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A Study on Optimization of Sun Light Source (Day Lighting) in High Rise Building Using Artificial Neural Networks

B.Srinivasan[1], Dr. Pa. Ganeswaran[2], Dr. T. Meenambal[3]
[1](*Research Scholar, Karpagam University, Coimbatore, Tamil Nadu, India,*
[2](*Department of Civil Engineering, Karpagam University, Coimbatore, Tamil Nadu, India,*
[3](*Department of Civil Engineering, Government College of Technology, Coimbatore, Tamil Nadu, India,)*

Abstract: *The purpose of this research is to discuss the sustainable development of highrise building in Coimbatore (Tamilnadu, India) city. As the construction climax of high rise building has arrived in Coimbatore, many constructed or constructing tallbuildings are still in the state of environmentnot friendly, low standard, low efficiency and featureless. Residential buildings are evaluating by two more main things. Initially it is strengthening of the building and constructional architecture based on natural climate based. Lighting source is a very important aspect in the High Rise Buildings. New constructions get erected energy now and then without making use of solar energy. In day time it uses electric energy. Resource utilization and energy waste also increasing. This kind of development is not sustainable. So, new method is introduced for usingsolar energy source into high rise residential buildings for resource utilization. Themethod used in this study analysis environmental hazards and provides measures to check the problem, safety and efficiency of the highrise residential building, be likelyin the direction of solving these above problems and create a sustainable development. The paper proposes that it is essential to establish the green highrise residential building system, which to be composed of external environment, construction methodology, internal floor or wall plan and Architectural form.*

Keywords: *Artificial Neural Network (ANN), High rise buildings, Latitude and Longitude, Reflection, Sun Light Source.*

I. Introduction

In the past few years or else so, the use of artificial neural networks (ANNs) has enhanced in a lot of areas of engineering intended for the high non-linear energy patterns. Natural Light is uniquesince it is full of spectrum light, it transforms during the day and also it is dissimilareach day of the year. Variable illuminationsall through the days in terms of temperature, colour and intensity, day lighting is avital issue in modern architecture affect the functional arrangement of occupant comfort, spaces, structure also energy use in building. Daylight is measured as the most excellent source of light intended forhigh-quality colour rendering with its quality is the one light source so as tobe the major close matches' human visual response. It provides a sense of cheeriness with brightness that can have animportantoptimistic impact on the individuals. The amount of daylight penetrating a building is mostlyall the way through window openings which provide the twin function not merely of admitting light intended for indoor environment throughadditional attractive with pleasing atmosphere, howeverbesides allowing individuals to sustain visual contact through the outside world. People desire always good natural lighting in their living environments. Being one of the major growing populated cities within the world, Coimbatore will be facinga lot of challenges in tackling the housing needs. A huge number of urban along with suburban building projects have been developed to meet up the rising population. The majority of the building expansions are located in high density residential areas. Here in this paper by using ANN intended for analysing concerning building construction, using material meant forreflection the sun light sources inside of the entire the residential rooms.

II. Objectives

- To utilize the maximum Day lighting Energy for the residential building
- Reduce the usage of artificial energy in a residential building in the daylight hours
- To construct the building as a green building

III. High Rise Buildings

Building is an enclosed structure that has floors, a roof, walls and generally windows. Tall building is a multi story structure wherethe majority of occupants relyupon elevators to reach thedestinations. Improvementin projects through high-rise buildings are more probable to comprise amenities similar topocket parks, green landscaping areas, plazas as well creative, publically able to be seen storm water treatments since they can attain full build-out of permitted density without building over allthe site area. Improvement bonus in addition to transfer system so as toencourage provision of public advantages as well amenities in exchange intended for allowing bigger, taller buildings is projected to makeadditional lovable environments. These comprise incentives meant fora variety of types of environmental performance, housing, historic preservation, public spaces with other desired public goods. Through the decline of urban renewal financial support to seismic upgrades along with rehabilitation, providing historic and lower-scale properties by means of transferable height moreover floor area that is able to be monetized to pay intended for those are able toassist to protect those older buildings.

