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HIGH-PERFORMANCE BUILDING DESIGN PROFESSIONAL - HBDP OVERVIEW

ONLINE PROFESSIONAL COURSES LED BY THE
WORLD'S TOP SPECIALISTS

ONLINE TRAINING BY KRISHNAJI PAWAR

LEED AP(BD+C), GSAS CGP, GCP, ISO 14001

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MODULE

1

Introduction and Course Outline

KRISHNAJI PAWAR - CEO & FOUNDER

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**HIGH-PERFORMANCE
BUILDING DESIGN
PROFESSIONAL
HBDP OVERVIEW**

The HBDP Overview training program equips individuals with essential skills, knowledge, tools, credentials, and 100 practice exam questions for High-Performance Building Design (HBDP Knowledge Domain).



BRIEF ABOUT ME

Krishnaji PAWAR

CEO & FOUNDER

Krishnaji Pawar is founder and CEO of Beyond Smart Cities. Before being named CEO in January 2020, Krishnaji held leadership roles at Beyond Smart Cities in both Sustainability ,Energy & Environmental Consultancy.

Specialized in developing sustainable design strategies for Green Building Certification Systems (LEED, GSAS, etc.), Energy & Water Conservation, Commissioning, Environmental Impact Assessment & Environmental Management Systems.

Currently responsible for 3,787 million square feet Green Building /Energy modeling Consulting since January 2008 in UAE, India and Qatar.



Learning Objectives

- **Introduction**
- **Getting Started with HBDP**
- **Sustainability Concepts**
- **HVAC Processes**
- **Sustainable Processes**
- **Environmental Improvement Programs and Rating Systems**
- **Certification for High-Performing Building Specialists**
- **Summary and Resources**
- **High-Performance Building Design Professional - HBDP Practice Test V.4.1**



INTRODUCTION

- Equips individuals with essential skills, knowledge, tools, credentials, and 100 practice exam questions for High-Performance Building Design (HBDP Knowledge Domain).
- ANSI-accredited personnel certification program under ISO/IEC 17024 (#1139) validates competency to design and integrate sustainable HVAC&R systems into high-performing buildings.
- Validates competency in key domains: energy analysis, indoor and site environments, controls and monitoring, benchmarking with performance metrics, water conservation, commissioning in sustainable construction, energy and material use, and management.



HIGH-PERFORMANCE BUILDING DESIGN OVERVIEW TRAINING PROGRAM



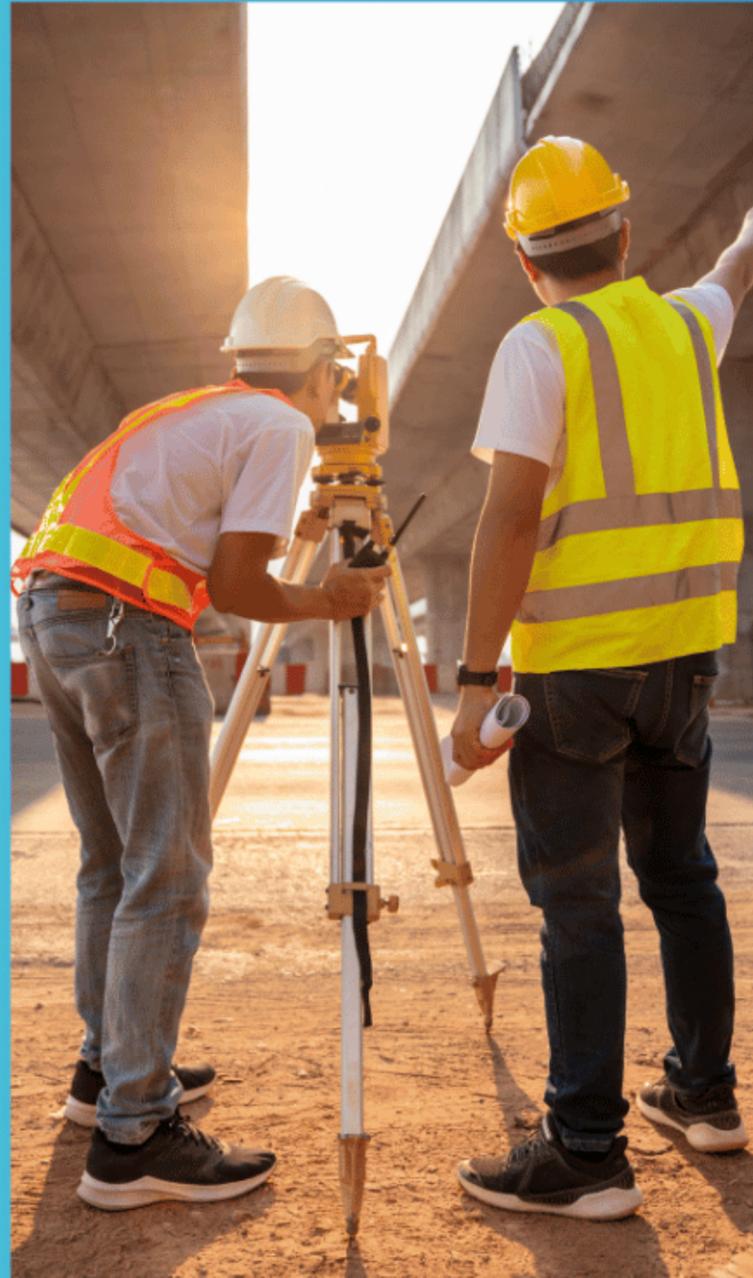
- Supports the mission of ASHRAE, an international membership society committed to advancing the arts and sciences of heating, ventilation, air conditioning, and refrigeration.
- Equips participants with foundational understanding, principles, sustainability concepts, HVAC processes, environmental improvement programs, environmental rating systems, and resources needed to design high-performance buildings effectively.

