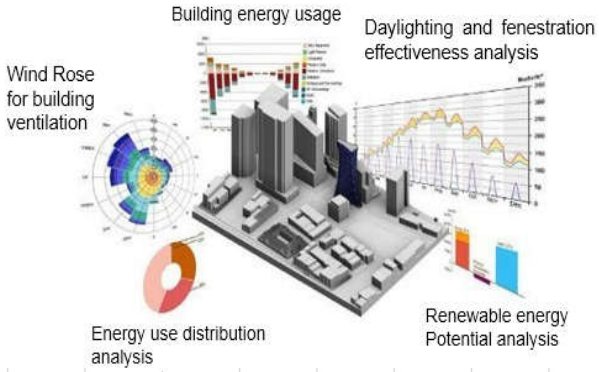
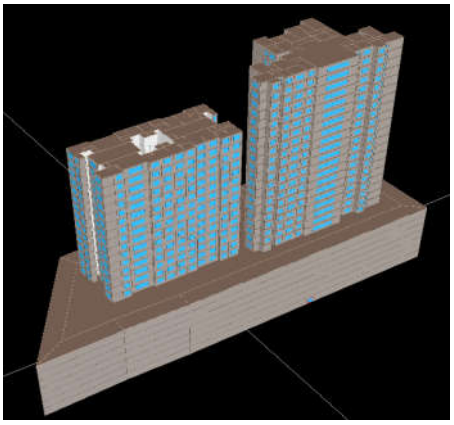
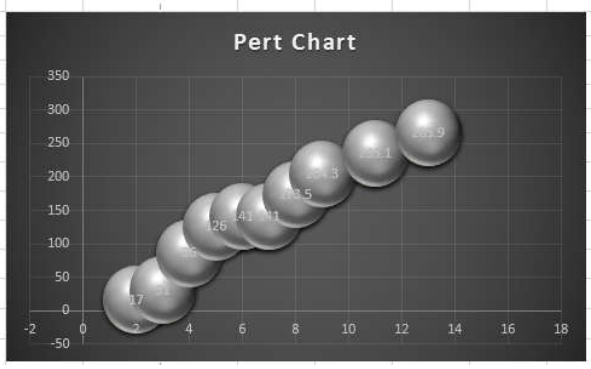
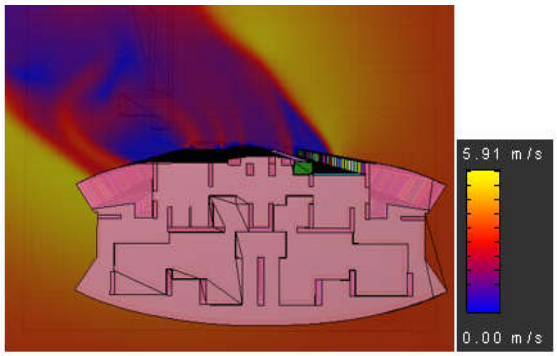
SIKA
solutions pvt ltd.

