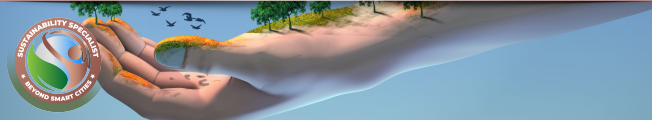


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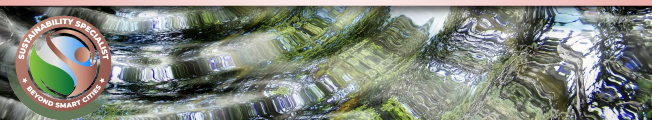
**TECHNOLOGY FOR SUSTAINABLE
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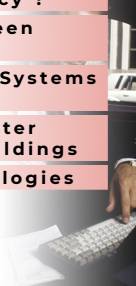


**WATER EFFICIENCY TECHNOLOGIES
FOR GREEN BUILDINGS**
KRISHNAJI PAWAR, LEED AP BD+C, GSAS CGP, ISO 14001:2015, GCP
BUILDING SCIENCE SPECIALIST CURRICULUM



WHAT SHOULD YOU LEARN





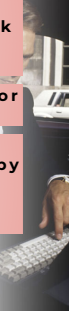
What is Water Efficiency ?
Water Efficiency In Green Buildings
Green Building Rating Systems for Water Efficiency
Key Components Of Water Efficiency In Green Buildings
Water Efficient Technologies

WATER IS NOT A LIMITLESS RESOURCE

Water is essential for human life, in fact, it can be considered fuel for humans. Even today, many think its supply is abundant, but to contradict that thought – Water Isn't A Limitless Resource.

More particularly the fresh potable water crucial for human survival is quickly depleting.

India holds the planets 2nd largest population at 1.3 billion which is expected to grow to 1.7 billion by 2050. It's a daunting truth, but India finds itself unable to serve the massive populace with safe, clean water.



WHAT IS WATER EFFICIENCY?

Water Conservation – It implies curtailment of water usage and includes day-to-day demand management for better water usage.

Water Efficiency – In simple terms, it means responsible use of fresh water and reducing the overall usage of water and minimizing wastewater. It also points toward using improved practices and technologies which deliver equal or better life service with reduced water consumption.

Water efficiency is a significant chunk of green buildings whose strategies and technologies lessen the amount of potable water consumed in buildings.



WATER EFFICIENCY IN GREEN BUILDINGS

As access to fresh water continues to be a source of worry in many areas of the world (including India), water efficiency strategies in green building practices have become paramount to both new and existing construction efforts.

A Green building design largely emphasises on making effectual use of natural resources like water, energy, etc.

Considering water efficiency in Green Buildings, today several technologies are being used rainwater harvesting, recycling and reuse of grey water, low-flow fixtures, sensors etc.

Water efficiency measures in residential and commercial buildings can greatly reduce water waste, yielding lower sewage volumes, reduced energy use, and bring in financial benefits too.



GREEN BUILDING RATING SYSTEMS FOR WATER EFFICIENCY



Several rating systems for Green Building have been developed by various countries across the globe to rate the green buildings based on its degree of the environmental goals which have been achieved by them. In India, the main certifying agencies who consider water efficiency are:

- ☒ Leadership in Energy and Environmental Design (LEED)
- ☒ Indian Green Building Council (IGBC)
- ☒ Green Rating for Integrated Habitat Assessment (GRIHA)
- ☒ Global Sustainability Assessment System (GSAS)
- ☒ Beyond Sustainability Assessment System (BSAS)

KEY COMPONENTS OF WATER EFFICIENCY



The three key components of water efficiency in green buildings according to the USGBC (U.S. Green Building Council) are:

1. Reduce Indoor Potable Water Use
2. Reducing Water Consumption to Save Energy
3. Improve Environmental Well-Being

The strategies and technologies involved in a green building aim at reducing the amount of potable water consumed in buildings. Today there are several water conservation strategies which involve a low cost of implementation and have a very quick payback.

WATER EFFICIENT TECHNOLOGIES



1. Rain Water Harvesting

We are sure you would have heard about this one as recently it has been grabbing a whole lot of attention. In simple terms, it is the active collection and distribution of rainwater which rather than going to the sewage is put into use in daily life

Typically, rainwater is collected from the rooftops, deposited in a reservoir with filtration. Once the water is purified, it is can be used for cultivation, gardening, and other domestic uses.

2. GREY WATER RECYCLING

Grey water can be defined as untreated waste water which has not come into contact with water closet waste. Basically, it emanates from showers, bathtubs, bathroom wash basins, washing machines, and dishwashers. Treatment of greywater can include:

- ☑ Filtering
- ☑ Settlement of solids
- ☑ Flotation and separation of lighter solids
- ☑ Aerobic or anaerobic digestion
- ☑ Chemical or UV disinfection

One of the major benefits of recycling greywater is that it is a huge source with a low concentration of organic matter.



3. PRESSURE REDUCTION

These days, pressure reducing valves are being very commonly installed in high rise residential and commercial buildings to help to maintain a consistent water pressure at the water fixtures across the entire building from top to bottom.

With these higher pressures, water flows through the system with greater flow through the terminal fixtures beyond rated flow capacities, this additional water is wasted and it serves no extra benefit to the rated performance.



4. COOLING TOWERS

Green buildings make use of evaporative cooling systems to save on energy. Such systems use water for cooling. Keeping in mind the huge need to conserve water, the water used such cooling towers is non-potable water and the same is not drained out but recycled time and again and reused.



5. LOW-FLOW PLUMBING FIXTURES

Low-flow plumbing fixtures like faucets, shower heads, and toilets have become an increasingly common feature in green homes today, and for good reason. Large quantities of water are saved by the use of plumbing fixtures which are designed to operate with less water.

For example, toilets were once made to function using 7 gallons per flush, but these days they can efficiently operate using only 1.3 gallons – this clearly means water savings of over 80 percent.



CONCLUSION

The main objective of this lecture was to stress on the need for water conservation of water and highlight the several technologies available for implementing water efficiency practices

Without our acknowledgment in the construction industry and in our everyday awareness, this crucial supply of water may be endangered. New technologies which use less water are becoming increasingly significant than ever before, this will ensure that we protect the existing sources of fresh water which is most essential for avoiding the crisis of water in the future.



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