through natural ventilation and solar protection.
The existing house is therefore renovated in this sense: partitions are removed in favor of trellises in order to promote natural ventilation, the shutters are rehabilitated for solar protection, air blowers are put in place to ensure cooling throughout. of the year.



The elevation was designed to meet these two objectives: the reused joinery was redesigned to allow an opening favoring natural ventilation. A compass system allowing easy and constant opening during use.
A solar protection principle completes the system (see below).

Not occupied so far.

Passive solution: sun protection

Product category : Gros œuvre / Système passif

As mentioned, in order to guarantee passive thermal comfort to users, we must imperatively protect the facades with an effective system of solar protection in bioclimatic architecture.
Thus, the shutters of the existing house are restored and put into service.
The design of the elevation develops solar protections offset from the facade in local materials: frame in cryptomeria (local wood) creating cheeks perpendicular to the facade, supports for horizontal blades in the face of the facade in cryptomeria essence for protection North / South and whose interior filling is made of pallet blades for East/West protection.
This effective device associated with natural ventilation supplemented by a system of air blowers provide real comfort to users.
Added to this is the landscaping of the plot essential to the device.

Not occupied so far.

Air blower

HUNTER

https://www.hunterfan.com/

Product category : Génie climatique, électricité / Ventilation, rafraîchissement

The climatic context of Reunion and a responsible bioclimatic architectural design will always ensure fluctuations of incoming and outgoing air (open permeability) which will solve the problems of air quality and evacuation of internal thermal loads.
On the other hand, for certain windy geographical areas or for certain periods of the year when the wind is weak, the ventilation strategy developing natural dynamic irrigation currents will need to be assisted. We will then use the ceiling fan.

This solution is implemented on the Order's Headquarters project with one ceiling fan per

office or work area/small meeting.
The Council Chamber will have 4 ceiling fans to ensure real comfort for all occupants.

Not occupied so far.

Costs

Construction and exploitation costs

Cost of studies : 33 557 €

Total cost of the building : 247 350 €

Additional information on costs :
A significant part of the budget (€94,000) corresponds to installations and overheads, road and utility works and above all reinforcements of the existing structure (€54,000).

Circular Economy

Reuse : same function or different function

Batches concerned by reuse :

- Structural framework
- Roofing
- Facades
- Locksmithing-Metalwork
- Outdoor joineries
- Floorings
- Electricity
- Landscaping
- others...

For each batch : Reused Materials / Products / Equipments :

- Sheet metal roof: 84m²
- Wood frame: 6m3
- Wooden floor: 55m²

- Exterior joinery / Glazed doors with wooden frames: 11 units
- Exterior joinery / Windows with wooden frames 4 panes: 4 units
- Exterior joinery / Wooden frame windows transom window: 4 units
- Interior door - Wood: 1 U
- Metal railing: 18mL
- Sanitary: 2 units
- Sinks / washbasins: 3 units
- Mirrors: 1 units
- Sanitary accessories: 1ENS
- Closings:17mL
- Exterior flooring: 120m²
- Sunscreen side panels: 24 SET
- Three-row horizontal brise-soleil: 11mL
- Earthenware: 3m²

Field of use and material origin :

Sheet metal roof : 84m² - Submitted by S2R (company holding the GO lot) for the elevation of the Clinique Sainte Clothilde (Réunion), reused.

Timber frame : 6m3 - Scrap from stock from the EBOI company (holder of the frame lot), reused for the timber gantries sized according to the available sections.

Wooden parquet floor: 55m² - Wooden slats removed following the rehabilitation of the Pont de la Rivière de l'Est (Réunion), reused for indoor use.

Exterior joinery / **Glazed doors with wooden frames** : 11 units - Joinery from the rehabilitation of Clinique Sainte Thérèse (Réunion), reused.

Exterior joinery / **Windows with 4-pane wooden frames** : 4 units - Joinery from the demolition of Gîte du Volcan (Réunion), reused.

Exterior joinery / **Windows with wooden transom window frames** : 4 units - Joinery from the demolition of the Gîte du Volcan (Réunion), reused.

Interior door - Wood : 1 U - moved on the project, reused.

Metal railing: 18 mL - Deposited as part of the elevation of the Sainte Clothilde Clinic (Reunion) reused for the same use.

Toilets : 2 units - Removed as part of the rehabilitation of the Lycée de la Renaissance (Réunion), reused.

Sinks / **washbasins** : 3 units - Removed as part of the rehabilitation of the Lycée de la Renaissance (Réunion), reused for the same use.

Mirrors : 1 units - Removed as part of the rehabilitation of the Lycée de la Renaissance (Réunion), reused.

Sanitary accessories : 1ENS - Deposited as part of the rehabilitation of the Lycée de la Renaissance (Réunion), reused.

Fences : 17 mL - Brises soleil deposited as part of the elevation of the Clinique Sainte Clothilde (Réunion), reused as a fence.