SUSTAINABILITY SERVICES









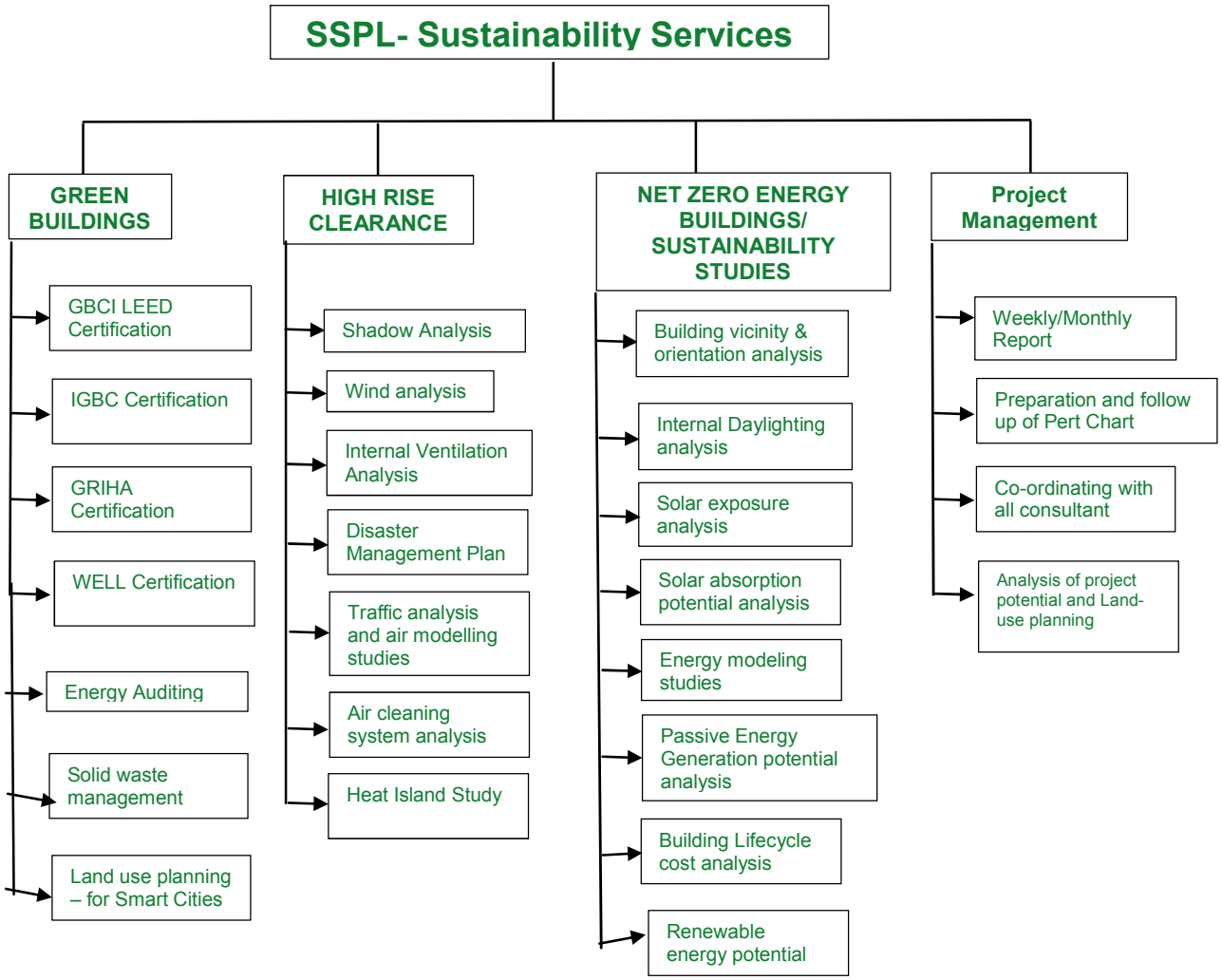
CAPACITY STATEMENT

info@sikasolutions.in

About SSPL

SIKA Solutions Pvt. Ltd. (SSPL) formed in 2020 is accredited organization for various certifications as one stop sustainable solutions, for various development sectors. SSPL has been providing financially feasible site specific engineering solutions in terms of sustainability for various sectors like High Rise Residential & Commercial Buildings, Educational Buildings, Industries, Storage Building (ware houses) and Smart Cities apart from construction management of projects.

SSPL's spectrum of clients includes Multilateral and Bilateral funding agencies, Real Estate Developers, Industrial Estate Developers, PWD Department, Corporates and Municipal Authorities. With the increased awareness and inclination of the masses and the leaders about energy conservation and renewable energy sources, it has become indispensable to comply with energy consumption management standards like ECBC and ASHRAE90.1 in the present scenario. Hence the sustainable solutions provided by SSPL can prove to be a boon throughout various project design phases.



1) GREEN BUILDING

"Creating a Green building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction. This practice expands and complements the classical building design concerns of economy, utility, durability, and comfort. Green building is also known as a sustainable or high performance building."
Type of green building certifications:

a. **GBCI LEED Certification:**
b. **IGBC certification:**
c. **GRIHA Certification:**
d. **WELL Certification:**

Green Building Certifications offered by SSPL

1. **Indian Green Building Council (IGBC) & LEED India:**

The Indian Green Building Council (IGBC), part of Confederation of Indian Industry (CII) was formed in the year 2001. It is applicable to *residential buildings, factories, townships etc.*
The first LEED India rating program was launched during Green Building Congress Conference in October 2006. It is applicable to *hotels, hospitals, educational institutions,* airports, government buildings, corporate offices etc.
IGBC Accredited Professional: Rashmi Kolatkar
LEED Accredited Professional: Hrushikesh Kolatkar

2. **Green Rating for Integrated Habitat Assessment (GRIHA)**

It is an initiative of TERI (The Energy and Resources Institute) and MNRE (Ministry of New and Renewable Energy) was adopted as the national rating system for green buildings by the Government of India in 2007. GRIHA footprint today is around 11 million sq m.
GRIHA Evaluator: Hrushikesh Kolatkar

Green Building is a building which minimizes use of resources, generates lesser wastes and provides healthy living conditions to the residents. SSPL has the required certified expertise to procure the necessary certification. SSPL has expertise in Private and Public large real estate project such as Residential, Commercial and Institutional.

Our Clientele and Ongoing Projects

1. Labadhi Garden, Karjat
2. RSC Factory, Lote
3. International School Aamby, Lonavala for *Sahara School Holding Ltd*
4. Somaiya Hospital Complex and College, Sion for *K.J Somaiya Trust*
5. Peninsula Land Ltd., Gahunje,
6. Celestial Spaces, Bhattad Group,
7. Skylark, Borivali,
8. My World, Aurangabad,
9. Ghasswala, Mumbai
10. Empress Park, Palghar,
11. Kailas Heights, Mumbai for *D.K Patel Group*
12. Kailas Lake View, Mumbai for *D.K Patel Group*
13. Arihant Adita, Jodhpur for Arihant Superstructures Ltd.
14. Nandan Carnival, Nashik for Nandan Developers etc.
15. HSP, Mulund
16. Tata Club House
17. PWD Existing Building certification (GRIHA) 57 Premises around Maharashtra.
18. PWD Satara,
19. Bandra Court,
20. Zen Hospital, Chembur
21. Parvati Motors, Yavatmal
22. National Tax Headquarters, New Delhi for *Income Tax Department - Govt. of India*
23. Arihant Aura, Navi Mumbai for *Arihant Superstructures Ltd.*
24. Hyatt Regency at Lucknow and Guwahati for *Chartered Hotels*
25. Kailas Hospitalities, Mumbai for *D.K.Patel Group*
26. Aamby Valley City, Lonavala for *Sahara Group.*
27. Megacity Hinjewadi, Pune for Eiffel Developers
28. TATA One Bangalore (WELL Certification)

2) NET ZERO ENERGY BUILDING/ SUSTAINABILITY STUDIES:

There are a number of ways by which net zero consumptions can be achieved. Some of ways of achieving net zero energy building are discussed below.

