

Palm tree Residential building

Vietnam / Hanoi

21.02, 105.85

Client Name: Viet Hung Company (VIHAJICO)

Project website: <http://khudothi.ecopark.vn/chung-cu-ecopark/>

30,100,200,0.6

Project Description

Project: Palm Tree Residential Area, Ecopark, Hung Yen Building investor: Viet Hung Company (VIHAJICO) Architecture designer: Kume Sekkei Total land area: 40,100m² Ecopark blocks were designed in accordance with the functional city model with full utilities. The buildings are covered by trees surrounding and water ponds, which are combined harmonizing between citizens and nature. The investor also create new bus lines for citizens and visitors. So that the distance between ecopark and city center may be not a trouble for citizens to come.

Building Details

Type of Building

Residence complex

Type of project

New building project

Site Area

40100 m²

Number of Floors

19-22-25

Type of unit

02 Bedrooms, 3 bedrooms, penthouse, sky villa

Number of units

13

Area of unit

70.9; 83.3; 91.8; 163.3; 178.8; 154 m²

Gross floor area

169654.6 m²

Net floor area

9020 m²

Non Air-conditioned area

NA m²

Performance Standards

Green building prize of Vietnam Architecture association 2015

Total Cost

USD 6 billions for whole projects

Cost per m²

USD \$735

Year of completion

2015 (several first buildings) to 2029 for the whole projects

Year of occupancy
2015 to now

Project Team

Organisation

Viet Hung company, VIHAJICO

Website

<http://www.ecopark.com.vn>

General contractor

Cotec company

Structural Engineer

Delta DCMC

Architech

Kume Sekkei

Architect's profile

<http://www.kumesekkei.co.jp/en/>

Environmental Consultant

CPG company

Climate Analysis

Describe the local climate

Hanoi has a warm humid subtropical climate with plentiful precipitation. The city experiences the typical climate of Northern Vietnam with 4 different seasons. Summer, from May until August, is characterized by hot and humid weather with abundant rainfall. September to October is fall, characterized by a decrease in temperature and precipitation. Winter, from November to January, is dry and cool. The city is usually cloudy and foggy in winter. The averages rainfall is 1,680 millimetres (66.1 in) per year and the most precipitation is from May to September. The average temperature is 23.6°C (74°F) with a mean relative humidity of 79%. The highest recorded temperature was 42.8°C (109°F) on 5 May 1926 while the lowest recorded temperature was 2.7 °C (37 °F) on January 1955.

Design Approach

Concept

The blocks are located as zigzag shapes; therefore, the apartments have daylighting, good and diverse views. Orientation of buildings is considered clearly, which does not face to East or west and may utilize the prevailing wind from the South and the South-East. Ventilation gaps/clefts are installed surrounding the buildings are to get more daylighting and ventilation into auxiliary space (restroom, kitchen...). Therefore most of their spaces have natural ventilation and daylighting. Garden is in the middle of blocks with ponds for evaporative cooling

Site integration

Trees are grown for shading and water ponds are installed for evaporative cooling. Reducing the concrete surface by weed area is to increase permeable surface. More weed and trees surface helps to reduce heat island effect. Water ponds also reduce the heat by 2-3°C surrounding the buildings.

Building design

Construction complex comprises 13 dwelling units. The building complex is recognized with the following items: + Sustainable site: arrange the building according prevailing winds, with water ponds, for optimizing ventilation and evaporate cooling; + Friendly environmental material with non-baked materials; + Solid waste control; + Utilizing renewable energy for street light. And using energy efficiency appliances; + Passive strategies for building form, and envelope; Passive design approached: 1 - Technical roof for insulation; 2- Non-baked brick from recycled material with low U-value for better insulation, (mova motar); 3 - Balcony as solar shading in some spaces; 4 - Vegetalisation of the surroundings; 5 - Water Efficient equipment; 6 - Evaporated cooling; 7 - Natural ventilation for all main function spaces/auxiliary spaces; 8 - Daylighting for all main function spaces/auxiliary spaces;

Special Feature

Natural Lighting

The blocks are located as zigzag shapes; therefore, the apartments have daylighting, good and diverse views. Ventilation gaps/clefts are installed surrounding the buildings are to get more daylighting and ventilation into auxiliary space (restroom, kitchen...). Therefore most of their spaces have daylighting. --> Daylighting for all main function spaces/auxiliary spaces

Water efficiency

Water Efficient equipment such as toilet/ Water recycle system

Passive heating/cooling

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Cost effective features

The application of energy efficiency equipment and passive desing reduces the energy use for cooling system, it leads to the money saving for electricity

Eco-friendly features

Non-baked brick, Which just complies with EEBC 09:2013/BXD Energy efficiency building codes; Using balcony as shading, and some short horizontal shading

Other features

To avoid the use of air-conditioning, several passive strategies are used : insulation roof, cross ventilation by ventilation clefts/gaps, reduce heat, orientation according to prevailing winds. The large and dense garden and vegetalisation of building access permit to limit heat accumulation. Artificial lights are reduced to accurate requirement. And water ponds for evaporate cooling. The buildings with ventilation gaps/clefts surrounding can get more daylighting and ventilation into auxiliary space (restroom, kitchen...). Therefore most of spaces have natural ventilation and daylighting.

Energy systems

Interior Lighting

Installed by the occupants

Exterior Lighting

solar energy lighting

Ceiling Fans

Fans are installed by occupants

Air-conditioning

Inverter air-conditioning, installed by customers

Lift

installed by investors

Energy efficient systems

Controls : timer switch according the sun for exterior lighting

Energy efficient systems

Domestic solar water systems are installed in only private houses but not in the highrise buildings. Street lights use solar energy.
