Malicounda High School

by Nicolas Vernoux-Thélot

New Construction

Primary energy need:
5.17 kWhpe/m².year
(Calculation method: Other)

Energy Consumption

<table>
<thead>
<tr>
<th>Building Type: School, college, university</th>
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</thead>
<tbody>
<tr>
<td>Construction Year: 2021</td>
</tr>
<tr>
<td>Delivery year: 2022</td>
</tr>
<tr>
<td>Address 1 - street: 934F+366, Rte Mbour - Joal 23000 NIANING, Other countries</td>
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<tr>
<td>Climate zone: [BWh] Subtropical dry arid</td>
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</tbody>
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Net Floor Area: 584 m² SHON (Fr)

Number of Pupil: 400 Pupil

Construction/refurbishment cost: 187 000 €

Cost/m²: 320.21 €/m²

Proposed by:

General information

This project is located in Nianing, in Senegal, and consists in creating eight new classrooms and an amphitheater for the public high school of Malicounda.

The layout of the classrooms is inspired by the morphology of xerophytic plants to create an exterior envelope that promotes natural convection. Openings have been made in the lower and upper parts of the classrooms to promote air circulation and cooling. The walls are made of raw earth bricks and the ceilings are made of Ronier palm fiber.

The building is completely autonomous thanks to solar panels and rainwater recovery.

See more details about this project

http://www.insitu-architecture.net/fr/projets/14558-lycee-de-malicounda.html#
Stakeholders

Contractor
Name: G2C

Construction Manager
Name: G2C

Stakeholders
Function: Developer
Ministry of Education of Senegal - Malicounda Public High School

Function: Investor
Enfance et Nature Association

Function: Designer
IN SITU Architecture

Contracting method
General Contractor

Building users opinion
Please find attached a letter from the director of Malicounda High School

Energy

Energy consumption
Primary energy need: 5.17 kWhpe/m².year
Calculation method: Other

Envelope performance
Envelope U-Value: 0.35 W.m².K⁻¹
More information:
Hygrometric property = 13.2 kg of water / m²
Constant hygrometric rate = 40%
R = 0.35

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
- Nocturnal ventilation

Renewable systems:
- Solar photovoltaic

Renewable energy production: 100.00 %
The construction has an autonomous energy supply through solar panels.

Environment

Biodiversity approach

The use of local materials for the construction:
- Local palm tree for the ceiling
- Raw earth bricks for the walls

Mitigation actions on soil and biodiversity:
The excavated soil have been preserved and reused.

Products

Product

BTC (Compressed adobe block)
Elémenterre, Fann Hock Pavillon E Appart 9, Dakar Tél. : (221) 77 596 42 56
Amadou Doudou Dème
https://au-senegal.com/elementerre-construire-en-blocs-de-terre,13630.html
Product category: Structural work / Structure - Masonry - Facade
Adobe block 12"x24"x10cm

Bio fiber of Roner Palm and Typha
Local hand craft
Henri Diène Mboundor, G2C 197 Patte d'Oie - Dakar Tel 77 421 4502
Product category: Finishing work / Partitions, insulation
Fibers 1inc per 10 feets

Costs

Construction and exploitation costs

Total cost of the building: 187 000 €

Health and comfort

Water management
The building has an autonomous water supply through rainwater recovery.
Reasons for participating in the competition(s)

- The use of local materials for construction
- The reuse of excavated soil
- The integration of the building in its environment
- The construction has an autonomous water supply by collecting rainwater
- The construction has an autonomous energy supply provided by the installation of a solar energy system

Building candidate in the category

Users' Choice