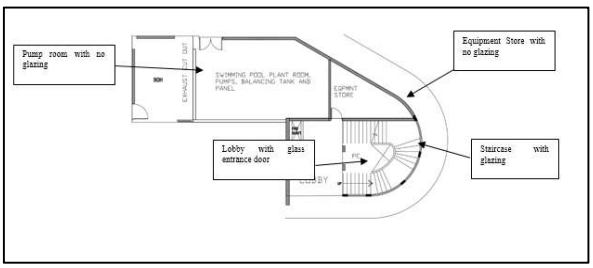
- **Net Zero Site Energy:** A site NZEB produces at least as much renewable energy as it uses in a year, when accounted for at the site. This option is easy to aim for as
- **Net Zero Source Energy:** A source NZEB produces (or purchases) at least as much renewable energy as it uses in a year, when accounted for at the source. Source energy refers to the primary energy used to extract, process, generate, and deliver the energy to the site. To calculate a building's total source energy, imported and exported energy is multiplied by the appropriate site-to-source conversion multipliers based on the utility's source energy type.
- **Net Zero Energy Costs:** In a cost NZEB, the amount of money the utility pays the building owner for the renewable energy the building exports to the grid is at least equal to the amount the owner pays the utility for the energy services and energy used over the year.
- **Net Zero Emissions:** A net zero emissions building produces (or purchases) enough emissions-free renewable energy to offset emissions from all energy used in the building annually. Carbon, nitrogen oxides, and Sulphur oxides are common emissions that ZEBs offset. To calculate a building's total emissions, imported and exported energy is multiplied by the appropriate emission multipliers based on the utility's emissions and on-site generation emissions (if there are any).

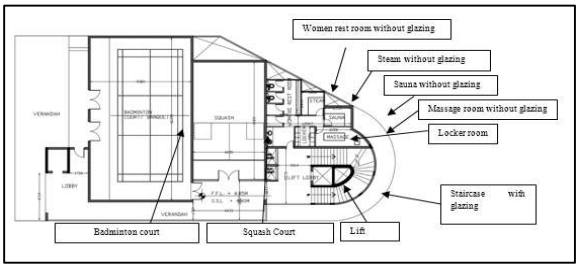
A NZEB is achieved by carrying out a number of studies like:

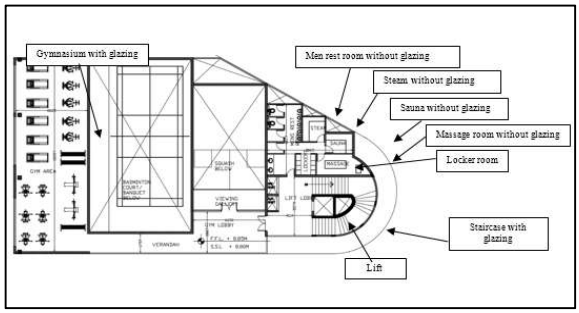
i. **Building vicinity & design analysis,**
ii. **Solar exposure analysis:**
iii. **Wind availability and ventilation study:**
iv. **Solar Insolation Study:**
v. **Internal daylight analysis**
vi. **Artificial lighting simulation**
vii. **Passive cooling possibility,**
viii. **Energy Modeling:**
ix. **Heat Island Analysis:**
x. **Shadow Analysis and Lighting Simulation:**

i. Building vicinity & design analysis:

Building surrounding feature studies helps in identifying the impact of the vicinity on the building under consideration. This study is of prime importance as it governs the energy consumption potential of the building and also helps in making decisions regarding the building structure, location and orientation. The following are the analyses carried out in the building surrounding feature studies:

