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APPLICATIONS OF ENERGY MODELS FOR BUILDINGS

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MODULE
L5

Modeling Energy Performance: Selecting Component Metrics

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APPLICATIONS OF ENERGY MODELS FOR BUILDINGS

Energy performance modeling involves selecting appropriate metrics to accurately assess and optimize a system's energy consumption. Key components include equipment usage, component performance, and equipment sizes. Equipment usage refers to the frequency and duration of energy-consuming devices operating, which helps identify patterns of energy consumption, forecast energy needs, and implement energy-saving measures.

Learning Objectives

- Introduction and Course Outline
- Simulation Comparisons
- **Selecting Component Metrics**
- 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

- Assesses and optimizes energy consumption using specific metrics.
- Key components include equipment usage, component performance, and equipment sizes.
- Equipment usage helps identify energy consumption patterns and forecast energy needs.
- Component performance metrics evaluate how individual components convert energy into useful work.
- Equipment sizes determine the physical dimensions and capacities of energy-consuming devices.
- Integrating these metrics into models allows for comprehensive analysis of energy consumption patterns.
- Understanding these components enhances energy management practices across various sectors.

MODELING ENERGY PERFORMANCE: SELECTING COMPONENT METRICS

- **Equipment Usage:** Refers to the frequency and duration of energy-consuming devices operating. It helps identify energy consumption patterns, forecast energy needs, and implement energy-saving measures.
- **Component Performance:** Evaluates how individual components of an energy system convert energy into useful work. It includes assessments of efficiency ratings, operational reliability, and the impact of maintenance practices on performance.





MODELING ENERGY PERFORMANCE: SELECTING COMPONENT METRICS



- Correct sizing is critical to ensure equipment operates efficiently and effectively.
- Integration of Metrics into Energy Performance Models: Allows for a comprehensive analysis of energy consumption patterns.
- Practical Application: Utilizes data on HVAC equipment usage patterns, assesses the performance efficiency of chillers and boilers, and evaluates the sizing of ductwork and air distribution systems.

CONCLUSION

Each metric contributes a unique perspective on energy consumption and operational efficiency, enabling stakeholders to make informed decisions aimed at reducing energy costs and environmental impact.





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