Asia Business Council

CII Sohrabji Godrej Green Business Centre

Hyderabad, the city of architecture & pearls, now boasts of one of the greenest buildings in the world. CII - Sohrabji Godrej Green Business Centre (CII Godrej GBC), cozily nestled close to Shilparamam, is the first LEED Platinum rated green building in India.

The building is a perfect blend of India's rich architectural splendor and technological innovations, incorporating traditional concepts into modern and contemporary architecture.

Extensive energy simulation exercises were undertaken to orient the building in such a way that minimizes the heat ingress while allowing natural daylight to penetrate abundantly.

The building incorporates several world-class energy and environment-friendly features, including solar PV systems, indoor air quality monitoring, a high efficiency HVAC system, a passive cooling system using wind towers, high performance glass, aesthetic roof gardens, rain water harvesting, root zone treatment system, etc. The extensive landscape is also home to varieties of trees, most of which are native and adaptive to local climatic conditions.

The green building boasts a 50% saving in overall energy consumption, 35 % reduction in potable water consumption and usage of 80% of recycled / recyclable material.

Most importantly, the building has enabled the widespread green building movement in India.

GREEN FEATURES AND SUSTAINABLE TECHNOLOGIES

ENERGY EFFICIENCY

State-of-the- art Building Management Systems (BMS) were installed for real-time monitoring of energy consumption.

The use of aerated concrete blocks for facades reduces the load on air-conditioning by 15-20%.

PROJECT DETAILS

LOCATION
Hyderabad, India

NAME
CII Sohrabji Godrej Green Business Centre

DEVELOPER
The project is a unique and successful model of public-private partnership between the Government of Andhra Pradesh, Pirojsha Godrej Foundation, and the Confederation of Indian Industry (CII), with the technical support of USAID

ARCHITECTURAL DESIGN
Karan Grover and Associates, India

SIZE
4.5 acres (total site area)
1,858 m^2 (total built up area)
1,115 m^2 (total air-conditioned area)

TYPE
Office building

BUILDING DETAILS
Office building
Seminar hall
Green Technology Centre displaying the latest and emerging green building materials and technologies in India
Large numbers of visitors are escorted on green building tour

RATINGS
Awarded the LEED Platinum Rating for New Construction (NC) v 2.0 by the U.S. Green Building Council (USGBC) in November 2003

MEASURABLE RESULTS

ENERGY SAVINGS

55% reduction, with ASHRAE 90.1 as the baseline

120,000 kWh / year

REDUCTION IN CO_2 EMISSIONS

~ 100 tons / year (building is functional since January 2004)

WATER SAVINGS

35% reduction in potable water consumption

ENVELOPE THERMAL TRANSFER VALUE

U-value of double glazing: 1.70 Watt/m^2 °K

U-value of solid wall: 0.57 Watt/m^2 °K

U-value of roof: 0.294 Watt/m^2 °K

AIR CONDITIONING SYSTEM EFFICIENCY

0.8 kW/ton (water-cooled scroll chiller system with CoP: 4.23 at ARI condition)

Installed two 25 TR chillers

ENERGY EFFICIENCY INDEX (EEI)

84 kWh/m^2/year

Double-glazed units with argon gas filling between the glass panes enhance the thermal properties.

ZERO WATER DISCHARGE BUILDING

All of the wastewater, including grey and black water, generated in the building is treated biologically through a process called the Root Zone Treatment System. The outlet-treated water meets the Central Pollution Control Board (CPCB) norms. The treated water is used for landscaping

MINIMUM DISTURBANCE TO THE SITE

The building design was conceived to have minimum disturbance to the surrounding ecological environment. The disturbance to the site was limited within 40 feet from the building footprint during the construction phase.

This has preserved the majority of the existing flora and fauna and natural microbiological organism around the building.

Extensive erosion and sedimentation control measures to prevent topsoil erosion have als been taken at the site during construction.

MATERIALS AND RESOURCES

80% of the materials used in the building are sourced within 500 miles from the project site. Most of the construction material also uses post-consumer and industrial waste as a raw material during the manufacturing process.

Fly-ash based bricks, glass, aluminum, and ceramic tiles, which contain consumer and industrial waste, are used in constructing the building to encourage the usage of recycled content.

Office furniture is made of bagasse-based composite wood.

More than 50% of the construction waste is recycled within the building or sent to other sites and diverted from landfills.

RENEWABLE ENERGY

20% of the building energy requirements are catered to by solar photovoltaics.

The solar PV has an installed capacity of 23.5 kW.

INDOOR AIR QUALITY

Indoor air quality is continuously monitored and a minimum fresh air is pumped into the conditioned spaces at all times.

Fresh air is also drawn into the building through wind towers.

The use of low volatile organic compound (VOC) paints and coatings, adhesives, sealants, and carpets also helps to improve indoor air quality.

OTHER NOTABLE GREEN FEATURES

- Fenestration maximized on the north orientation
- Rain water harvesting
- Water-less urinals in men's restroom
- Water-efficient fixtures: ultra low and low-flow flush fixtures
- Water-cooled scroll chiller
- HFC-based refrigerant in chillers
- Secondary chilled water pumps installed with variable frequency drives (VFDs)
- Energy-efficient lighting systems through compact fluorescent light bulbs (CFLs)
- Roof garden covering 60% of building area
- Large vegetative open spaces
- Swales for storm water collection
- Maximum day lighting
- Operable windows and lighting controls for better day lighting and views
- Electric vehicle for staff use
- Shaded carpark

COST AND BENEFITS

This was the first green building in the country. Hence, the incremental cost was 18% higher. However, green buildings coming up now are being delivered at an incremental cost of 6-8%. The initial incremental cost gets paid back in 3 to 4 years.

Benefits achieved so far:

- Over 120,000 kWh of energy savings per year as compared to an ASHRAE 90.1 base case
- Potable water savings to tune of 20-30% vis-à-vis conventional building
- Excellent indoor air quality
- 100% day lighting (Artificial lights are switched on just before dusk)
- Higher productivity of occupants

For more information, visit www.AsiaBusinessCouncil.org