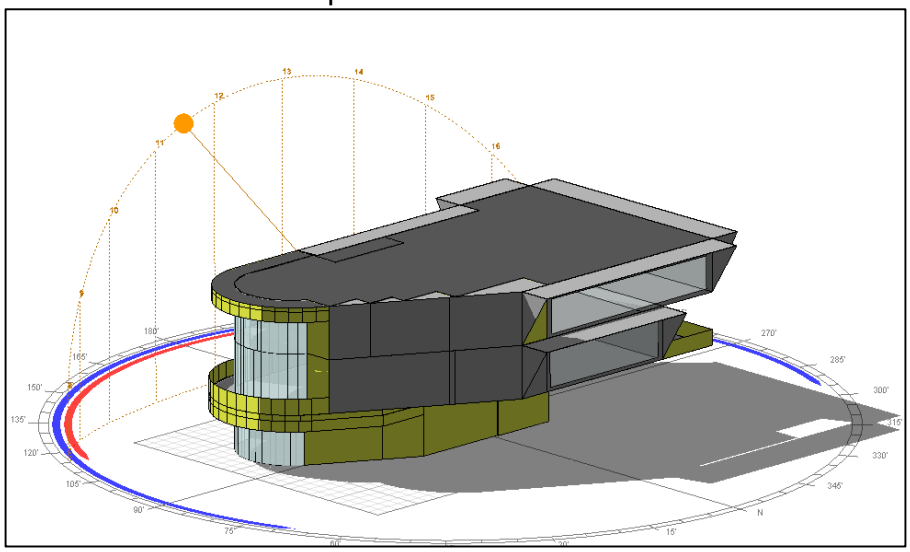






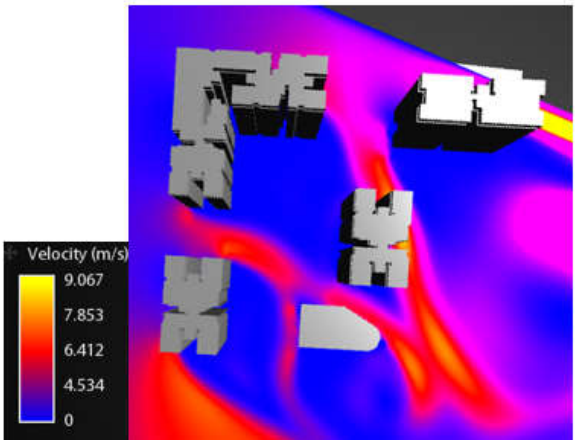
ii. Solar exposure analysis:

This study is carried out to find the shadow impact of other buildings in the project on the club house. This in turn would help in discovering the areas which are exposed more to the direct solar radiation so that proper measures can be taken to insulate the affected part



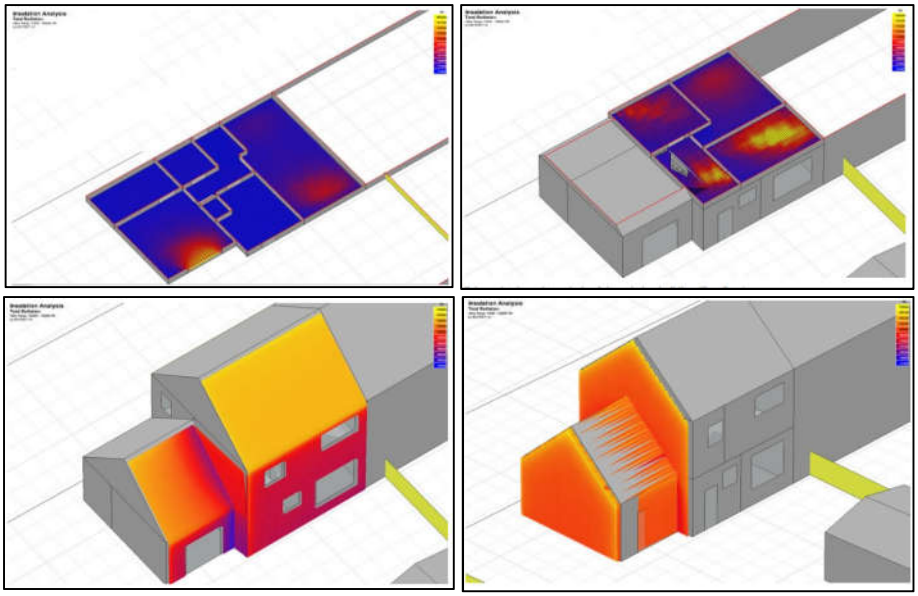
iii. Wind availability and ventilation study:

Wind flow pattern and ventilation study helps in discovering the areas of the affected building that are in direct contact with the wind flow with the help of wind flow pattern of the area. During the summer season the winds at higher temperature increase the building temperature through direct contact which in turn leads to increased HVAC load.



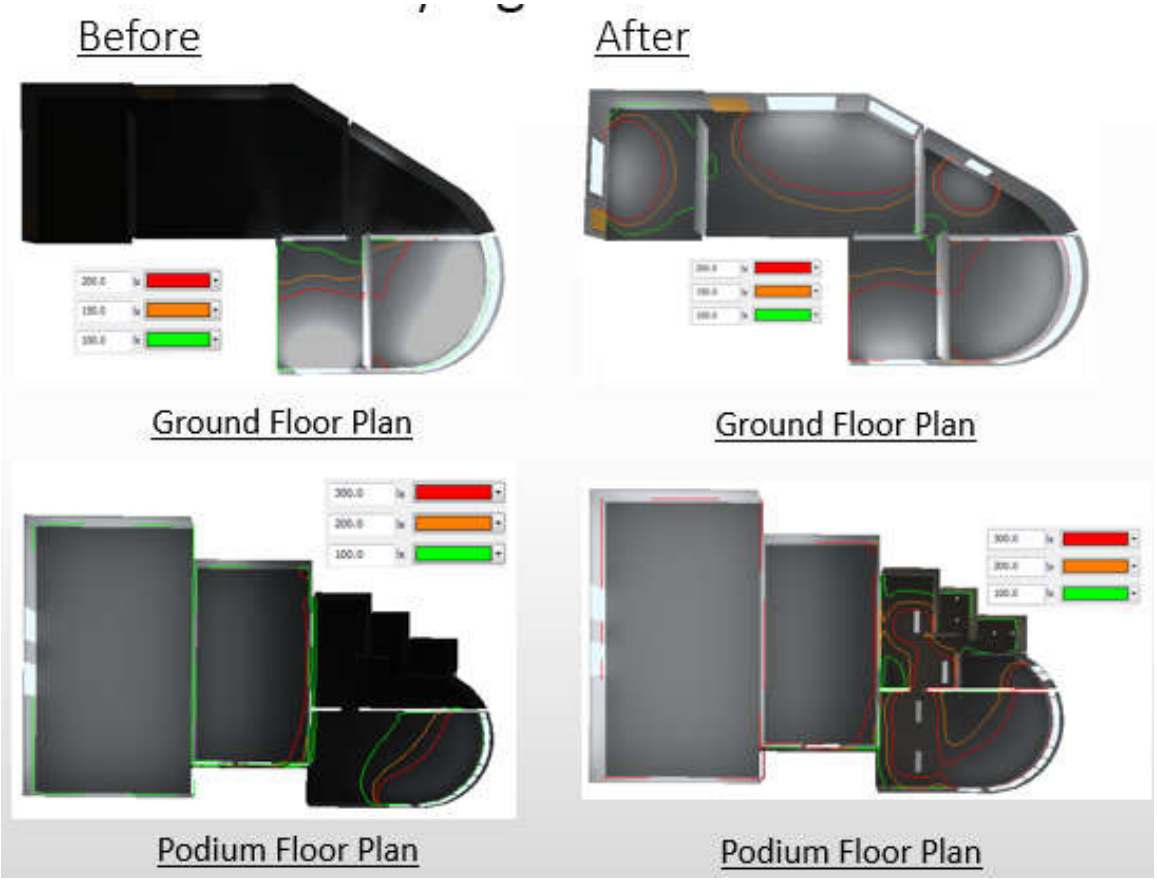
iv. Solar Insolation Study:

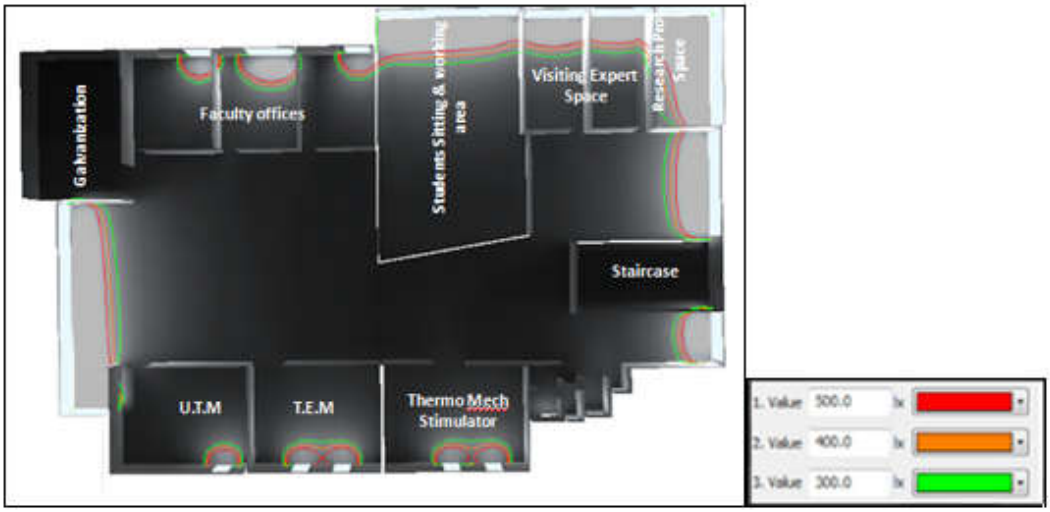
This study involves identification of solar absorption of various components of the affected building so as to provide a suitable insulation.

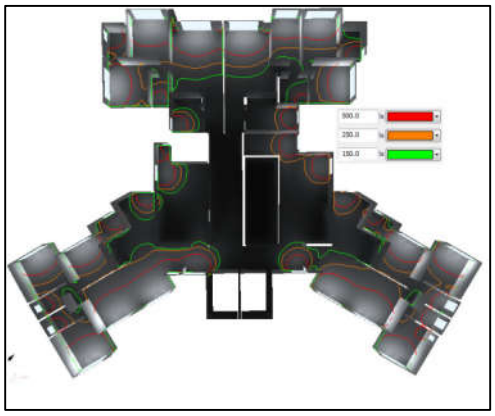


v. Internal daylight analysis:

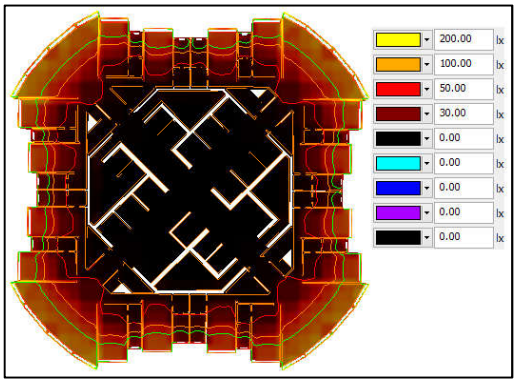
This study helps in finding the daylighting levels of the occupied areas within the building. Also artificial lighting fixtures can be provided accordingly so that proper lighting levels can be achieved both in the day as well as night.







Rumah Bali (Puranik)

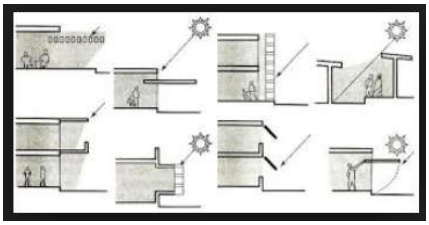


96 World Cup (Colombo Project)

vi. Passive cooling possibility

Passive cooling is a building design approach that focuses on heat gain control and heat dissipation in a building in order to improve the indoor thermal comfort with low or no energy consumption.

