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Review on Green Buildings

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ABSTRACT

Green Building is also known as green establishment or bearable building. it is the practice of develop structures and using advancement that are geographically responsible and it is resourceful and efficient throughout a green establishment life-cycle, from sitting to design, construction, procedure, maintenance, rejuvenation, and dismantling. This practice explores and accompaniment the classical building construction which concerns of economy, usefulness, longevity, and comfortness. So that new technologies are constantly being developed to accompaniment current application in creating greener structures, the most common objective is that green buildings are construct to less the overall impact of the building environment on human health and the natural environment by efficiently usage of energy, water, and other resources and it can also be done by Protecting occupant health and improving employee.

Keywords : Green Building, Structure Design Efficiency, Energy Efficiency, Water, Materials Efficiency, Indoor Environmental Quality, TVOC, VOC

I. INTRODUCTION

Green building comes together a variety of application and techniques to reduce and ultimately get rid of the effects of buildings on the environment domain and human health. It mostly emphasizes taking advantage of renewable resources, basically using sunlight through passive and active solar and photovoltaic techniques and it is using plants and trees through green roofs, rain gardens as well as for reduction of rainwater run-off.

There are also many other techniques, such as using packed gravel or permeable concrete in place of conventional concrete or asphalt to enhance replenishment of ground water, are used as well. While the application, or technologies, involve in green building are constantly evolving and it may be differ from region to region, so that there are fundamental principles that persist from which the method is derived: Structure Design Efficiency, Energy Efficiency, Water and Materials Efficiency, Indoor Environmental Quality improvement, Operations and Maintenance Optimization, Reduction in Waste and Toxics. The necessity of green building is an optimization of one or more of these principles. Also, with the proper cooperative design, individual green building technologies may work together to produce a greater combined effect. On the decorative side of green architecture or bearable design is the philosophy of designing a building that is in coordination with the natural features and resources available surrounding the site. There are various key steps in designing sustainable and bearable buildings: specifically 'green' building materials from local resources, reduce loads, optimize systems, and it will generate on-site renewable energy.

In a present scenario, Demand for energy is increasing day by day and is likely to enhance in tune with industrialization and / urbanization. Building consumes more than 35% of total energy consumption and so that the demand is to preserve energy in various ways by all means. Amongst the several applications of energy of the buildings and utilization of day lighting, is hence the most simple and direct option as well as most advantageous one in view of high-energy consumption for these applications.

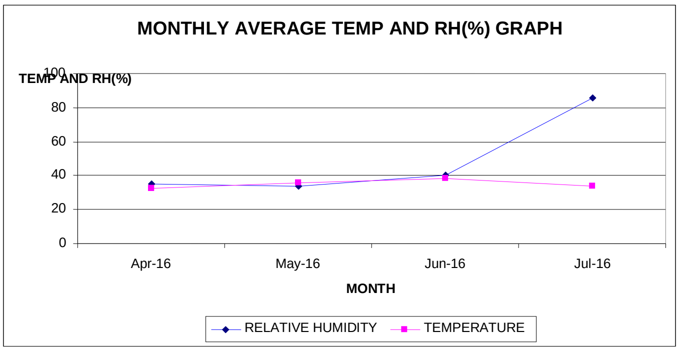
In this paper it has been tried to specify quantitavily the energy saving in the Building of IIMT College of Engineering, Greater Noida. Temperature, Relative Humidity were measured daily of two hours intervals (6.00am to 6.00 pm) for four months (April-2016 to July-2016) in different locations of the college buildings. But this study is of limited in nature, and it is consider having definite conclusion, it should be extended to several buildings, it is highly recommended to green building concepts.

Thermal Comfortness: various environmental parameters were measured within the building to specify thermal comfortness. In this case three measured parameters were temperature at location, relative humidity at specified location, and percent predicted dissatisfied (PPD). The result of the thermal comfort measurements are presented in Table given as the average measured values for a morning session and an afternoon session, set of measurements performed on each of the two days of sampling. Each value shown in the table is the average of between two and six measurements taken throughout the entire college at various locations. Temperature was fairly uniform throughout all zones, as indicated by the fact that standard deviations (this is not given in the table) of each set of measurements were always within 5% of the average, and all measurements were between 21ºC (70°F) and 25°C (77°F). The relative humidity at location was between 20% and 35%. All of the PPD measurements were below 10%, which is indicative of acceptable conditions for thermal comfort based on the assumptions of clothing and activity levels used in performing the measurements

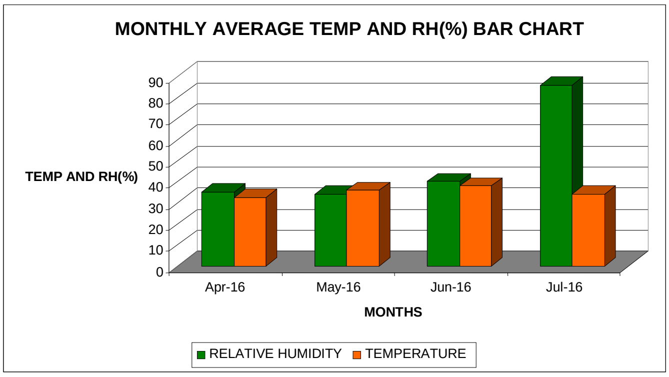
STATION: IIMT College of engineering, Greater Noida Monthly Average Temperature (°C) and Relative Humidity (%) from April-2016 to July-2016

Month	Monthly Average Temp °C	Monthly Average RH (%)
April-2016	31	36
May-2016	37	33
June-2016	38	39
July-2016	34	76

Monthly Average Temperature °C and Relative Humidity (%) Graph from April-2016 to July-2016.



