

Development of a Computer Model for Analyzing Moisture Problems in Hotels and Motels

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ABSTRACT

The presentation will focus on the development of a computer model that can serve both as a design tool for new hotel construction and as a diagnostic tool to analyze moisture problem in existing facilities.

PROBLEM

Facility designers, owners, and contractors make decisions during the design and construction process that significantly impact the potential for moisture and mildew problems in a building. These decisions are frequently made solely for economic reasons without the benefit of knowing whether these decisions will increase or decrease the potential for future problems.

If the facility owner and designer know the long-term ramifications of any design and construction decisions, beyond the initial cost impacts, then more intelligent decisions could be made.

SOLUTION

- To provide the design and construction team with a tool that could analyze the moisture/mildew impacts of decisions. For this tool to be widely used, the required input information must be readily accessible and easy to input.
- To construct a computer model using an expert system that can function two ways: initially to serve as a design tool for new construction and eventually to serve as a diagnostic tool for existing facilities with problems.
 - Design Tool: An aid to the building designer where design parameters could be input for the wall system and the HVAC system. The model would analyze the various systems, how they interact, and selectively weigh the importance (vis-a-vis moisture potential) of the selected systems. The output would inform the designer if moisture and mildew problems were likely to occur, where these problems were likely to occur (i.e., within the envelop, within the room, or

both), and provide options for design changes to reduce the possibility of moisture problems.

- Diagnostic Tool: In existing facilities experiencing moisture/mildew problems, operating parameters of the existing HVAC and envelope systems would be input since many symptoms are uniquely characteristic of one moisture source or another. These symptoms would be compared to the operating parameters of the systems and a cross-check made to determine if there is consistency between the two sets of data. If not, the user would be instructed to gather and supply further data. The final output would instruct the user in remediation options to correct the problem.

This system is intended to deal with the diagnosis and identification of moisture and mildew problems as well as assist in the planning of energy-conserving and moisture remediation retrofits.

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