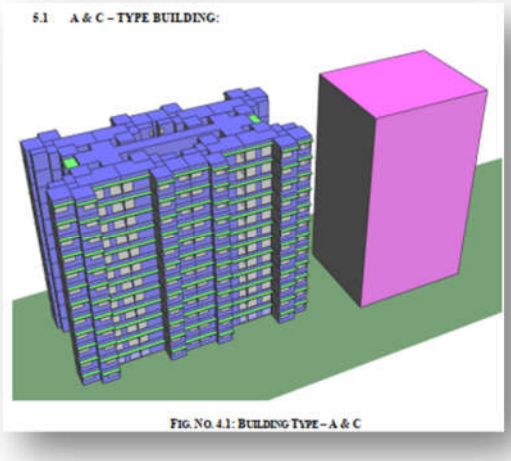
There are various design elements have been used in different part of world for thermal comfort. like orientation of building, thermal mass, water body, open courtyard, various kind of shading devices, vegetation, lattice screen, domes, jharokhas & wind towers & air vent etc.

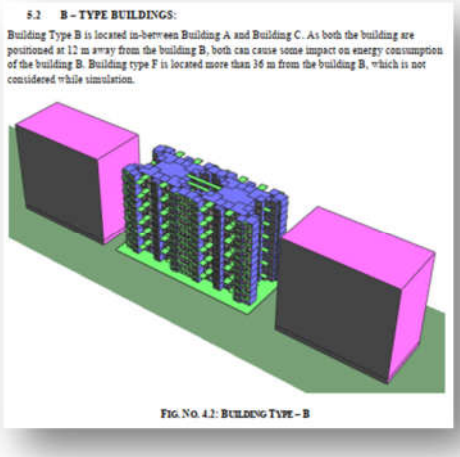


From above mentioned elements mostly perform multiple functions. For example water body behaves like aesthetical feature in the building as well as a source of thermal cooling. open courtyard functions like a source of ventilation as well as a part of integrated indoor- outdoor living area, shading devices provides shade but also capable to change direction of wind at micro level.

vii. Energy Modeling:

Energy modelling is done during a design process to predict energy consumption over the life of a building. Heating and cooling requirements are assessed along with other energy needs to develop an accurate model of future energy use. This can be used to improve a building's design and to make informed decisions about design and energy alternatives. The energy model is a computer software simulation that starts with specified materials and systems for a building, calculates the energy cost for one year, and creates a report of the anticipated energy performance of the building. The model will reveal how energy efficient the building can be, while there is still time to enhance it.

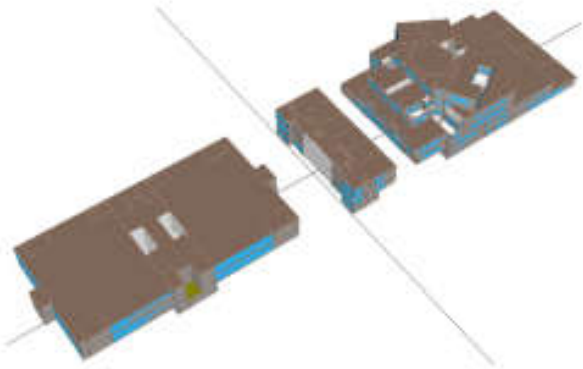




NANDAN Carnival

An important concept to understand is percent improvement. The ASHRAE standard and the LEED model compare the annual energy cost of the proposed building vs. the baseline building that just meets code. Annual energy cost is used because it is readily understood by engineers, architects, building owners, executives, accountants, and occupants.

Project Building (Arihant Aura)

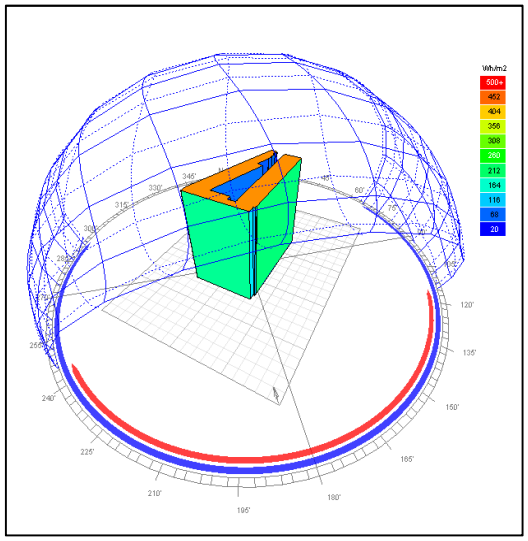


Simulation Model

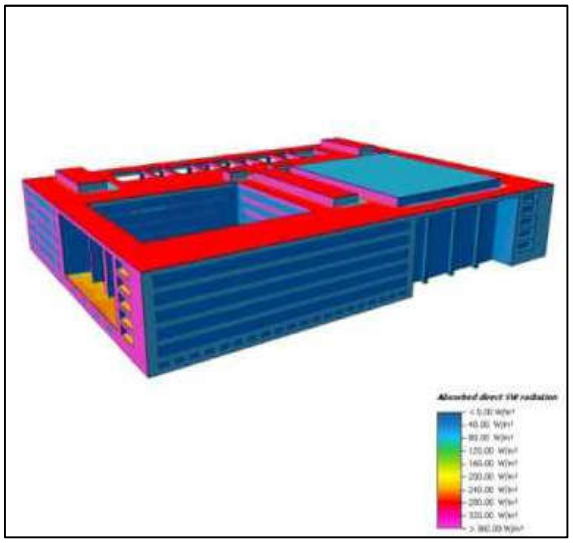
Everyone can understand how one item may cost 10 percent less, but not everyone has a frame of reference for British Thermal Unit-hours (BTUh), kilowatt-hours (kWh), tons of carbon dioxide and the like.

