

Latitude

Longitude

Nouth

BUILDING FEATURES

Construction type:

✓ New Building pr.

Renovated pr.

Programming:

Social

Private

✓ Mix

Typology:

Туре	Nb	Area (m²)
Α		70.9
В		83.3
С		91.8
Penhouse		163.3-178.8
Sky villa		154.2

Total number of units: 13 Number of storeys: 19-22-25 Number of apartments: 1500

Total Net Floor Area: 169654,6m²

Total land area: 40100m² Total construction area: 9020m²

Performance Standards :

Green building prize of Vietnam Architecture association 2015

Total Cost:

Cost Per m2:

15 million VND/m² = \$675/m2 (much lower than other buildings as same level because of the position)

Date of completion :

Energy use:

About 40-60kWh/m2.year (each apartment only)

PALM TREE RESIDENTIAL AREA / Hanoi, Vietnam



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 citizends 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





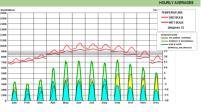


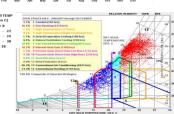
Hanoi has a warm humid subtropical climate with plentiful precipitation. The city experiences the typical climate of Northern Vietnam with 4 different seasons. Summer, from May until August, is characterized by hot and humid weather with abundant rainfall. September to October is fall, characterized by a decrease in temperature and precipitation. Winter, from November to January,

The averages rainfall is 1,680 millimetres (66.1 in) per year and the most precipitation is from May to September.

is dry and cool. The city is usually cloudy and foggy in winter.

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 SMay 1926 while the lowest recorded temperature was 2.7 °C (37 °F) on January 1955.





BUILDING TEAM

Building Owner:

Viet Hung company, VIHAJICO

Architect :

Kume Sekkei

General Contractor:

Cotec company

Mechanical Engineer:

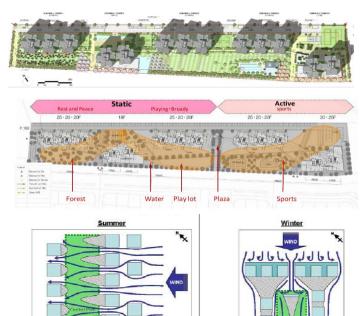
Energy Modeler:

Lighting Design:

Structural, Civil Engineer
Delta DCMC

Environmental Consultant : CPG company

SITE PLAN



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.

Guidelines for wind flows:

- + Tower only, no podium to allow more channels for air to move at ground level
- + Staggered tower arrangement across park.
- + Taller tower along edge of park to accelerate air movement through wind tunnel effect.

BUILDING ENVELOPE

ROOF

Type: Technical roof with

non-HVAC system

Materials (ext to int):

Concrete + insulation+ plaster void+ plasterboard/ And technical roof without HVAC

WALLS

Materials (ext to int) :

Non-baked brick, low U-value for better insulation (Uvalue is ~1.39 W/m2K)

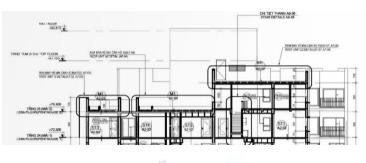
Glazing Percentage:

about 30%

PASSIVE APPROACHES

Towers

Low Podiums
Wind Shadows

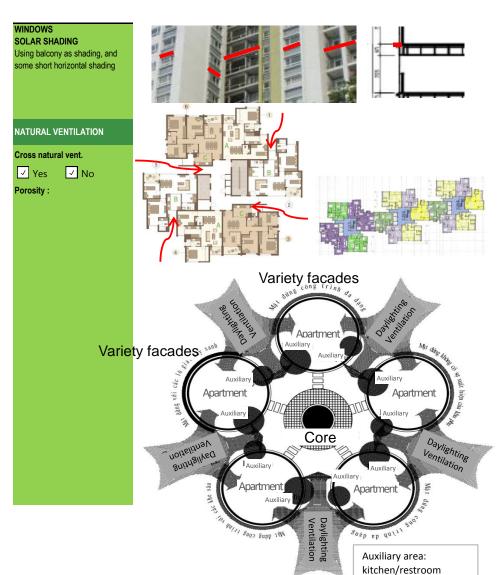






Non-baked brick, Which just complies with EEBC 09:2013/BXD Energy efficiency building codes

- 1 Technical roof and insulated roof
- 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



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.

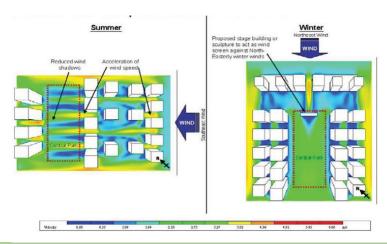
The buildings with ventilation gaps/clefts surrounding can get more daylighting and ventilation into auxiliary space (restroom, kitchen...). Therefore most of spaces have natural ventilation and daylighting.

DESIGN TOOLS

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

Building energy tool was used for analysing microclimate, which surrounding buildings, then to arrange the buildings



ENERGY SYSTEMS

ENERGY EFFICIENCY SYSTEMS

- ✓ Interior lighting Installed by the occupants
- Exterior lighting

 Type :solar energy lighting

Controls: timer switch according the sun

- ✓ Air-conditioning

 Type: Inverter air-conditioning
- Mechanical vent.
 Location?
- Ceiling fans
 Type / Number per rm
- ✓ Lift
- Plug loads
 Controls ?
- Energy analysis

ENERGY FEATURES

☐ DWH

Type : solar

✓ Photovoltaics

Type of mounting : for street lights.



Street lights use solar energy and timer switches according the level of daylight. Energy efficiency appliances are used including air-conditioners, fridges, washing machines (inverter system), televisions, LEDs and fluorescents.

Heating/cooling systems are installed by tenants

RENEWABLE ENERGY SYSTEMS



Domestic solar water systens are installed in only private houses but not in the highrise buildings.

Street lights use solar energy.

SITE INTEGRATION





Trees are grown for shading and water ponds are installed for evaprative 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 sorrounding the buildings.











Balcony is built next to the kitchen to increase natural ventilation, reduce the bad smell and keep it clean and dry to ensure the indoor air quality.

The buildings with **ventilation**

gaps/clefts surrounding can get more daylighting and ventilation into auxiliary space (restroom, kitchen...). Therefore most of the spaces have natural ventilation and daylighting.

LESSONS LEARNED / FEEDBACK

Contact person :

CPG company for planning Kume sekkei for architecture

Design team (Architect, energy consultancy):

Palm Tree Residential Building is a modern residential area with smart design, open spaces and effective utility service. The project is surely an optimized choice for families.

Institution:

Users:

The building with great infrastructure and landscape surrounding. The outdoor activities are often performed here to attract people to live. However, it is quite far from city center.

Website:

Maintenance

http://khudothiecopark.v n/chung-cu-ecopark/ Service maintenance is quite good until now.

Photos credits:

Others:

The blocks are in a new eco-residential area with full infrastructure. It is far from city center; however, the bus is convenience to go. The citizens can also use their private vehicles for travelling.