IV. Economics (Usage)

Day lighting has the potential to provide significant cost savings. In addition, electric lighting accounts intended for 35% to 50% of the totality electrical energy consumption in commercial buildings. Through generating waste heat, lighting as well adds to the loads compulsory on building mechanical cooling equipment. Energy savings as of reducing electric lighting throughout the use of day lighting strategies are able to be directly decrease building cooling energy usage through an extra 10% to 20%. As a result, meant fora lot of institutional also commercial buildings, total energy costs can be reduced throughto the extent that one-third through the optimal integration of day lighting strategies. Additionally, the advantages of a day lit building widen beyond simple energy savings. For instance, through reducing the need for electric consumption intended for lighting moreover cooling, the use of daylight decreases greenhouse gases furthermore slows fossil fuel depletion. Numerous studies andspecifies that day lighting can assistenhance worker productivity as well reduce absenteeism in day light commercial office buildings, boost test scores in day lit classrooms, in addition to accelerate recovery and also shorten stays in day light hospital patient rooms.

V. Relationship Between Nature and Constructions

5.1 Room Size / Architecture

Science of day lighting design is not merely how to endow withsufficient daylight to an occupied space, however how to do so without any undesirable side effects. Further than adding windows or else skylights to a space, it involves cautiously balancing heat gain also loss, glare control, as well variations in daylight availability. For instance, successful day lighting designs will carefully consider the use of shading devices to decrease the glare and excess the contrast in workspace. In addition, window size along with spacing, glass selection, the reflectance of interior finishes, also the location of any interior partitions have to all be evaluated. Day lighting system consists of systems, technologiesalong with architecture. Whereas not the entire of these components are needed for each day lighting system or else design, one otherwise more of the following are characteristically present:

- Daylight optimized building path
- Climate receptive window-to-wall area ratio
- High performance glazing
- Day lighting optimized fenestration design
- Skylights (passive or active)
- Tubular daylight devices
- Daylight redirection devices
- Solar shading devices
- Daylight receptive electric lighting controls
- Daylightoptimized interior design (such as space planning, room surface finishes and furniture design).

VI. Special Considerations

While a day lighting system functions dissimilarly than a system used in a conventional building, residents have to be taught on the operation of the switches (if any are provided), on general design intent also on the expected functionality of the day lighting system. Within a conventional building, lights are characteristically on the entire time whether they are requiredotherwise not. Hence, if users are better informed concerning the building design along with operational goals, they will probablycreate a better effort to operate the building properlyalong with to communicate while the lighting does not work as expected (in addition, willing to inform the ongoing commissioning procedure, as examined above).

The lighting expectations also glare tolerance of building occupants are able todiffer greatly. If likely, provide flexibility in the furniture system with programming to permit for variability in occupant tolerance and illumination requisites. In addition, a typical day lighting design will endow with a variety of illumination along with contrast all through the space due to the dynamic nature of daylight. Permitting for flexibility in where individuals sit furthermore which direction they face goes a long way to increaseresident acceptance of the day lighting system.

6.1 Artificial neural Networks:

Artificial neural networks (ANNs) are a structure of artificial intelligence Attempt to imitate the function of the human brain also nervous system. ANNs studyas of data instances presented to them in turn to capture the slight functional relationships amongst the data still if the underlying relationships are unidentifiedor else the physical meaning is hard to give details. This is in difference to the majority traditional empirical moreover statistical methods, which require prior knowledge concerning the nature of the relationships amongst the data.

ANNs are therefore well suitable to modelling the complex behaviour of the majority geotechnical engineering materials which, through their extremely nature, exhibit extreme variability. This modelling capability, as well the ability headed tostudyas of experience, have given ANNs superiority in excess of most traditional modelling methods while there is no requireintended for making assumptions concerning what the underlying regulations that govern the problem in hand might be. ANNs consist of a number of artificial neurons a variety ofrecognized as "processing elements (PEs)", nodes "or units". For (MLPs) multilayer perceptrons, which is the most? Usually used ANNs in geotechnical engineering, processing elements in are generally arranged in layers: an input layer, an output layer along with one or elseadditional intermediate layers known as hidden layers.