viii. Heat Island Analysis:

Heat islands are urbanized areas that experience higher temperatures than outlying areas. Structures such as buildings, roads, and other infrastructure absorb and re-emit the sun's heat more than natural landscapes such as forests and water bodies. Urban Heat Island (UHI) has significant impacts on the buildings energy consumption and outdoor air quality (OAQ). Various approaches, including observation and simulation techniques, have been proposed to understand the causes of UHI formation and to find the corresponding mitigation strategies. However, the causes of UHI are not the same in different climates or city features.

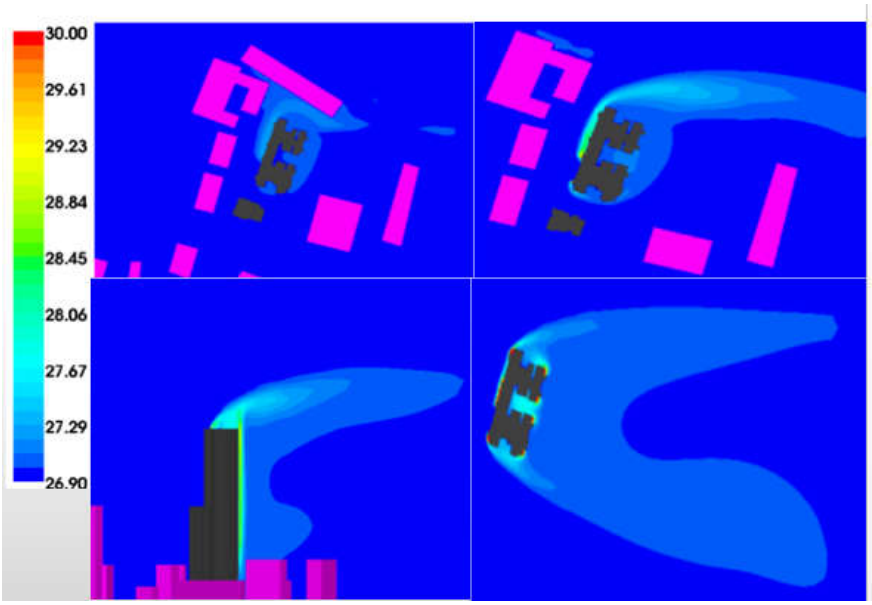


Dhobi Ghat (Omkar)



Mixed Use Development Project 'Ashok Meadows' & 'Godrej 24'

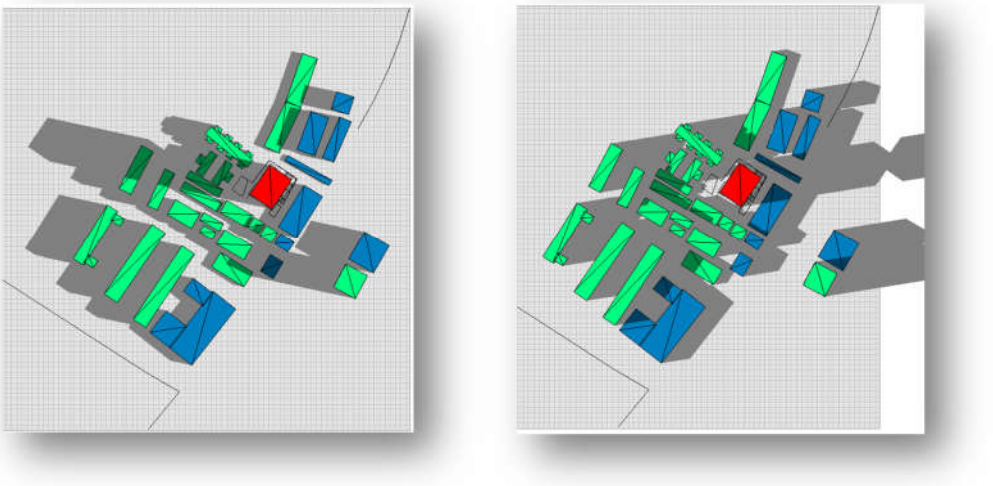
The local meteorological conditions play a major role in identification of the UHI potential of the building apart from building orientation and development density of the area. Envi-MET and Ecotect is a software that helps in the identification various passive strategies.



