

Case Study on Multi Dwelling Building and Rating of a Building According to IGBC Green Homes System

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Abstract— Green building technology is new technology in which protect the environment, economy, and human health etc. points are includes. Now a days human face many problems and these problem destroy the environment. For improve our society from environment and economic point of view green building technology are introduce. In green building technology many parameters are use like water reuse, waste of water, energy conservation, vegetation, site selection etc. Now a day water and energy is the most needed things for human survivor and green building technology help to save these things. In this project we study on a multi dwelling building and rank the building according to IGBC parameter than apply deferent type of green building technology to improve the ranking according to IGBC. Use of LED light to reduce energy loses, use solar plates to produce electricity, solar heater for water heating, reuse of waste water in toilet flushing, rain water harvesting, plantation for reduce environment harm, use different materials for protection of the buildings from the infra radiation etc.

Keywords— Green building; vegetation; IGBC; infra radiation; flushing

I. INTRODUCTION

Buildings consume 65-70% electricity of the nation’s and a huge part of materials, water. Green building use resources like energy, water, materials, land more efficiently than local buildings that are normally constructed. Green building improve human comfort, health, and productivity more effectively [1]. The Indian green building council and Leadership in Energy and Environmental Design (LEED) to provide a guideline and rating system for green buildings. According to IGBC the rating system. It is recognized that local buildings consume more energy, water, materials etc. with respect to the green building.

Certification Level	Recognition
Certified	Best Practices
Silver	Outstanding Performance
Gold	National Excellence
Platinum	Global Leadership

The table shows the studies on local multi dwelling building and rated the building according to the IGBC green home system and use some technology for improve the grade of the building in IGBC rating system. For case study we take a local multi dwelling hostel building

Green building brings together a vast array of practices, techniques, and skills to reduce and ultimately eliminate the impacts of buildings on the environment and human health. It often emphasizes taking advantage of renewable resources, e.g., using sunlight through passive solar, active solar, and photovoltaic equipment, and using plants and trees through green roofs, rain gardens, and reduction of rainwater run-off. Many other techniques are used, such as using low-impact building materials or using packed gravel or permeable concrete instead of conventional concrete or asphalt to enhance replenishment of ground water.

II. TECHNOLOGY USED IN STUDY

In this paper we rated the multi dwelling building according to IGBC and ranking the building. For improving the ranking of building use the green building technology.

In green building technology, use of solar plats to produce electricity economically and environment friendly. Use of low energy consumption light and equipment’s. Use of solar heater for water heating.[2]

Main technology we use in this building is reuse of waste water produced from the buildings like bathing water, basin water, etc. are used in toilet flushing. For this use of waste water we first introduce primary filtration. Rain water harvesting also introduce for irrigation purpose, in landscape designing, plantation etc.

Solid waste management also introduce for economic and environment point of view.

A. Rating of building according IGBC green home system

TABLE 1 SITE SLECTION AND PLANING

Site Selection and Planning	Site data	Required data
Local Building Regulations	Y	Required
Soil Erosion Control	Y	Required
Basic House-hold Amenities	2	2
Natural Topography or Vegetation : 15%, 25%	1	4
Heat Island Effect - Roof : 50%, 75%		4
Parking Facilities for Visitors : 10%	1	1
Electric Charging Facility for Vehicles : 5%	0	1
Design for Differently Abled	0	2

Basic Facilities for Construction Workforce	2	2
Green Home Guidelines, Design & Post Occupancy	0	1

According to IGBC green home system, site selection and planning parameter points are 6 out of 17.

According to IGBC green home system, water efficiency parameters points are 5 out of 18.

TABLE 2 INDOOR ENVIRONMENTAL QUALITY

Indoor Environmental Quality	Site data	Required data
Tobacco Smoke Control	Y	Required
Minimum Daylighting: 50%	N	Required
Fresh Air Ventilation	Y	Required
Enhanced Daylighting : 75%, 95%	4	4
Enhanced Fresh Air Ventilation	2	2
Exhaust Systems	2	2
Low VOC Materials, Paints & Adhesives	0	2
Cross Ventilation : 50%, 75%	4	4
Building Flush-out	1	1

According to the IGBC green home system, indoor environmental quality parameters points are 13 out of 15. The results shown here are the indicative of quality.

TABLE 3. ENERGY EFFICIENT PARAMETERS

Energy Efficiency	Site data	Required data
CFC-Free Equipment	N	Required
Enhanced Energy Performance: 3%, 6%, 9%, 12%, 15%, 18%, 21%, 24%, 27%, 30% (or) 2%, 4%, 6%, 8%, 10%, 12%, 14%, 16%, 18%, 20%	0	10
On-site Renewable Energy: 2.5%, 5%, 7.5% (or) 10%, 20%, 30%	0	6
Solar Water Heating System : 50%, 95% (or) 25%, 50%	4	4
Energy Saving Measures in Other Appliances & Equipment	0	2
Distributed Power Generation	0	2
Energy Metering	1	1
Minimum Energy Performance	Y	Required

TABLE 5 INNOVATION & DESIGN PROCESS

Innovation & Design Process	Site data	Required data
Innovation & Design Process	2	4
IGBC Accredited Professional	0	1

According to the IGBC green home system, innovation and design process parameters points are 2 out of 5. The results shown here are the indicative of quality.

III. DISCUSSION

As per study, we checked all the parameters of building like innovation and design process, water efficiency, indoor environmental quality, energy efficiency, materials and resources, etc. According to the IGBC, gave the points to these parameters of the building. These points are not sufficient to make a green building.

We have to improve the parameters by using rain water harvesting, solar plates, plantation, landscape designing, waste water management and reduce solid waste for the following criteria.

CERTIFICATION LEVEL	MULTI DWELLING RESIDENTIAL UNITS	RECOGNITION
CERTIFIED	50-59	BEST PRACTICES
SILVER	60-69	OUTSTANDING PERFORMANCE
GOLD	70-79	NATIONAL EXCELLENCE
PLATINUM	80-100	GLOBAL LEADERSHIP

IV. CONCLUSIONS

The case study of following building gives us the result that 33 parameter point are matched out of 100 according to IGBC green house system, which is not sufficient for make a green building's criteria. So I provide suggestion to make the following structure as a green building according to IGBC.

REFERENCES

- [1] Rajesh K. S., Murty H.R., Gupta, S. K. and Dikshit, A. K., 2012. An overview of sustainability assessment methodologies. Ecological Indicators, 15 (1), pp. 281 – 299.
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