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Conversion of a Traditional College Building into Green Building

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ABSTRACT: The term "green building" refers to buildings that are designed, constructed, and operated in a way that has the least impact on the indoor and outdoor environment. Many discussions about green buildings have dealt with the importance of providing an acceptable (if not the only) indoor climate for the occupants of the building. However, these discussions on indoor climate quality do not contain many specific recommendations or standards for planning, constructing or operating buildings. Indoor air quality is often mentioned in construction projects called environmentally friendly buildings. However, these references are generally general and qualitative. In addition, the classification system developed to assess the "greenness" of buildings is mainly based on design and has nothing to do with indoor air quality. Indoor air quality should be considered when discussing environmentally friendly buildings, demonstration projects and evaluation systems. The integrity and specificity of the green building properties are analyzed and compared with other planning, building and operation guidelines to ensure good indoor air quality.

I. INTRODUCTION

Green buildings refer to buildings that reduce or eliminate negative impacts during design, construction or operation and can have a positive impact on our climate and environment. Green buildings can protect precious natural resources and improve our quality of life. The integrated system approach of building design and construction that saves energy, water and material resources is healthier, safer and more comfortable. Many people think of solar panels when they think of green buildings.

Green building, also known as green building or sustainable building, is a way to improve the environment. It benefits people, communities and the environment by reducing resource consumption while improving the quality of life. Gases that contribute to the reduction of the greenhouse effect This document outlines the application of modern technologies in the construction of environmentally friendly infrastructures that have a significant impact on the protection/correct use of resources such as land/water, energy, air, and total costs. Construction and the negative impact of climate change.

Green or sustainable buildings determine healthier, more energy efficient and more environmentally friendly buildings. Compared with standard buildings, green buildings consume less energy, water and natural resources, generate less waste, and are healthier for the people living in them. The green grading of the comprehensive assessment of human settlements is India's national grading system. GRIHA was conceived by TERI and jointly developed with the Ministry of New Energy and Renewable Energy of the Government of India. It is an environmentally friendly building design rating system, applicable to all types of buildings in different climates in the country. Green buildings have many advantages. For example, compared with conventional buildings, the energy consumption of green buildings is reduced by 40-50%, and water consumption is reduced by 20-30%. If the construction of all buildings in the world takes into account the ecosystem and energy efficiency, then harmful effects on the environment and the earth's ecosystem can be prevented or reduced, such as the greenhouse effect, ozone depletion, global warming, etc. As long as the building has the above-mentioned functions, any building can be green, whether it is a house, an office, a school, a hospital, a community center or other facilities.

However, it is worth noting that not all green buildings must and must be the same. Different countries and regions have many characteristics, such as special climatic conditions, unique cultures and traditions, different types of buildings and

ages or very different characteristics. Various ecological, economic and social priorities determine the way companies adopt green buildings.

II. LITERATURE REVIEW

Avinash Shivajirao Pavar et al. Green or sustainable buildings, such as important resources such as energy, water, materials, and land, are more efficient than buildings that have just been constructed in accordance with the Code. With more natural light and better air quality, green buildings often help improve health, comfort and productivity. In the process of construction and operation, green buildings will consume natural resources to a minimum.

Shukla T Ramesh Ravi & Prakash.k published their research report, which involved residential and office buildings. The results show that these operating rooms (80-90) and the comprehensive energy consumption phase (10-20%) are largely carried out through the use of active and passive technologies, even if this leads to a slight increase in actual energy consumption.

Ph.D. Laura Cole is an interior design lecturer and an architectural studio lecturer. He has more than 15 years of experience in the environmentally friendly building movement for various functions. She used to work as a designer at Perkins Will, a global construction company, leading a sustainable development team, and leading junior designers to become LEED certified professionals. She has a PhD degree in architecture, natural resources and environment. She currently teaches at the University of Missouri, where she teaches green design, and works in an interdisciplinary research group that promotes theoretical and practical green building training.

