



## Fortis Memorial Research Institute

<b>Location</b>	: Sector 44, Gurgaon
<b>Site area</b>	: 43,303 m <sup>2</sup>
<b>Built-up area</b>	: 65,961 m <sup>2</sup>
<b>Air-conditioned area</b>	: 26,254 m <sup>2</sup>
<b>Non-Air-conditioned area</b>	: 44,612 m <sup>2</sup>
<b>Energy consumption reduction</b>	: 33% reduction in energy consumption compared to TERI GRIHA benchmark
<b>EPI</b>	: 154 KWh/m <sup>2</sup> /year
<b>Renewable energy installed on site</b>	: Rated capacity of solar PV installed on site is 25 KWp
<b>TERI GRIHA final rating</b>	: 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.

Building performance as per audit report:

- 📍 **Energy**
  - Final EPI achieved - 109 KWh/m<sup>2</sup>/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.

### Integrated Design Team:

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