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APPLICATIONS OF ENERGY MODELS FOR BUILDINGS

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ONLINE TRAINING BY KRISHNAJI PAWAR

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MODULE
L2

Compare Alternative Simulation Results

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APPLICATIONS OF ENERGY MODELS FOR BUILDINGS

Simulation comparisons are crucial in building energy modeling (BEM), particularly as outlined in ASHRAE guidelines. These comparisons involve evaluating and contrasting the results of various simulation scenarios against specific benchmarks, such as code compliance, performance relative to established standards, parametric studies, and the selection of equipment and components. Building codes are regulatory frameworks that establish minimum requirements for energy efficiency in buildings.

Learning Objectives

- Introduction and Course Outline
- Compare alternative simulation results
- Modeling Energy Performance
- 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



INTRODUCTION

- Simulation comparisons are crucial in building energy modeling (BEM), as per ASHRAE guidelines.
- These comparisons evaluate and contrast simulation scenarios against benchmarks like code compliance, performance relative to standards, parametric studies, and equipment and component selection.
- Building codes, such as ASHRAE 90.1 or IECC, use simulations to ensure energy efficiency compliance.
- Performance relative to standards allows for evaluation of a building's performance in absolute terms and relative to similar structures.
- Parametric studies assess the impact of design parameters on building performance.
- Simulations aid in evaluating equipment options and their impacts on overall building performance.

CODE COMPLIANCE

- Building codes establish minimum energy efficiency requirements.
- Simulations can ensure compliance with these codes, often referencing standards like ASHRAE 90.1 or the International Energy Conservation Code (IECC).
- If the simulated energy use intensity (EUI) falls below the code threshold, the building can be deemed compliant.
- If the EUI exceeds the code requirements, the building design may need to be altered.



PERFORMANCE RELATIVE TO STANDARDS



- Building performance can be assessed against various industry benchmarks and standards.
- Standards such as ASHRAE 90.1 and LEED provide frameworks for this evaluation.
- Simulations allow stakeholders to identify which designs not only comply but also excel in energy performance.

PARAMETRIC STUDIES

- Parametric studies involve systematic variations of design parameters to assess their impact on building performance.
- They help identify optimal design solutions and understand the sensitivity of energy performance to specific design variables.
- Simulations allow for a nuanced understanding of how modifications in building design influence energy performance.



EQUIPMENT AND COMPONENT SELECTION



- Simulation comparisons can be employed to evaluate different equipment options and their corresponding impacts on overall building performance.
- The results facilitate an informed decision on which system is more efficient and suitable for the specific building context.

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