Fortis Memorial Research Institute

Location: Sector 44, Gurgaon
Site area: 43,303 m²
Built-up area: 65,961 m²
Air-conditioned area: 26,254 m²
Non-Air-conditioned area: 44,612 m²
Energy consumption reduction: 33% reduction in energy consumption compared to TERI GRIHA benchmark
EPI: 154 KWh/m²/year
Renewable energy installed on site: Rated capacity of solar PV installed on site is 25 KWp
TERI GRIHA final rating: 4 Stars

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

**Sustainable site planning:**
- Top soil from the site, which was not very fertile was stacked, preserved, made fertile with the addition of manure and re-laid on the landscape areas.
- Consolidation of all site services along the transportation corridors minimizes the site disturbances.
- Surface parking is provided with 100% grass pavers reduce the heat island effect on site.
- Sufficient plantation done at the site reduces the noise levels considerably and enhances exterior environmental quality.

**Reduction in water consumption (compared to TERI GRIHA benchmark):**
- Low flow plumbing fixtures used to minimize the building water consumption reduction by 63%.
- Drip irrigation system adopted on the site along with native plant species to cut short the landscape water consumption by 50%.
- 100% Treated water from sewage treatment plant is reused for cooling towers and irrigation purposes.

**Reduction in energy consumption (compared to TERI GRIHA benchmark) while maintaining occupant comfort:**
- For achieving visual comfort
  - Ingress of daylight in Patient areas & Waiting areas.
  - Landscape in sync with the Architectural spaces to provide visual comfort.
- For achieving thermal comfort
  - Use of AAC blocks, Double Glazing & Roof insulation.

**Renewable energy technologies installed on site:**
- Solar Photovoltaic Panels for 25 KWp are installed at site.
- Solar Water Heaters for 8000 litres are also installed to meet the surplus hot water requirement after heat recovery system.

**Use of low energy materials:**
- Autoclaved Aerated Concrete blocks are used for the construction of the hospital building.
- Cement with sufficient percentage of fly ash had been used for the construction.
- Low embodied energy construction materials and finishes have been used in the hospital interiors.

### Integrated Design Team:

- **Client:** Fortis Healthcare (P) Ltd, Gurgaon, www.fortishealthcare.com
- **Project Coordinator:** Mr. Surender Kumar, Fortis Healthcare (P) Ltd, Gurgaon
- **Principal Architect:** Ar. Rajinder Kumar, Rajinder Kumar Associates, New Delhi
- **Landscape Architect:** Ms. Sanjoo Bose, S Bose Landscape Consultants, New Delhi
- **Project Management Consultant:** Mr. Nilin Kumar, Fairwood Consultants (P) Ltd, Noida
- **Structural Consultant:** Ar. Rajinder Kumar, Rajinder Kumar Associates, New Delhi
- **Electrical Consultant:** Mr. Ashish Rakheja, Spectral Service Consultants (P) Ltd, Noida
- **Green Building Design and Certification:** GreenTree Building Energy (P) Ltd, Ghaziabad
- **Green Building Design and Energy Consultant:** The Energy and Resources Institute

**Building performance as per audit report:**

**Energy**
- Final EPI achieved - 109 KWh/m²/year.
- Reduction in EPI from proposed case-53%.
- Thermal comfort is met as per NBC 2005.

**Water and waste**
- Portable water test report indicates conformity to IS code
- Treated water test report indicates conformity to IS code

**Noise level**
- Outdoor noise levels are within acceptable limits as per CPCB.
- Indoor noise levels are not within acceptable limits as per NBC 2005.