Western Side Teaching Block Complex, National Institute of Technology – Karnataka, Surathkal

Location	:	National Institute of Technology, Surathkal, Mangaluru
Site Area	:	11700 m^2
Built up Area	:	4647.64 m^2
Air-conditioned Area	:	625.48 m^2
Non Air-conditioned Area	:	4022.15 m^2
Typology	:	Institutional
Energy consumption reduction	:	60.93% reduction in energy consumption compared to GRIHA benchmark
Energy Performance Index (EPI)	:	15.81 kWh/m^2/yr
Renewable Energy	:	Rated capacity of solar PV installed is 30 kWp
GRIHA provisional rating	:	4 Stars
Year of Completion	:	2017

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

Sustainable Site Planning:

- Buffer strip of vegetation including existing mature trees between the building and the National Highway has been maintained on site.
- Out of the 15 existing trees, 9 trees were cut and 45 new trees were planted, all of which are native species to the region.
- Top soil of the site was well preserved and has been reused in landscaping work on site.
- The building design took advantage of the natural contours on site and ensured that minimum amount of cut and fill is carried out.

Water management:

- Reduction of 50.6% from the GRIHA base case has been demonstrated in building water use by installing water efficient flush and flow fixtures.
- Reduction of 33.6% from the GRIHA base case has been demonstrated in landscape water demand through use of native shrubs and trees, sprinkler irrigation system and minimizing turf area on site.
- Regular metering and monitoring is also practiced on the site to ensure efficient management of water resource.

Energy Optimization:

- Window to wall ratio has been maintained at 8%.
- High efficacy lamps are installed for exterior lighting which is operated by timer controller.
- Lighting power density has been reduced against ECBC prescribed values with the use of efficient lighting fixtures like T5 and LEDs ensuring reduction in lighting consumption while emitting less heat in turn reducing the air conditioning consumption.
- 52.37% of the habitable spaces are day lit and meet the daylight factors as prescribed by the National Building Code of India.
- EPI reduction of 60.93% from GRIHA benchmark has been demonstrated.
- ECBC mandatory clauses compliant lighting, HVAC and electrical power system have been implemented.
- 30 kWp solar PV panels have been installed on site.
- 32712 kWh of energy is generated annually by the renewable energy system which meets 58.92% of the energy requirement of internal building lighting.

Sustainable building materials:

- 30% of cement was replaced with Ground Granulated Blast Furnace Slag content by weight in the structural concrete.
- Pozzolana Portland Cement indicating use of 30% fly-ash content by weight has been used in plaster and masonry mortar.
- Use of low energy flooring, false ceiling and paneling has been demonstrated.

Integrated Design Team:

Client	:	National Institute of Technology–Karnataka, Surathkal
Project Coordinator	:	Central Public Works Department
Principal Architect	:	Arkie Atelier Design India (P) Limited
Landscape Architect	:	Arkie Atelier Design India (P) Limited
Structural Consultant	:	Arkie Atelier Design India (P) Limited
Electrical Consultant	:	Arkie Atelier Design India (P) Limited
Green Building Design and Certification	:	Green Sketch Consultants