International Prize for Sustainable Architecture

11th competition 2015

PAEDIATRIC CENTRE IN PORT SUDAN

A HEALING GARDEN IN THE DESERT

The Port Sudan Paediatric Centre is located in a large desert between two settlements of towns - a very poor area in which there is a large concentration of refugees. The existing building has three operating rooms, a clinic ward, a dispensary, and a pharmacy, all of which are to be expanded. Therefore, the architectural concept aims to create spaces that are well connected and that harmonize naturally with the environment. The main aim is to provide a healing garden that is not only a place of recreation but also a focal point for the community.

We decided to use water from the clinic's wastewater system as a cooling system for the operating rooms. This approach is based on the tradition of using local resources and technologies, as well as the notion of sustainability and adaptability to the local climate.

The building is designed to be self-sufficient, with a focus on energy efficiency and minimal impact on the environment. The materials used are local and recycled, reducing the carbon footprint and supporting local economic development.

The design incorporates features such as photovoltaic panels on the roof to generate electricity, rainwater harvesting systems, and green roofs to provide additional cooling and reduce urban heat island effects.

For more information, please visit our website at [Website URL].

Project title: Paediatric Centre in Port Sudan
Project architect: Studio Tommasi Associati Architects
Construction phase: Sudan
Year of completion: 2012

NATURAL VENTILATION AND COOLING

To reduce energy costs and filter the fine dust generated by the activities of the clinic, a low-energy, sustainable ventilation system is employed, utilizing natural ventilation and cooling solutions. This system helps to create a comfortable environment for patients and staff.

The building features a series of inlets and outlets that allow for the free flow of air, ensuring adequate ventilation and cooling. The design includes elements such as overhangs, shading devices, and openings that help to regulate the temperature and humidity levels inside the building.

WASTE WATER TREATMENT

The building is equipped with a waste water treatment system that processes and reutilizes the water for various purposes, reducing the demand for fresh water and promoting sustainability.

The system includes a series of tanks and filtration stages, which help to remove contaminants and make the water suitable for reuse. This approach helps to minimize the impact on the local environment and conserve water resources.

SUN SHADING

The building features a series of sunshades and shading devices that help to protect the building from excessive solar heat gain and provide a comfortable environment for patients and staff.

The sunshades are designed to be adjustable, allowing for optimal shading according to the position of the sun. This feature helps to reduce the heat load on the building and improve energy efficiency.

An historical reference:
The traditional sunshades are a distinctive feature of the building, adding cultural significance to the design and highlighting the importance of sustainability in the local context.

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STUDIO TANNUASSOCIATI - making love in architecture

Tommasi Associati is an Italian based group, recognized for its work in social design issues. A professional practice, the work of sustainable architecture, urban planning, landscape design, particularly for recreation, green design and social community, and urban planning. The group has won numerous awards for its work and has been recognized for its innovative approach to healthcare design in Africa and for its work in public space and social housing design, and in different projects for sustainable architecture in Africa, Middle East, Italy, and the United States.
PORT SUDAN - EXTREME CONDITIONS

In Port Sudan, for most of the year temperatures often reach and exceed 40°C, these weather conditions, together with the problem of dust generated by the strong desert winds, have required a detailed study of specific cooling technologies, isolation and filtration technologies, to take into account the maximum energy comfort of the structures. Such systems are on innovation in Sudan and for all sub-Saharan climate areas, not only for the technology used but especially for the low-making cost and the extreme simplicity.

geographical data
latitude: 19°55'N
longitude: 37°10'E
altitude: 50 m
climate data
average annual temperature: 28°C
average annual rainfall: 60 mm
average annual rain: 60 mm

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