

SUSTAINABLE BUILDINGS

Delivering high quality assets in Vietnam with Sustainable Design.

Executive Summary

Indochine Engineering is a leading LEED/LOTUS consultant for multiple projects in Vietnam. Our sustainable/green buildings have become icons of sustainability and a benchmark for others

Benefits to Projects

Key benefits to the project include.

- Lower OPEX eg electricity/ water bills.
- Small or no increase in CAPEX.
- Eco-friendly Material
- Indoor Air Quality improvement
- Higher occupant comfort
- Improved yields & higher asset values



Process

Sustainable design is an integral part of the design process and starts at the concept stage and runs through to practical completion and beyond, and requires a focused architectural & engineering team, and a client who recognizes the benefits.

Recommendations

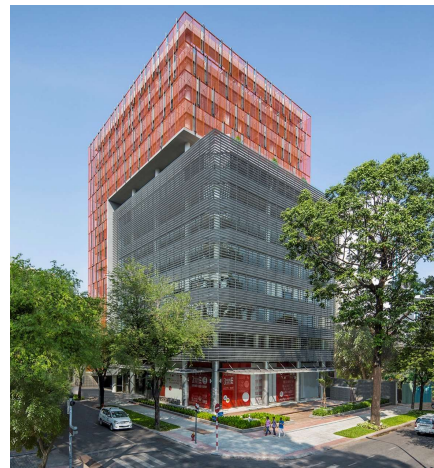
Sustainable buildings are achievable with good engineering & architectural design, it doesn't mean they need to be exotic. Certification, eg LEED or Lotus or DGNB etc, is a good thing but not necessarily an essential requirement to capture the value.

Conclusions

Indochine Engineering has been an early adopter, and is a strong supporter of sustainable & green buildings, helping to make a difference to our environment, and our client's assets.

President Place

A 14 - floor mixed office and retail building, in District 1, HCMC. President Place is the First office building achieved LEED Gold in HCMC.



President Place

Deutsches Haus Ho Chi Minh City

A 25 - floor mixed use building of office, retail and restaurants. Deutsches Haus targets LEED platinum and the very first DGNB certification in Vietnam.



Deutsches Haus Ho Chi Minh City

Supporting information

Software implemented

Energy modelling - HAP E20 or IES.

Lighting & daylight - AGI32

Key considerations

Approximately 50% of the points are engineering and 50% are with respect to the site and architectural considerations.

Favourable sites, considering reuse of land, and access to public transport and other facilities, can provide advantageous starting points.

Comfortable, useable spaces for occupants is not just a demand from green buildings but also for more modern working spaces, such as activity based working.

Energy modelling has typically been in the regime of the building services engineer, and it makes sense to combine the activities. Note the prevalence for relative based studies (comparing to a baseline rather than absolute), which can make improving efficient designs harder, and reward less efficient starting points.

Water management is more readily undertaken using progressive steps starting with water efficient fixtures, and progressing through recovery of effluent, storage of rain water, grey water systems and drip irrigation for landscape.

Lighting, both natural and artificial are important in terms of functionality, aesthetics and costs.

Indoor air quality has been a key requirement for some time, but increasingly external pollution is becoming an issue.

Examples

- Reflective and green roof
- Low-E glass or double glass with shading system
- High performance chiller, heat pump and air conditioner.
- Heat recovery unit and demand control ventilation.
- LED lighting, integrated with photo sensors, occupant sensors and timers.
- Solar photovoltaics, solar water heating and solar
- LED lighting.
- Building Management System with power monitoring.
- Water efficient sanitary wares.
- Landscape with local, adaptive or drought-tolerant plants.
- Drip irrigation system with rain water collection or treated wastewater.
- On-site wastewater treatment plant for irrigation and make-up cooling tower.
- Recycled content material and regional material.
- Increased ventilation.
- Low VOC sealant, adhesive, paints, coating, carpet and floor system.
- High efficient air filter.

Discussion

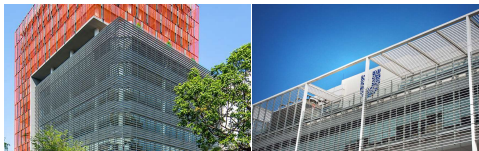
Indochine has now certified 6 buildings in LEED, Lotus, and has 2 buildings currently in the pre-certification process.

Some of the lessons we have learnt so far are;

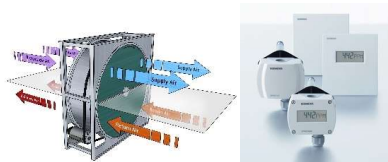
Sustainable buildings are really buildings with the lowest life cycle costs.

Many of the requirements to achieve a sustainable building have been with us for a while and the objective is now to help guide the decision making process to those systems are in place.

For example, shading structures can be seen on buildings constructed in HCMC in the 1960s, and they still assist in energy efficiency today.



Heat recovery and CO₂ based ventilation control have been important in tropical climates for some time.



Site based water management systems in the form of sewage treatment plants have been requirements of buildings in Vietnam since the mid 90s.

Water efficient fixtures are available in the market. Thorough selection helps significant saving without necessarily adding cost.



Newer technologies such as LED lighting, heat pump technology for hot water generation and the widespread application of variable speed drives, have become more prevalent and cost effective to be applied more generally.



Solar photovoltaics (PV) pricing has been dropping rapidly allowing these to be more commonly integrated.



Low VOC materials have become more commonly available, if not the norm.



So, Indochine's experience has been that if a quality building is being sought in the first place, then there is little or no additional increase in capital costs, and only reduced operating costs to enjoy.