

Building Type : Group Housing
Climate Zone : Composite
Area : 5040 m²
WWR : 9.12
Conditioned Area: 4000 m²
Occupancy Type : 24 hours
ECBC Compliance: Whole building simulation method (**ECBC 2007**).
Baseline EPI : 77.26 KWh/m²/year
Proposed EPI : 73.18 KWh/m²/year
% Energy saving: 5.28%
Payback period : 13 years

HVAC Specifications

BEE 5 star rated split AC

Piping and ductwork

System Description: 20 mm thick Nitrile Rubber

R value: R value of insulation: 0.35,
Thickness of insulation 13 mm.

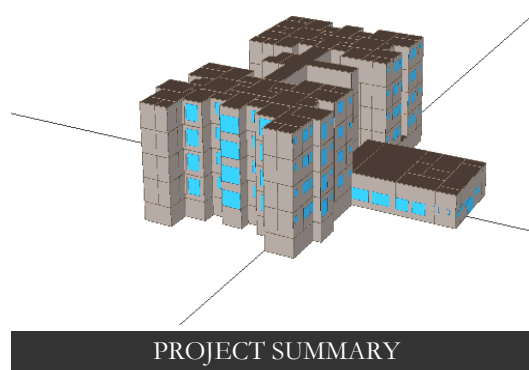
Air leakage

Envelope is sealed, caulked, gasket or weather-stripped.

Envelope Sealing :

seal, caulk, gasket, or weather-strip the following areas of the enclosed building envelope to minimize air leakage
ECBC requirement of 20% hot water through solar water heaters

TRANSIT FLATS NUH (HARYANA)



The transit flat building is five storied building which will serve as residential quarters. The longer axis of the building is in North- South direction.

BUILDING ENVELOPE

Opaque wall : 12 mm Plaster + 230 mm Brick wall + 12 mm Plasters

U-value: 1.80 W/m²K

Assembly thickness : 254 mm:

Roof Assembly: 10mm tiles + 50 mm Cement screed + 150mm RCC + 12 mm Cement Plaster

U-value: 2.65 W/m²K

Assembly thickness : 222 mm

Glazing type 1: Single Glazed Unit

U-value: 4.5 W/m²K, SHGC: 0.31, VLT: 18%

Glazing type 2 : DGU(Double Glazed Unit

U-value: 2.8 W/m²K, SHGC: 0.28, VLT: 21%

Lighting Power Density

Space Function Method

Bedroom / Drawing Room :9 W/m²

Lobby : 9 W/m²

Toilets : 7 W/m²

Kitchen : 10 W/m²

Common Areas : 4 W/m²

Fixtures - :LED Bulbs

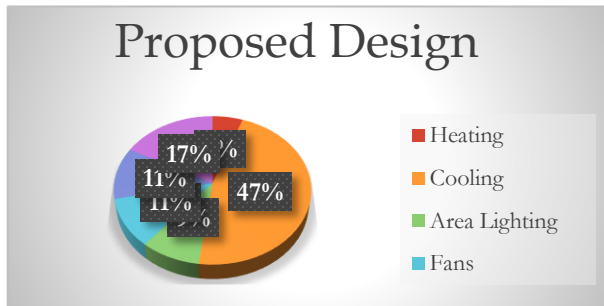
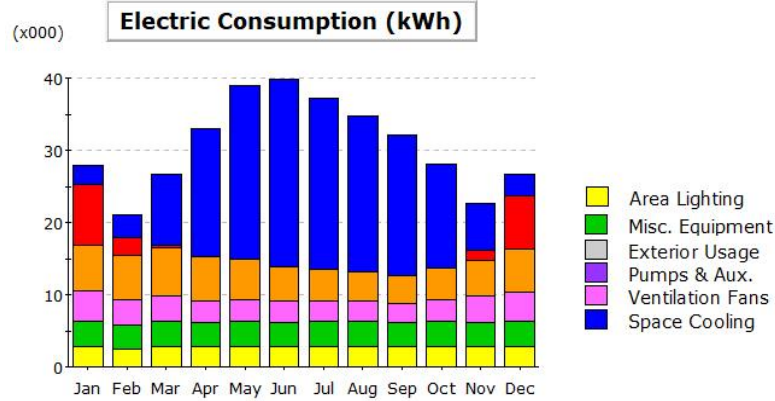
Occupancy Sensors : in corridors, toilets, offices and conference rooms

Exterior Lighting Details

Fixtures with minimum efficacy of 80 lumens/watt.

Energy Consumption Comparison between Base Case and Proposed Case

Consumption	Heating (kWh)	Cooling (kWh)	Area Lighting (kWh)	Fans (kWh)	Misc Equipment (kWh)	Hot Water (kWh)	Total (kWh)
Baseline	2.59	135.33	116.08	25.93	41.46	62.84	383.23
Proposed	20.03	171.91	33.16	39.16	41.46	63.13	368.84



Proposed office building has been modelled using the e-QUEST energy simulation software which is able to model energy flows on hourly basis for the entire year. Provided are the charts indicating the steps flow of 'Whole Building Energy Performance Process. Summarizing the output results of energy simulation into following points:

- 5.28% energy saving is achieved by following ECBC compliance.

Case	Cost
Conventional building	Rs. 14851072
Prescription based	Rs. 21807662
Whole building simulation based	Rs. 19373130

Incremental cost percentage as compared to conventional case.

Prescription based: 31.8 %

Whole building simulation based: 30 %

The difference between proposed cost through whole building energy simulation method and conventional method would be Rs. 4522058. On the other hand cost difference between proposed cost through prescription based method and conventional cost would be Rs. 6956590.

The annual electricity saving in energy is

Rs. 1395911.65 @ Electricity tariff Rs. 5/ kWh.

Payback period: 3.29 years (whole building simulation method).

Payback period: 4.98 years (prescription based method)