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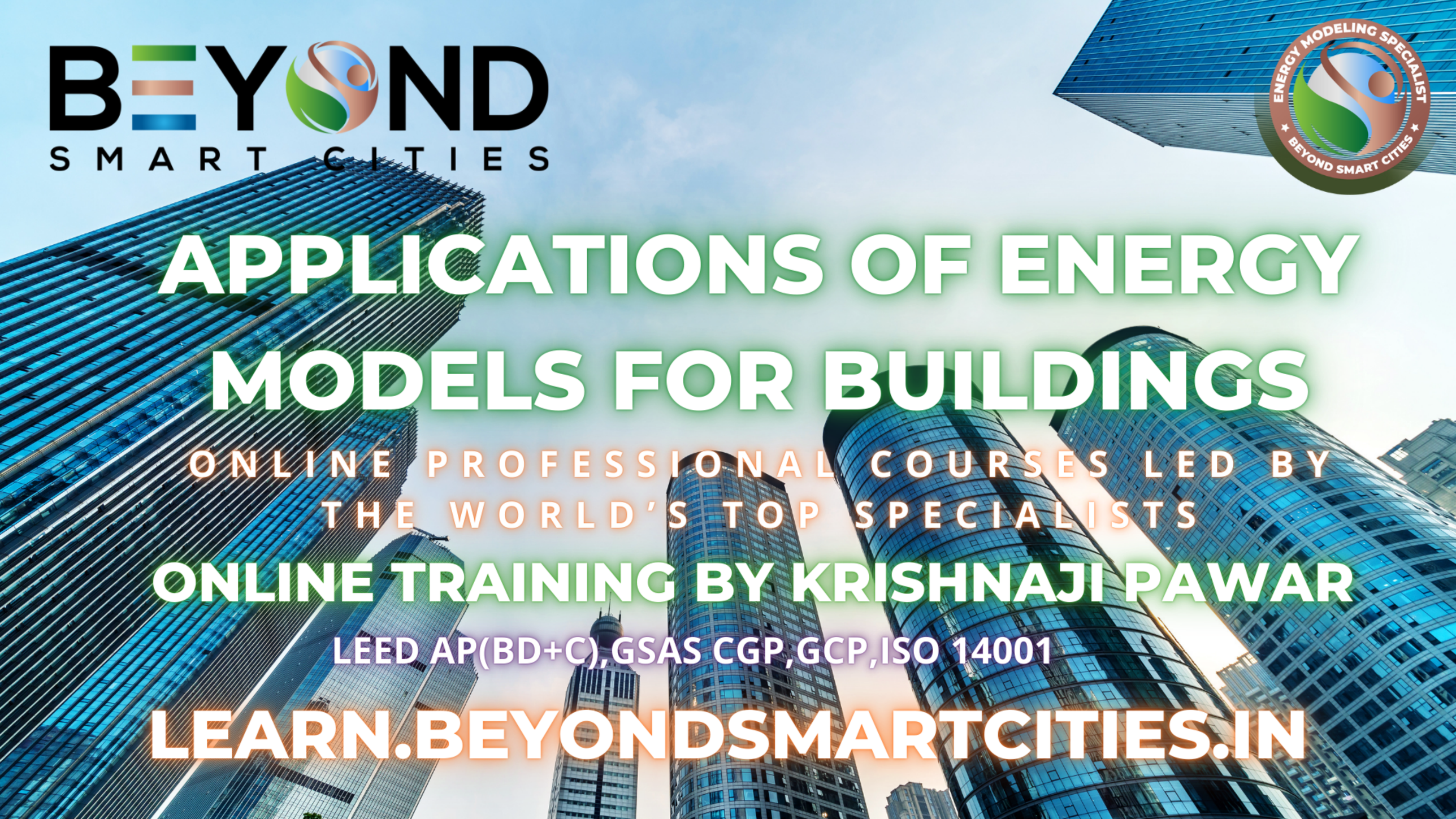
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ENERGY MODELING SPECIALIST
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APPLICATIONS OF ENERGY MODELS FOR BUILDINGS
ONLINE PROFESSIONAL COURSES LED BY THE WORLD'S TOP SPECIALISTS
ONLINE TRAINING BY KRISHNAJI PAWAR
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MODULE L6

Choose Metrics for Indoor Environmental Performance

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APPLICATIONS OF ENERGY MODELS FOR BUILDINGS

Ventilation rate is crucial for maintaining indoor air quality (IAQ) and occupant health. Proper ventilation helps dilute indoor pollutants, such as carbon dioxide, volatile organic compounds (VOCs), and particulate matter. Building simulation models can help determine the optimal ventilation rate, using tools like computational fluid dynamics (CFD) to visualize airflow patterns.

Learning Objectives

- Introduction and Course Outline
- Simulation Comparisons
- Choose Metrics for IEQ
- Evolution of Simulation Techniques
- Baseline Building Models
- Communicate Analysis Results
- Collaborate Within Project Teams
- Applications of Energy Models for Building
- Case Study: Application of BEM
- Summary and Resources
- BEMP Practice Test V.5.1

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INTRODUCTION

- Analyzing indoor environmental metrics like temperature, humidity, ventilation rate, and daylighting.
- Maintaining the right indoor temperature is crucial for energy efficiency and occupant satisfaction.
- Proper ventilation helps dilute indoor pollutants, aiding in maintaining indoor air quality.
- Building simulation models can determine the optimal ventilation rate using tools like computational fluid dynamics.
- Daylighting strategies, including window orientation, light shelves, and reflective surfaces, can reduce artificial lighting and contribute to energy savings.
- Energy modeling tools can help design buildings that optimize daylighting benefits while mitigating drawbacks.
- A multifaceted approach is required to create energy-efficient and health-friendly environments.

MODELING ENERGY PERFORMANCE IN BUILT ENVIRONMENTS

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Key Indoor Environmental Metrics

- **Temperature:** Directly related to occupant comfort and energy consumption. Ideal indoor temperature varies based on season, building type, and specific activities.
- **Humidity:** Influences comfort and energy required for heating, cooling, and ventilation. Recommends maintaining relative humidity between 30% and 60% for optimal comfort.
- **Ventilation Rate:** Essential for maintaining indoor air quality (IAQ) and occupant health. Measured in liters per second per person (L/s/person). Proper ventilation helps dilute indoor pollutants.

KEY INDOOR ENVIRONMENTAL METRICS

- **Daylighting:** Use of natural light to illuminate indoor spaces, reducing the need for artificial lighting and contributing to energy savings.
- Energy modeling tools can predict effects of daylighting and help design buildings that optimize benefits while mitigating potential drawbacks.

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CONCLUSION

- Modeling energy performance in buildings requires a multifaceted approach that considers various indoor environmental metrics.
- Understanding these concepts is critical for the advancement of sustainable building practices in an increasingly energy-conscious world.

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