Exterior floor coverings : 53 m² made from rubble from demolitions or reusing floor tiles deposited on site, reused.

70m² made from asphalt slabs deposited as part of the rehabilitation of the Lycée de la Renaissance (Réunion), reused.

Sunshade sides: 24 ENS made from wooden slats taken from pallets, resold by Ecopal, reused.

Horizontal brise-soleil in three rows : 11 m, made from wooden slats taken from pallets, resold by Ecopal, reused.

Earthenware : 3 m² from waste from S2R site stock, reused.

Environmental assessment

Impacts avoided : water, waste, CO2 :

The data below is given in Kg

Sheet metal roof: 84m²

- eq Kg CO2: 2066.15
- water: 0.02
- waste: 5024.92

Wood frame: 6m3

- eq Kg CO2: 902
- water: 14.5
- waste: 788

Wooden floor: 55m²

- eq Kg CO2: 152.53
- water: 3.42
- waste: 257.79

Joinery: 18.02 m² *[Exterior joinery / Glass doors with wooden frames: 11 units / Windows with wooden frames with 4 squares: 4 units / Windows with wooden frames with glass transom: 4 units]*

- eq Kg CO2: 11141.77
- water: 10.37
- waste: 1421.87

Metal railing: 18mL

- eq Kg CO2: 1671.46
- water: 11.61
- waste: 821.56

Sanitary: 2 units

- eq Kg CO2: 136.94
- water: 2.22
- waste: 123.84

Sinks / washbasins: 3 units

- eq Kg CO2: 270.66
- water: 2.60
- waste: 161.56

Mirrors: 1 unit

- eq Kg CO2: 14.19
- water: 0.03
- waste: 10.60

Sanitary accessories: 1ENS

- eq Kg CO2:
- water :
- waste :

Closings:17mL

- eq Kg CO2: 6881.07
- water: 43.69
- waste: 6504.59

Exterior flooring: 120m²

- eq Kg CO2: 5798.73
- water: 25.22

- waste: 14431.01

Closures and solar protections: 61.55 m² *[Sunshades cheeks: 24 ENS / Horizontal sunshades on three rows: 11 ml]*

- eq Kg CO2: 2508.16
- water: 42.94
- waste: 1207.02

Earthenware: 3m²

- eq Kg CO2: 47.56
- water: 10.15
- waste: 98.06

Office furniture: 2 U

- eq Kg CO2: 218.03
- water: 2.28
- waste: 151.63

Lighting - Industrial suspension: 10 U

- eq Kg CO2: 1738.16
- water: 14.22
- waste: 2154.82

Interior door - Wood: 1 U

- eq Kg CO2: 104.98
- water: 97.81
- waste: 130.63

The reuse operation saved the equivalent of 25,273 kilometers traveled by a small car, or 215 Paris-Nice journeys, 1,875 rectangular bathtubs filled with water and 67 years of household waste.

Economic assessment

Cost of reuse in percentage of the operation : 26 %

Saving realised thanks to the implementation of reused materials compared to new materials :

23 385 €

Social economy

Social economy and professional integration :

Several materials such as the joinery of the Clinique Sainte Thérèse were supplied by

Synergie Péi . Synergie Péi is an experimental approach of Industrial and Territorial Ecology (ITE). It is a pillar of the circular economy, industrial and territorial ecology is an operational approach which aims to promote the pooling, reuse, reuse and recycling of industrial resources to optimize their use and reduce their footprint. environmental.

Materials not used on site were recovered by the ADRIE **Ressourcerie** . It is a member of the Réseau des Ressourceries and has an ACI (Atelier Chantier d'Insertion) Ressourcerie. This allows the association to employ people in social and professional difficulty. An order for furniture was made to them, reusing the materials recovered on site.

Contest

Reasons for participating in the competition(s)

This project is the **very first reuse project on Reunion Island** . Accompanied by the companies in charge of the project (EBOI, S2R and Paysages), the architects got down to sourcing the materials, supplying the design in parallel. Many round trips were necessary to finalize the project.

The facades of the elevation will be made up of **joinery from the deconstruction** of the Gîte du Volcan and the Sainte Thérèse Maternity Hospital. The sheet metal roof comes from the elevation of the Maternity Sainte Clothilde, the wooden floor is made of the decking of the Pont de la Rivière de l'Est. The brises soleils use **recycled and treated pallet wood** . **Sanitary equipment is also reused** .

We also use stock scraps. Thus, the frame was drawn from a stock of wood from the company holding the EBOI lot. The tiling comes from surplus S2R sites.

In the context of on-site demolitions (small lean-tos and floor coverings), the latter will be used as embankments to allow PMR accessibility, and as exterior floor coverings.

The metal tubes supporting the small roofs were taken over by Ressoucerie, a public interest and integration company, creator of upclycling object design.

The removal of the air conditioning unit and the hot water tank is neat, allowing their resale by Synergie Péi.

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