Monthly Average Temperature (°C) and Relative Humidity (%) Bar Chart from April-2016 to July-2016.



II. CONCLUSION

The term "green building" is useful in to describe buildings that are designed, developed, and operated, to have a minimum effect on the environment, both indoor and outdoor. Most discussions and conclusion of green buildings refer to the significance of providing an acceptable, if not exceptional indoor environment for the building occupants. However, these discussions based on indoor environmental quality have not included many specific criteria for building design, construction, or operation. Building projects described as green building demonstrations mostly make reference to indoor air quality, but these references are often general and qualitative. In addition, rating systems that have been developed to assess the "greenness" of a building are based largely on design features and are not particularly specific with respect to indoor air quality.

This paper basically reviews the features of indoor air quality that are considered in green building discussions, demonstration projects, and rating systems. These green building features are discussed in terms of their completeness and specificity, and are compared to other guidance on building design, construction, and operation for good indoor air quality. A case study of indoor air quality performance in a green building is presented. This study includes a description of the indoor air quality features of the building and the results of a short-term indoor air quality evaluation of the building involving ventilation and contaminant concentration measurements.

The manner in which indoor air quality is addressed in discussions of green buildings and green building relating systems was reviewed and discussed. In reviewing green building demonstration projects, there are many issues related to indoor air quality which were not discussed. The issues based on green building that were discussed, to varying degrees of specificity, were building ventilation and material selection for low VOC emissions. the indoor air quality issues were not always fully addressed with respect to their "greenness", e.g., the trade-off between increased ventilation and energy use. This is often due to the inherent difficulty in making these trade-off decisions between difficult-to-quantify parameters. There are various Issues related to indoor air quality frequently were not mentioned at all, and only the energy-related issues were addressed. Based on the reviewed rating systems and demonstration projects, it appears that demonstration projects need to be more comprehensive and specific in addressing indoor air quality issues.

Indoor air quality guidance in general, including green building rating systems, is challenged by the current limits of knowledge and the inability to be quantitative on all issues, e.g., VOC concentration limits and emission guidelines. Specifically, there are no standard methods for determining emission characteristics of materials, and there are inadequate data concerning the health effects of the compounds emitted. This problem not only exists in the emission test laboratories but is further confounded by the unlimited possibilities of material combinations, loadings, and building operating conditions that can occur within the built environment.

Indoor air quality is an important feature in mostly all discussions of green buildings and is featured prominently in current green building rating systems. However, these rating systems are focused primarily on building design as opposed to actual performance. As has been seen in many studies of building performance, design goals are not always realized in practice due to short comings in building construction, operation, and maintenance. Since there is no reason to expect that green buildings will not have similar problems, performance testing is key to determining whether indoor air quality design goals have been realized in green buildings. This was revealed with respect to several indoor air quality issues addressed in the case study of the green building demonstration projects presented in this paper. TVOC measurements revealed an episode of elevated source strength significantly greater than those measured earlier the same day and the next day, indicating that even though much attention was given to the selection of building materials, unanticipated sources can still be introduced into the building. Elevated carbon dioxide levels appeared to be related to the outdoor air ventilation rates. Even though the building ventilation system was designed with ventilation rates well in excess of those recommended in ASHRAE Standard 62, the actual rates at the time of the measurements were below the design values on most of the floors. There are various reasons for the discrepancy between the design and actual ventilation rates was not analysed, but it is more likely to be an operational issue than a design issue. While differences between design and operation are not unusual in buildings, their existence points to the need for performance monitoring in green and other buildings

III. RECOMMENDATION

There are following recommendation have been made for Energy Conservation in Building and its Environmental Benefits (Green Buildings):

(1) The direction of wind and velocity must be studies as per seasonal variation and building must be oriented.

(2) The Sun rise and Sun set and its effect on building radiations must be taken into consideration and accordingly. The material used for the building must be selected specially for interior as well as exterior design of the building.

(3) The effect of rain water on the building and its surrounding must be considered for the thermal

comfortness of the building along with reduction in Air- Conditioning through ventilation.

(4) Theventilation cover should be design as per the eco-inventory of the building plan and accordingly the vegetation cover that is selection of trees, selection of shrubs and ground cover must be taken into consideration.

(5) The rain water harvesting for the ground water improvement with respect to quality and quantity must be considered with concept of zero rain water discharge out of the building.

Finally the relation-ship of the building with soil, water and vegetation must be considered in order to improve the environment of the building and its surrounding.

IV. RESULTS AND CONCLUSION

- ✓ The compressive of the dismantled fresh concrete aggregate aggregate is lower than the .pre –stressed concrete
- ✓ The fresh aggregate concrete absorbs less water than the recycled aggregate concrete.
- ✓ The average modulus of elasticity is higher than that of its Standard value.
- ✓ All the concretes presented workability satisfactory, and the concrete with recycled aggregate behaves like the conventional concretes, when RCA is used in the condition previous wetting.
- ✓ One of the factors which is most important that justify this is the fact that RCA is a porous aggregate, summed to the emptiness let by the drying of the concrete that are compressible.

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