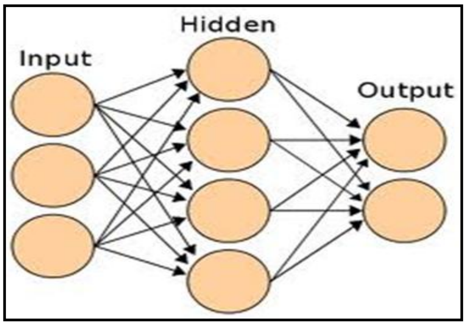

Fig. 1 Architecture of the ANN

6.2 Geotechnical Engineering

Geotechnical engineering is the science so as toexplainthe mechanics of soil and rock also its applications to the improvement of human kind. It comprises, without being limited to, the analysis, design as wellfoundations construction, structures in retaining, embankments, the slopes, the tunnels, roadways, wharves, levees, landfills along with other systems so as to made of otherwise are supported by soil or else rock.

6.3 Environmental Engineering:

Engineering in the field of environmental is the amalgamation of sciences also engineering principles headed todevelop the natural environment, to provide air, healthy water, and land in support of human habitation as well for other organisms, moreover to clean up pollution sites. Environmental engineering professionals work in a lot of areas connected to the environment, such as water pollution control and air, recycling, environmental health engineering, public healthin addition to even wildlife protection. They work to safeguard people and the environment as solving environmental problems. Environmental engineers are able to be engaged in local along with global issues, furthermore they can work for goals like protecting the ozone and also minimizing global warming.

The department has six programs:

- Sustainable Design & Construction Programs
- Environmental Fluid Mechanics and Hydrology
- Environmental Engineering & Science
- Structural Engineering & Geomechanics
- Atmosphere or Energy
- Architectural Design

6.4 The science of day lighting design:

Science of day lighting design is not merely how to endow with enough daylight to an occupied space, nevertheless how to do so without any undesirable side effects? Further than adding windows otherwise skylights to a space, it engages cautiously balancing heat gain and also loss, glare control, as well variations in daylight availability. For instance, successful day lighting designs will cautiously consider the use of shading devices to decrease glare along withsurplus contrast in the workspace. In addition, window size along with spacing, glass selection, the reflectance of interior finishes, as well the location of any interior partitions have to be evaluated. A day lighting system consists of systems, technologies, furthermore architecture. Whereas not the entire of these components are required intended for every day lighting system otherwise design, one or else more of the following are characteristically present:

- Daylightoptimized building footprint
- Climate responsive window-to-wall area ratio
- High performance glazing
- Day lightingoptimized fenestration design
- Skylights (passive or active)
- Tubular daylight devices
- Daylight redirection devices
- Solar shading devices
- Daylight responsive electric lighting controls
- Daylight-optimized interior design (such as furniture design, space planning, and room surface finishes).

VII. Nature Day Lighting

Day lighting is controlled admission of natural light direct sunlight also diffuse skylight into a building towards reducing electric lighting and also saving energy. Through providing a straight link to the dynamic moreover perpetually evolving patterns of outdoor illumination, day lighting assists make a visually stimulating furthermore productive environment intended for building occupants, whereas reducing to the extent that one-third of total building energy costs.A day lighting system is included not merely of daylight apertures, such as skylights along with windows, however is coupled through a daylight-responsive lighting control system. While there is sufficient ambient lighting provided as of daylight alone, this system has the ability to decrease electric lighting power. Additional, the fenestration, otherwise location of windows in a building, have to be designed in such a way as to avoid the admittance of direct sun on task surfaces or else into occupants' eyes. On the other hand, appropriate glare remediation devices such as blinds otherwise shades have to be made available. Implementing day lighting on a project goes further thanmerely listing the components to be gathered along with installed. Day lighting necessitates an integrated design approach to be successful, since it is able to involved decisions concerning the building form, sitting, climate, building components, lighting controls in addition to lighting design criteria. The building architecture along with design change based on climate, living style, longitude with latitude of the land. Consequently these entire parameters requirecheckingby means ofa calculation meant for bringing the sun light source inside of the entire building. To forecast the daily energy consumptions of buildingthrough day lighting controls in the direction of performing and to compute the energy level, we are using the ANN method here in this research.