Godreg Skyline Developers

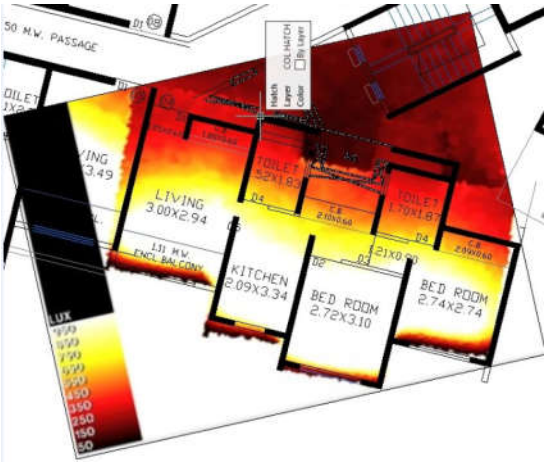
ix. Shadow Analysis and Lighting Simulation:

Shadow Analysis. A shadow analysis can help determine the areas of the drawing that will receive less sunlight or remain in a shadow during a particular time of the year.To perform a shadow analysis: Add the objects to the drawing that will cast a shadow on the site

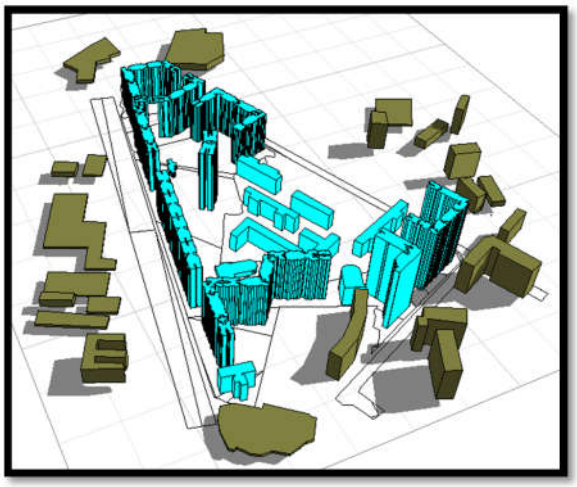


Skylark Project Boriwali

Shadow Analysis is being used by hundreds of designers around the world. Logotypes of a few of those companies are presented on the right-hand side. Despite the fact that Shadow Analysis is very user-friendly we provide a collection of tutorials which will help you get you on track quickly and become an expert in insolation analysis



Minimum required Lux level achieved with designs of sky scrapers on the site



3) HIGH RISE BUILDING SOLUTIONS:

A high-rise building can be defined as follows:

1. " Any structure where the height can have a serious impact on evacuation " (The International Conference on Fire Safety in High-Rise Buildings)[1]
2. "For most purposes, the cut-off point for high-rise buildings is around seven stories. Sometimes, seven stories or higher define a high-rise, and sometimes the definition is more than seven stories. Sometimes, the definition is stated in terms of linear height (feet or meters) rather than stories. "[2]
3. "Generally, a high-rise structure is considered to be one that extends higher than the maximum reach of available fire-fighting equipment. In absolute numbers, this has been set variously between 75 feet (23 meters) and 100 feet (30 meters), "[3] or about seven to ten stories (depending on the slab-to-slab distance between floors).

In Mumbai however a building is deemed to be a high rise when the height of the building is more than 70mts. When the building exceeds this height, then fire, an ever-present danger in such facilities, must be fought by fire personnel from inside the building rather than from outside using fire hoses and ladders. For practicality and convenience such a multi-level or multi-story structure uses elevators as a vertical transportation system and, in addition, some utilize escalators to move people between lower floors.

The connection between the size of cities and the concentration of tall buildings at their core makes intuitive sense, seeing as large, dense cities frequently depend on transit to move large numbers of workers into their downtown business districts. A city's density is also connected to the height of buildings. As the population density of urban areas has increased, so has the need for buildings that rise rather than spread. The skyscraper, which was originally a form of commercial architecture, has

increasingly been used for residential purposes as well.
SSPL has presented and cleared more than 150high rise projects in front of the Bombay Municipal Corporation and is proficient in carrying out various high rise studies that assesses the feasibility of the building like:

1. Shadow analysis,
2. Wind analysis,
3. Internal ventilation studies,
4. Evacuation analysis,
5. Disaster management plan preparation
6. Indoor air analysis
7. Air pollution modelling studies
8. Air cleaning system analysis for basements and podiums
9. Material balance analysis.

4) SMART CITY SOLUTIONS:

As per the Smart City Mission and Guidelines defined by the Ministry of Urban Development Government of India in June 2015, there is no universally accepted definition of a Smart City. It means different things to different people. The conceptualization of Smart City, therefore, varies from city to city and country to country, depending on the level of development, willingness to change and reform, resources and aspirations of the city residents. A Smart City would have a different connotation in India than, say, Europe. Even in India, there is no one way of defining a Smart City.
The core infrastructure elements in a Smart City would include:

1. adequate water supply,
2. assured electricity supply,
3. sanitation, including solid waste management,
4. efficient urban mobility and public transport,
5. affordable housing, especially for the poor,
6. robust IT connectivity and digitalization,
7. good governance, especially e-Governance and citizen participation,
8. sustainable environment,
9. safety and security of citizens, particularly women, children and the elderly, and
10. Health and education.

As far as Smart Solutions are concerned, an illustrative list is given below. This is not, however, an exhaustive list, and cities are free to add more applications.

Shendra-Bidkin Industrial Estate

A smart city may have all or some or a combination of the above features as per the need and requirement and need of the particular city.

5) MANAGEMENT AND PROJECT TEAM

SSPL Team comprising of In-House Experts (IHE)

Sr. No.	Office Team Members	Designation
1	Ms. Rashmi Kolatkar	Managing Director
2	Mr. Hrushikesh Kolatkar	Director and Head of Green Building

REGISTERED OFFICE ADDRESS:	NAVI MUMBAI OFFICE:
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