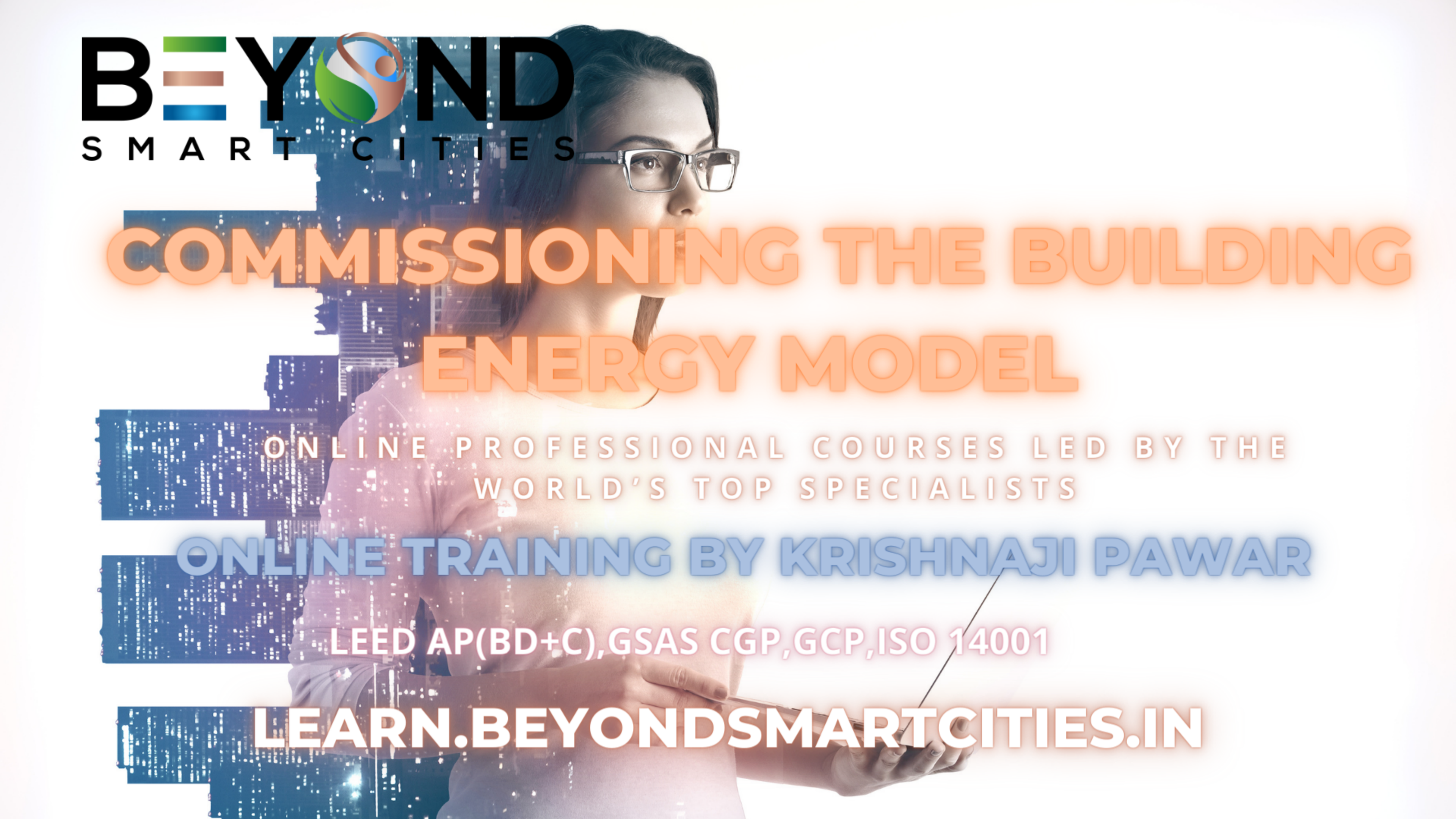




BEYOND
SMART CITIES

COMMISSIONING THE BUILDING ENERGY MODEL

ONLINE PROFESSIONAL COURSES LED BY THE
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ONLINE TRAINING BY KRISHNAJI PAWAR

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MODULE

07

Summary and Resources

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COMMISSIONING THE BUILDING ENERGY MODEL

Building commissioning and energy modeling complement each other to optimize building performance and save energy. Energy models can identify energy savings opportunities, validate building system performance, and evaluate building performance after commissioning to help building owners save even more energy and ensure peak performance.

Summary

- **Introduction and Course Description**
- **Commissioning the Building Energy Model**
- **Building Energy Model: Theoretical or Predicting the Actual?**
- **Why do we have a Building Energy Model?**
- **Why Commission the Energy Model?**
- **Using Energy Models for Building Commissioning**
- **Different building-level commissioning models**
- **Simulation model examples at the building level**



LEARNING OBJECTIVES

- Building commissioning and energy modeling complement each other to optimize building performance and save energy.
- Energy models can identify energy savings opportunities, validate building system performance, and evaluate building performance after commissioning to help building owners save even more energy and ensure peak performance.
- Energy modeling has three steps.
- Energy models help building commissioning optimize HVAC systems, install energy-efficient lighting, and evaluate solar panel performance.
- Thus, building owners should include building commissioning and energy modeling in any construction or renovation project.
- Combining these two processes allows building owners to reduce energy consumption and optimize performance.
- This class will examine the best energy models for building commissioning, with many examples.

COMMISSIONING THE BUILDING ENERGY MODEL

- Whole-building models are used for HVAC system design but not commissioning. Pre-design models and simulations are used.
- These models have many default inputs to speed their use and provide early feedback on major envelope or system configuration options. Detailed models are used to size heating and cooling equipment during design, and a simulation model like DOE-2, TRNSYS, EnergyPlus, etc. can be used to explore the effects of a few design options on annual energy use.
- The continuous use of simulation throughout a building's life cycle has been considered for two decades (middle east Project), but it has never been implemented.



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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.

RESOURCES

- http://www.eere.energy.gov/buildings/tools_directory/software/idaice.htm, June 24, 2004.
- IPMVP 2001. IPMVP Committee, International Performance Measurement & Verification Protocol: Concepts and Options for Determining Energy and Water Savings, Vol. 1, U.S. Dept. of Energy, DOE/GO-102001-1187, 86 pp., January.
- RIUSKA (2003), http://www.eere.energy.gov/buildings/tools_directory/software/riuska.htm, June 24, 2004.
- Sagara, Ishida, Takeda and Shioya, "Analysis of Seasonal Chilled Water Thermal Quantity Consumption for HVAC Systems in a Commercial Building: Study of a Method of Macroscopic Diagnosis of Energy Consumption in Buildings." A40-D-M5-J- KTAK-1 –





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