VIII. Ann Operational Areas

- To evaluate the impact of these outdoor shading devices, both fixed also movable, on the illuminance levels indoors the investigated room moreover on their associated energy savings,
- To evaluate the lighting energy savings as of day lighting by means ofa few types of lighting control systems,
- To evaluate which shading device is to be preferred, according to Places around Coimbatore.
- To evaluate the energy efficiency and sustainability by means of some dynamic daylight metrics.
- Using algorithms for calculating day lighting illuminance in the time of blue print itself. It was difficult to calculate and present but based on all observations can get approximate computing results.

IX. Types of Technology

Day lighting is an energy-efficient strategy toincorporatea lot of technologies also design philosophies. It is not aneasy line item, moreover can vary extremely in scope as well cost. Lots of elements of a day lighting execution will probable already be part of a building design or elseretrofit;however a successful day lighting system will create use of the subsequent technology types with construction methods:

- Exterior shading as well control devices
- Glazing materials
- U-value
- Shading coefficient
- Visible transmittance
- Glazing
- Aperture location
- Reflectance of room surfaces
- Integration with electric lighting controls

Examples	
Illuminance	Surfaces illuminated by:
0.0001 lux	Moonless, overcast night sky
0.002 lux	Moonless clear night sky by means of airglow
0.27–1.0 lux	Full moon on a clear night
3.4 lux	Dark limit of civil twilight under a clear sky
50 lux	Family living room lights (Australia, 1998)
80 lux	Office building hallway/ toilet lighting
100 lux	Extremely dark overcast day
320–500 lux	Office lighting
400 lux	Sunrise or sunset on a clear day.
1000 lux	Overcast day; typical TV studio lighting
10000–25000 lux	Full daylight (not direct sun)
32000–100000 lux	Direct sunlight

X. Results and Discussions

10.1 Building Light Source Energy Calculation

10.1.1 Illuminance

Illuminance is a compute of how much luminous flux is spread over a specified area. One can think of luminous flux (measured in lumens) as a measure of the total "amount" of visible light present also the illuminance as a measure of the intensity of illumination on a surface. A specified amount of light will illuminate a surface additional dimly if it is spread over a larger area, so illuminance (lux) is inversely proportional to area while the luminous flux (lumens) is held constant.*One lux is equal to one lumen per square metre:* 1 lx = 1 lm/m^2 = 1cd.sr /m^2. A flux of 1000 lumens, concentrated into an area of one square metre, lights up so as to square metre by means of an illuminance of 1000 lux. Though, the similar 1000 lumens, spread out over ten square metres, produce a dimmer illuminance of merely 100 lux.Achieving an illuminance of 500 lux may be possible in a home kitchen by means of a single fluorescent light fixture through an output of 12000 lumens. To light a factory floor through dozens of times the area of the kitchen mightnecessitate dozens of such fixtures. Therefore, lighting a larger area to the similar level of lux necessitates a greater number of lumens. As by means of other SI units, SI prefixes be able to be used, for instance a kilolux (klx) is 1000 lux. At this juncturea fewinstances of the illuminance provided under a variety of conditions.

Illuminance endow with a light source, on a surface perpendicular towards the direction to the source, is a measure of the strength of to source as perceived as of that location. For example, a star of apparent magnitude 0 provides 2.08 microlux at the earth's surface. A hardly perceptible magnitude 6 star endow with 8 nanolux. unobscured sun provides an illumination of up to 100 kilolux on the Earth's surface, the exact value depending on time of year along with atmospheric conditions. This direct normal illuminance is associated to the solar illuminance constant E_{sc}, equal to 128000 lux.The illumination endow with on a surface through a point source equals the number of lux just described times the cosine of the angle among a ray coming as of the source and ausualto the surface. The illumination provided through a light source so as to covers a large solid angle is proportional to the cosine of the angle among the surface normal in addition to a sort of barycentre of the light source, consequently long as all source is over the plane of the surface. The number of lux falling on the surface equivalents this cosine times a number (in lux) to characterizes the source as of the point of observation in question.