ADVANTAGES OF GREEN BUILDING

- 1) Green building energy saving
- 2) More environmentally friendly materials
- 3) Water-saving equipment
- 4) Reduce waste
- 5) Higher recycling efficiency
- 6) Less air pollution

DISADVANTAGES OF GREEN BUILDING

- 1) Purchase at high prices.
- 2) Green buildings are not magic pills.
- 3) Power supply depends on weather conditions.
- 4) The long-term effects are unclear.

III. METHODOLOGY

1. IoT Integrated Automated Building Systems

The Internet of Things (IoT) enables executives to access data they have never accessed before. These connected small sensors can be integrated into the building automation system to improve operational stability. For example, IoT sensors can dynamically adjust the required ventilation. As well as determining the lighting level of the building based on temperature, weather and CO2 readings. The site administrator does not need to manually track these settings or enter data from multiple computers.

2. Synthetic Roof Underlayment

Roofs are usually based on asphalt, which degrades quickly. This layer must be replaced to prevent moisture from entering the building. The synthetic canopy provides a lighter option that can withstand the wear and tear of the exterior. This material uses polymers made from recycled waste materials. It can also remove VOCs from the floor.

3. Green Roofs

Another innovation at the top of green roof commercial real estate is the green roof. The roof is covered with grass, plants, flowers, shrubs and other plants. Roofing materials. Rainwater seeps into the ground and is easier to handle than bare roofs. Reduce heating and cooling costs and improve air quality.

4. Grid Hybrid System

Renewable energy provides companies with a sustainable way to power their commercial properties. However, in many grid systems, when solar energy availability is low, there is a lack of storage for the power system. Cloudy weather and other imperfect conditions.

5. Passive Solar

Another way to use sustainable solar energy is to build buildings based on the concept of passive solar energy. The location and design of the system can maximize the use of solar energy for heating in winter while minimizing the impact of warm months.

6. Greywater Plumbing Systems

The grey water system reduces the facility's fresh water requirements because everything except toilet nozzles can be recycled and reused. In most cases, this water is used for irrigation and to supply toilets.

7. Electrochromic Glass

When exposed to external stimuli (such as electric current or ultraviolet light), electrochromic glass can change from transparent to opaque. Eliminates the need for curtains and other window decorations, and passively adapts to current conditions. Other benefits include blocking most UV rays.

8. Solar Thermal Cladding

Solar thermal cladding is a passive solar structure specially designed to keep you warm in winter. Solar energy is stored in this material and then transferred to buildings to store heat.

9. Structural 3D Printing

The production and transfer of building materials to construction sites can cause high environmental costs. With the development of 3D printing structures, it has become easier to reduce transportation costs or reduce component weight.

10. Self-healing Concrete

This material is still in its early stages, but once it is economically viable, it will open up many environmentally friendly opportunities: everything from roads to sidewalks can benefit from self-curing concrete.

IV. SCOPE OF WORK

- 1) The green building concept which is very cost efficient in various ways like light bills, gas bills & water bills.
- 2) Materials used in green construction are renewable and the materials remain in excess are used for making different items like furniture etc.
- 3) It is a method which uses natural materials, hence saving huge amount of energy & depletion of resources.
- 4) Looking at current environmental condition, it is right time to start using green construction rather than normal construction method.
- 5) To meet the needs of society in ways without damaging or depleting or depleting natural resources on earth.
- 6) The idea is to meet present needs without making any compromises, focus is being shifted on making products that can be fully reclaimed or re-used.
- 7) It maximizes the use of efficient building materials and construction practices.
- 8) To reduce the rate of growth of energy consumption while enhancing economic development.

V. CONCLUSION

Green buildings help protect scarce natural resources and the health and well-being of residents. According to professional technical consultants, in the construction industry, this pioneering concept is becoming more and more important because it reduces the amount of construction waste at each stage of building construction and operation, thereby reducing costs.

All countries and construction companies need to understand the importance of sustainability, which helps reduce our carbon footprint and has a positive impact on the environment. There are many ways to introduce green buildings through



waste reduction, environmental protection and house demolition. Protect the productivity and healthy environment of people living in buildings by effectively using energy, water and other resources. Using sustainable design and materials to create environmentally friendly buildings can bring many benefits to builders and customers. This means lower development costs, operating costs and higher comfort, which leads to healthier internal quality, longer service life and lower maintenance costs.

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