WHO ARE THE HIGH-PERFORMANCE BUILDING DESIGN PROFESSIONALS?

- Energy professionals with knowledge of "green" construction technologies.
- Energy-efficiency consultants helping clients understand impact of sustainable practices.
- Involved in planning, developing, and implementing sustainability policies or programs.
- Involved in decision-making process.



WHAT DOES A HIGH-PERFORMANCE BUILDING DESIGN PROFESSIONAL DO?



- Understanding development practices, policies, technical requirements, program analysis, and financial assessments.
- Identifying various approaches for sustainability programs.
- Working in commercial, institutional, industrial, or governmental sectors.
- Knowledge applicable to specific markets like green building construction, environmental mitigation, industrial facility operation, planning, alternative energies, carbon reduction, sustainable transportation, and water conservation.

SUSTAINABILITY CONCEPTS

- Balancing economic, environmental, and social considerations to create a resilient society.
- Emphasizes the triple bottom line: economic prosperity, environmental stewardship, and social equity.
- Lifecycle thinking considers the environmental and social impacts of a product or service throughout its lifecycle.
- Both concepts aim to promote responsible and efficient use of resources for a more sustainable future.



ENERGY EFFICIENCY AND SUSTAINABILITY CONCEPTS

Energy Efficiency in Sustainability

- Involves optimizing energy use to minimize waste and environmental impact.
- Achieves desired outputs with minimal energy input through energy-efficient technologies, practices, and behaviors.
- Energy conservation involves reducing energy consumption by using less energy to achieve the same output.
- Energy management involves monitoring and optimizing energy use to improve efficiency.
- Energy efficiency reduces greenhouse gas emissions, mitigates climate change, and conserves natural resources.



ENVIRONMENTAL IMPACT OVERVIEW

- Environmental impact refers to the effects of human activities on the environment, including ecosystems, natural resources, and ecological balance.
- Key factors include emissions, solid and fluid waste disposal, deforestation, habitat destruction, and pollution.
- Emissions, including carbon dioxide, nitrogen oxides, sulfur dioxide, and particulate matter, contribute to climate change by trapping heat in the atmosphere.
- Solid and fluid waste disposal, including plastics, paper, food scraps, and other materials, can lead to pollution and harm to wildlife.
- Fluid waste, such as wastewater from industrial processes or sewage treatment plants, can contain harmful substances that can contaminate water sources and harm ecosystems.
- Factory production, for example, emits pollutants into the air, generates solid waste, and discharges wastewater containing chemicals, affecting aquatic life.
- Understanding these factors can help implement sustainable practices and reduce ecological footprint, ensuring a healthy and thriving planet for future generations.





WELCOME TO BEYOND SMART CITIES

Beyond Smart Cities is the world's 1st Green Technology Marketplace, connecting millions of Sustainability Specialists, Green Building Specialists, Energy Specialists, Commissioning Specialists, Environment Specialists, Health & Safety Specialists, Fire Safety Specialists, Climate Change Specialists & Green Products/Technology Manufacturers with independent talent around the globe.

Our mission is to build and support a global community of experts with the highest professional standards in sustainability, green building, energy, commissioning, environment, health & safety, fire safety, climate change, GHG accounting, carbon auditing, and GHG emissions management.

DEFINITION AND BENEFITS OF HIGH-PERFORMANCE BUILDING DESIGN



- Focuses on creating energy-efficient, environmentally friendly, and sustainable structures.
- Considers factors like building materials, insulation, ventilation, lighting, and layout to optimize performance and minimize environmental impact.
- Energy efficiency is achieved through the use of energy-efficient materials like double-pane windows, LED lighting, and high-efficiency HVAC systems.
- Indoor air quality is improved through proper ventilation systems and use of low-VOC materials.
- Sustainable building materials like recycled steel, bamboo flooring, and low-impact paints contribute to a more sustainable building industry.
- The goal is to create buildings that reduce environmental impact and provide a healthier, more comfortable space for occupants.

HIGH PERFORMANCE BUILDING DESIGN

High performance building design is a process of integrated approach using various parameters surrounding building design for optimised design excellence. The entire process is a holistic approach to designing high-performing buildings that are -

- Sustainable environmentally and economically
- Energy efficient
- Prioritising occupant's well-being through design

These three points essentially summarise all the attributes a high performance building should have. And naturally, it falls onto the architect to ensure all aspects are fulfilled.