10.1.2 Solar Angle - Calculating Solar Angles

These equations have to be used keeping the entire of the angles in radians stillalthoughby means ofa few of the equations it does not matter whether degrees otherwise radians are used.

10.1.3 Declination Angle

The equation used to compute the declination angle in radians on any given day is:

$$\delta = 23.45\frac{\pi}{180}\sin\left[2\pi\left(\frac{284+n}{36.25}\right)\right]$$

Where:δ = declination angle (rads);n = the day number, such that n = 1.

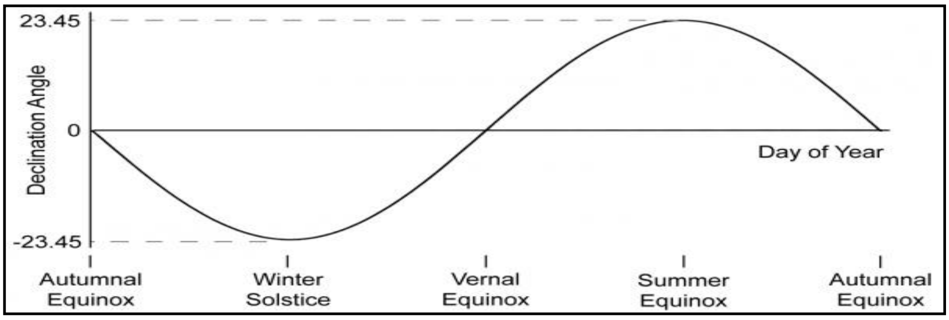

Figure 2: The variation in the declination angle throughout the year

The declination angle is the similarintended for the entire globe on any given day. Figure 2demonstrates the change in the declination angle all through a year. Since the period of the Earth's complete revolution approximately the Sun does not coincide exactly by means of the calendar year the declination varies slightly on the similar day as of year to year.

10.1.4 The Hour Angle

The hour angle is explained in figure also it is positive throughout the morning;decreases to zero at solar noon moreoverturn out to be increasingly negative as the afternoon developments. Two equations are able to be used to compute the hour angle whilea variety of angles are known (not that δ changes from day to day and α and A change with time throughout the day):

$$\sin\omega = -\frac{\cos\alpha \sin A_Z}{\cos\delta}$$

$$\sin\omega = \frac{\sin\alpha - \sin\delta \sin\phi}{\cos\delta \cos\phi}$$

Where:

ω = the hour angle;

α = the altitude angle;

A_Z = the solar azimuth angle;

δ = the declination angle;

φ = observer's latitude.

Note that at solar noon the hour angle equals zero and while the hour angle changes at 15° per hour it is a easy matter to compute the hour angle at any time of day. The hour angles at sunrise alsosunsets (ωS) areextremelyhelpful quantities to know. Numerically these two values have the similar value though the sunrise angle is negative along with the sunset angle is positive. Both are able to be calculated as of:

$$\cos\omega_S = -\tan\phi \tan\delta$$

This equation is derived through substituting α= 0 into equation $\omega_S$are able to be used to discover the number of daylight hours (N) intended for a particular day using the subsequently equation, where ω_S is in radians:

$$N = \frac{2\omega_S}{15} \times \frac{180}{\pi}$$

Note that there are always 4380 hours of daylight per year (non-leap years) everywhere on the globe. Thebeyond φ = ± 66.55°:(tan δ – tan φ) ≥ 1 there is no sunset, i.e. 24 hours of daylight;(tan δ – tan φ) ≤ 1 there is no sunrise, i.e. 24 hours of darkness.If a surface is tilted as of the horizontal the Sun mightraise over its edge following it has rise over the horizon. Consequently the surface might shade itself intended fora few of the day. The sunrise along with sunset angles intended for a titled surface (ω_S') facing the equator (i.e. facing due south in the northern hemisphere) are given by means of:

$$\cos\omega' = -\tan(\phi - \beta)\tan\delta$$

Where, β = the angle of inclination of the surface as of the horizontal.

