

Manipal Hospitals –Mangalore, A Unit Of Manipal Healthcare Services Pvt Ltd.

Location	: Mangalore
Site Area	: 2,994.78 m ²
Built up Area	: 15065 m ² including parking
Air-conditioned Area	: 11642.73 m ²
Non Air- conditioned Area	: 3422.27 m ²
Energy Performance Index (EPI)	: 223.89 KWh/m ² /year
Renewable Energy	: 20 kWp Solar PV installation
GRIHA provisional rating	: 4 Stars
Year of completion	: 2015

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

📍 Sustainable Site Planning:

- The only existing tree on site was protected during construction and additional plantation has been done along the site boundary post construction.
- Air pollution control measures such as site barricading, coverage of dusty material and appropriate stack height of DG sets were implemented during construction to contain pollution.

📍 Water management:

- Construction water requirement was minimized by adopting curing and ponding techniques.
- Reduction of 51.77% from the GRIHA base case has been demonstrated in building water use by installing water efficient flush systems and flow fixtures.
- Potable water demand reduced by reclaiming 37.2% STP treated water for landscaping, flushing and air-conditioning make-up water.

📍 Energy Optimization:

• Visual comfort:

- » WWR of 13.11% has been achieved to create a strong visual connection between the building occupants and the outside environment.
- » 54.4% of the habitable spaces in the building are day lit and meet the daylight factors as prescribed by the National Building Code of India.

• Thermal comfort:

- » Double glazing with SHGC of 0.2 and horizontal shading devices have been integrated in the project to reduce the solar heat ingress.
- » Water cooled chillers with a COP of 6.29 have been installed to achieve thermal comfort.
- » CO₂ sensors have been used in the project near all AHUs to monitor the quality of air.
- By adopting the abovementioned strategies, the project achieved a reduction of 50.25% in Energy Performance Index over the GRIHA base case.

📍 Renewable energy technologies installed on site:

- A 20 kWp solar PV has been installed which meets 16.24% of interior lighting requirement.
- The installed solar hot water system is offsetting 56.17% of annual energy required for water heating.

📍 Sustainable building materials:

- Sustainable materials such as gypsum board, mineral fiber and veneer finish for false ceiling; veneer, gypsum, laminate and MDF for paneling; vitrified tiles and granite for flooring; composite wood and laminate sheets for in-built furniture have been used.
- 26.3% cement is replaced with fly ash by weight in structural concrete.
- The embodied energy of the non-structural applications has been reduced by 48.6% by use of solid concrete blocks.
- Indoor air quality has been maintained by using 100% interiors finishes with no/low VOC content.

Integrated Design Team:

Client	: Manipal Health Enterprise
Project Coordinator	: Khilesh Surana
Principal Architect	: RSP Architects
Landscape Architect	: RSP Architects
Project Management Consultant	: Cushman & Wakefield
Electrical Consultant	: ARCO
Green Building Design and Certification	: Terra Viridis