Baseline model : the set of arithmetic factors, equations, or data used to describe the relationship between energy use or demand and other baseline data. A model may also be a simulation process involving a specified simulation engine and set of input data

Boundary conditions :physical conditions (values of physical quantities, conditions of energy interchange, etc.) imposed upon a system at the start or end of a process (temporal boundary conditions) and/or at the boundaries separating the system from its surroundings (local boundary conditions)

Building envelope : (1) outer elements of a building, including walls, windows, doors, roofs, and floors, including those in contact with earth. (2) the exterior plus the semi-exterior portions of a building. For the purposes of determining building envelope requirements, the classifications are defined as follows. **Building envelope, exterior**: the elements of a building that separate conditioned spaces from the exterior. **Building envelope, semi-exterior**: the elements of a building that separate conditioned space from unconditioned space or that enclose semiheated spaces through which thermal energy may be transferred to or from the exterior, to or from unconditioned spaces, or to or from conditioned spaces



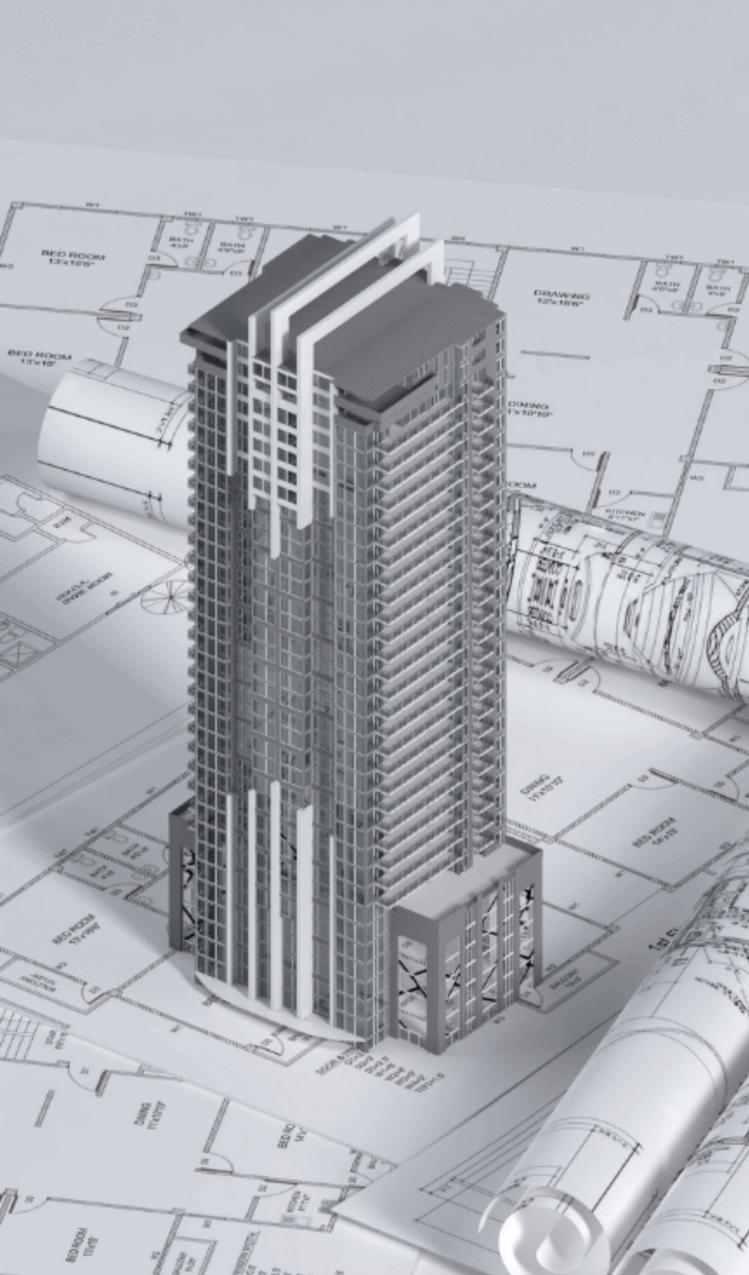
Urban energy system : a formal system that represents the combined processes of acquiring and using energy to satisfy the energy service demands of a given urban area.

“composition of all components related to the use and provision of energy services associated with a functional urban system, irrespective where the associated energy use and conversion are located in space “

Urban building energy modeling : UBEM involves developing energy models of buildings using their geometric and non-geometric features and simulating them in a simulation engine, just like BEM.

The modeling process is more complicated and fraught with uncertainty.

HIGH PERFORMANCE BUILDING DESIGN BENEFITS



- Environmental Benefits: High-performance green building design reduces energy consumption and CO2 emissions. It uses passive design strategy, reducing electricity consumption and indirect water consumption. Smart and advanced construction materials also reduce CO2 emissions.
- Economic Benefits: High-performance buildings are an investment with long-term economic benefits, including lower operating and maintenance costs and increased market value.
- Occupant Wellbeing: High-performance design improves indoor environmental quality, contributes to higher employee productivity, and reduces sick leave. It also improves air quality and overall wellbeing.

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THANK YOU