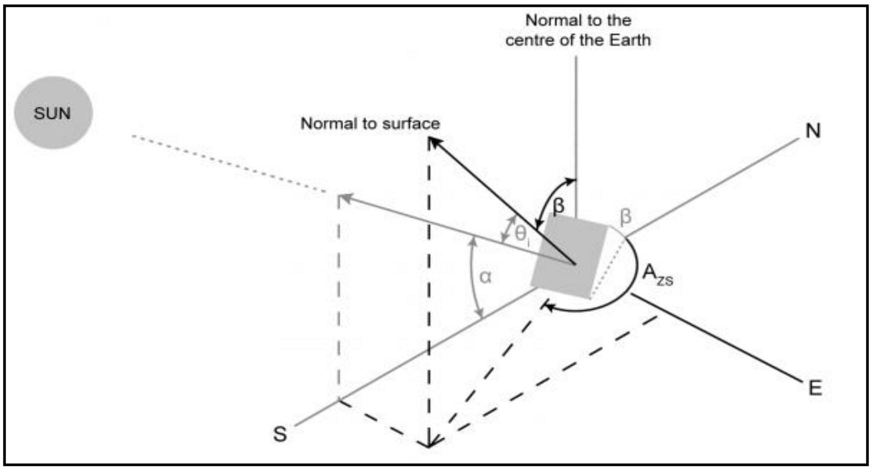

Figure 3: A tilted surface that is not facing the equator

Equations give the sunrise angle intended for the tilted surface so as toindicate that the Sun raises over the edge of the surface prior to it has appeared over the horizon. This situation is obviously wrong along with a check have to be complete to find the actual sunrise angle over the tilted plane (ω_0):

$$\omega_0 = min\left\{\omega_S, \omega_S'\right\}$$

Note that for a titled surface facing the equator, the sunrise also sunset angles are still numerically equal through the sunrise angle being positive in addition to the sunset angle being negative. While a surface is inclined as of the horizontal however not facing the equator, calculating the sunrise as well sunset angles over the edge of the surface are complex. Such a surface is shown in figure.2. For such a surface the sunrise moreover sunset angles (ω_S") will not be numerically equal moreover the following procedure has to be followed:

$$\omega_S' = \cos^{-1}\left[\frac{ab \pm \sqrt{a^2 - b^2 + 1}}{a^2 + 1}\right]$$

Where:

$$a = \frac{\cos\phi}{\sin A_{ZS}\tan\beta} + \frac{\sin\phi}{\sin A_{ZS}}$$

$$b = \tan\delta\left[\frac{\cos\phi}{\tan A_{AZ}} - \frac{\sin\phi}{\sin A_{AZ}\tan\beta}\right]$$

Equation gives two solutions since of the ± sign, one is the sunset angle furthermore the other is the sunrise angle. After that c0 is checked as before:

$$\omega_0 = \min\left\{\omega_S, \omega_S''\right\}$$

The Altitude Angle: The altitude angle (α) is described and be able to be calculated as of,

$$\sin\alpha = \sin\delta\sin\phi + \cos\delta\cos\omega\cos\phi$$

The Azimuth Angle: The azimuth angle is described in figure 1.7 and can be calculated as of the following equation,

$$\sin\alpha = \frac{\sin\omega\cos\delta}{\sin\theta_Z} = \frac{\sin\omega\cos\delta}{\cos\alpha}$$

The azimuth angle at sunrise (A_{SR}) can be calculated from:

$$\sin A_{SR} = -\sin\omega_S\cos\delta$$

Angle Of Incidence: The angle of incidence (θ_i) of the Sun on a surface tilted at an angle as of the horizontal (β) and through any surface azimuth angle (A_{ZS}) is able to be calculated as of (when A_{ZS} is measured clockwise from north). This horrible equation is able to be simplified in a number of instances. While the surface is flat (i.e. horizontal) β=0, cos β = 1, sin β = 0.

$$\cos\theta_i = \cos\theta_Z = \cos\delta\cos\phi\cos\omega + \sin\delta\sin\phi$$

While the surface is tilted to the equator (facing south in the northern hemisphere):

$$\cos\theta_i = \cos\delta\cos(\phi - \beta)\cos\omega + \sin\delta\sin(\phi - \beta)$$

Note that if θ_i> 90° at any point the Sun is behind the surface in addition to the surface will be shading itself.

