



Akshay Urja Bhawan HAREDA, Panchkula

Location	: Sector 17, Institutional Plot Number 1, Panchkula, Haryana
Site area	: 3,900 m ²
Built-up area	: 5,111 m ²
Air-conditioned area	: 1,208 m ²
Non Air-conditioned area	: 3,903 m ²
Energy consumption reduction	: 61% reduction in energy consumption compared to GRIHA benchmark
EPI	: 17 KWh/ m ² /year
Renewable Energy	: Rated capacity of solar PV installed on site is 42.5 KW
GRIHA provisional rating	: 5 Stars
Year of completion	: 2012

The following strategies were adopted to reduce the building impact on the natural environment:



Sustainable site planning:

- The building is placed on north– south axis (+7) in order to receive Sun from the southern side.
- Most windows are placed on north-south facade of building. This helps to keep the building naturally daylight. East and west windows are oriented towards south to have easier sun control through shading devices.
- The south area at site has a wide spread landscaped area.
- The building has 3 floors + Basement. The height of the building is such that the shadow on neighbouring buildings is minimized.
- The south face has solar chimneys to aid ventilation in some of the non a/c spaces.



Reducing water consumption:

- Annual reduction in water consumption with respect to GRIHA benchmark is 70% by using efficient fixtures.
- A 6.25 litre rainwater storage tank has been designed in the basement to collect water from the roof and courtyard. Percolation pits designed along the driveway to collect rainwater from the driveway, the overflow of which has been directed to the municipal sewer.
- Collected rainwater is treated by pressure sand filter and activated carbon filter and further used for potable use, HVAC plant, and horticulture.
- ETP plant is installed to treat grey water collected from kitchen and toilet, the treated water is reused for horticulture. Solid waste is directed towards municipal sewer line.



Reducing energy consumption (compared to GRIHA benchmarks) while maintaining occupant comfort:

- o For achieving visual comfort:
 - East and West windows are oriented south; these windows help the office spaces on those faces receive day light.
 - Central court and single loaded corridor help provide visual comfort by natural light.
- o For achieving thermal comfort:
 - The south face has solar chimneys to aid ventilation in some of the non a/c spaces.
 - Misting is done in the courtyard to cool the ambient air which is circulated into the building through solar chimneys. The achieved internal air relative humidity ranges from 60–75 per cent.
 - THERMATEK roofing tiles have been used to reflect maximum solar radiation back to the sky, which reduces the heat ingress from the roof.
 - Cavity walls with XPS foam insulation have been constructed in the east and west facade of the building.



Renewable energy technologies installed on site:

- A 42.5 KW SPV plant (with 5 KW BIPV installed above the courtyard) has been installed.
- A Solar water heater of 600 litre capacity has been installed for cooking and bathing purpose.



Use of low energy materials:

- Door/window frames are made of aluminium and UPVC.
- Low energy armstrong mineral type false ceiling is done to minimize the use of hardwood.
- Bamboo flooring is done in director's office, chairperson's room, and the conference room.
- AAC block masonry along with XPS foam insulation is done in east and west facade of the building and fly ash brick masonry done in north and south facade of the building.

Integrated Design Team:

Client	: Mr D K Chopra, Additional Director, Hareda
Project Coordinator	: Ar Siddhartha Wig, The Elements
Principal Architect	: Ar Siddhartha Wig, The Elements
Landscape Architect	: Ar Jitesh Malik, Brick & Green
Project Management Consultant	: Mr Dheeraj Gupta, Dheeraj Gupta
Structural Consultant	: Ar Sanjay Prakash, Sanjay Prakash and Associates
Electrical Consultant	: Mahesh Babu, Ashok A Sanadi, McD Built Environment Research Laboratory Pvt. Ltd
Green Building Design and Certification	: Mahesh Babu, Ashok A Sanadi, McD Built Environment Research Laboratory Pvt. Ltd