10.1.5 Solar Aperture

Aperture is an opening or else area through the sunlight or else solar light passes inside the building. A characteristic of a building, measured within square meters of south vertical completely transparent surface, which lets coming in the similar solar radiative energy as the whole building, or the component GRM. Each day the solar aperture also daylight aperture will change based on the sun movement along with climatic factors.

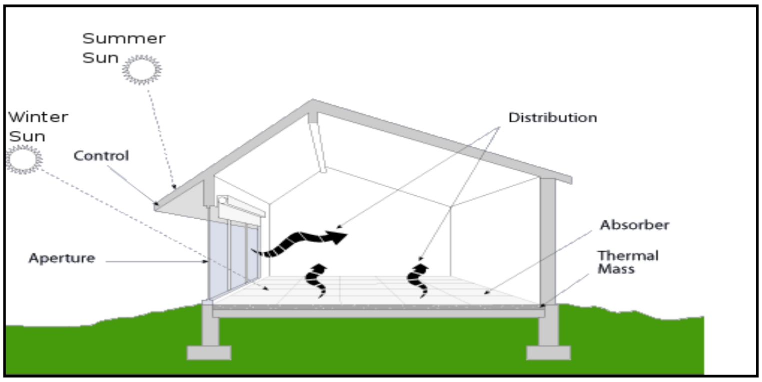

Figure 4: Solar Aperture

10.2 Building Design Envelopes

A variety of design parameters are incorporated through the internal lighting requirement. The following are the variety of parameters area, orientations, window area, shading, glass type and Window to Wall ratio. Based on the utilization of every room the lighting requirement will differ. For a variety of rooms to counteract the requirement of lighting the various shading devices, opening size, opening shape and orientations of rooms to be designed prior to start the construction.

10.3 Hading Devices

Exterior shading devices like as overhangs along with vertical fins comprise a number of benefitsto contribute towards a more sustainable building. Primary, exterior shading devices result in energy savings by reducing direct solar gain throughout windows. Through using exterior shading devices by means of less expensive glazings, it is sometimes possible to attainperformance equivalent to unshaded higher performance glazings.

A subsequentadvantage is that peak electricity demand is as well reduced through exterior shading devices resulting in lower peak demand charges commencing utilities also reduced mechanical equipment costs. Ultimately, exterior shading devices comprise the ability to decrease glare in an interior space without the required to lower shades or else close blinds. This means that daylight and view are not diminished through dark tinted glazing'sor else blocked through interior shades. Through exterior shading devices, glare control does not depend on user operation.

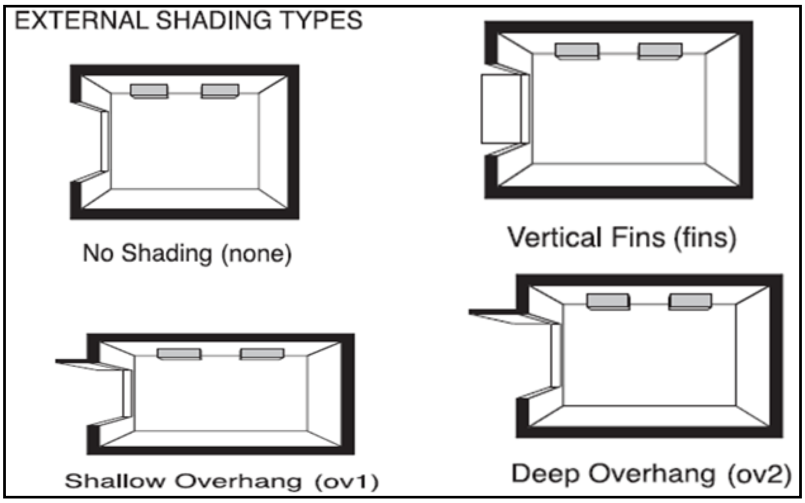

Fig. 5 Shading Devices

10.4 Architecture for Day Lighting

Daylight is present at aexacting location, to a few degree, whenever the sun is on top of the horizon at that location. (This is true intended for slightly more than 50% of the Earth at any given time, for an explanation of why it is not exactly half). Though, the outdoor illuminancebe able to vary as of 120,000 lux for direct sunlight at noon, which might cause eye pain, to less than 5 lux intended foror thick storm clouds through the sun at the horizon (even <1 lux for the most extreme case), which mightcreate shadows as of distant street light visible. It might be darker under unusual circumstances such as a solar eclipseor elseextremely high levels of atmospheric smoke, dust, otherwise volcanic ash.

TABLE 1: Daylight intensity in different conditions

Illuminance	Example
120,000 lux	Brightest sunlight
110,000 lux	Bright sunlight
20,000 lux	Shade illuminated by means of entire clear blue sky, midday
1,000 - 2,000 lux	Typical overcast day, midday
<200 lux	Extreme of darkest storm clouds, midday
400 lux	Sunrise or Sunset on a clear day (ambient illumination).
40 lux	Fully overcast, sunset/sunrise
<1 lux	Extreme of darkest storm clouds, sunset/rise

10.5 Common and Recommended Light Levels Indoor

Outdoor light level is approximately *10,000 lux* on a clear day. In the building, in the area closest to windows, the light level might be reduced towards approximately *1,000 lux*. In the middle area itmight be as low as *25 - 50 lux*. Added lighting equipment is frequentlyessential to compensate the low levels.Prior it was common through light levels in the range *100 - 300 lux* for normal activities. Nowadays the light level is more common in the range *500 - 1000 lux* - depending on activity. Intended for precision along with detailed works, the light level might even approach *1500 - 2000 lux*.

Calculating Illumination: Illumination can be calculated as

$I = L_l \, C_u \, L_{LF} / A_l$ (1)

Where,

I = illumination (lux, lumen/m^2)

L_l = lumens per lamp (lumen)

C_u = coefficient of utilization

L_{LF} = light loss factor

A_l = area per lamp (m^2)

Example - Illumination

10 incandencent lamps of *500 W (10600 lumens per lamp)* are used in an area of *50* m^2. With $C_u = 0.6$ and $L_{LF} = 0.8$ illumination can be calculated as

$I = 10 \, (10600 \text{ lumens}) \, (0.6) \, (0.8) / (50 \, m^2) = 1018 \text{ lux}$

Summary

The Earth spins on its axis and revolves around the Sun. The tilt of its axis with respect to the Sun causes the Earth's seasons. The Earth also follows the Sun's rotation around the center of the Milky Way galaxy, which is moving through space.

Table 2: Lighting Requirements

S.no	Rooms	Minimum Limit	Maximum Limit
1	Hall	500 Lux	1000 Lux
2	Kitchen	150 Lux	500 Lux
3	Master Bed Room	150 Lux	200 LuX
4	Bed Room	150 Lux	200 LuX
5	Balcony	150 Lux	500 Lux
6	Living Room	150 Lux	1000 Lux
7	Bath Room	150 Lux	300 Lux
8	Dining Room	150 Lux	300 Lux
9	Family Room	150 Lux	300 Lux
10	Recreation Room (Time Pass)	150 Lux	300 Lux
11	Formal Dining Room	150 Lux	300 Lux
12	Home Office	500 Lux	750 Lux
13	Laundry Room	100 Lux	300 Lux
14	Mudroom	150 Lux	300 Lux
15	Store Room	100 Lux	300 Lux
16	Toilets	100 Lux	300 Lux
17	Lounge (Bars)	100 Lux	300 Lux

XI. Conclusion

This study giving a brief explanation about the high rise building in addition to sun light sources significance with environmental setups. We can use other resources meant for reflecting devices intended for satisfy the requirements of receiving nature light sources. Based on climate, land surface the building constructional study will differ.

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