Center for the Built Environment (CBE)

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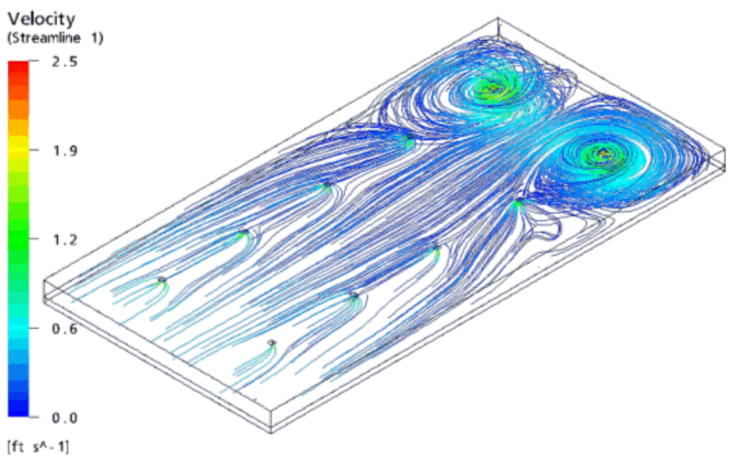
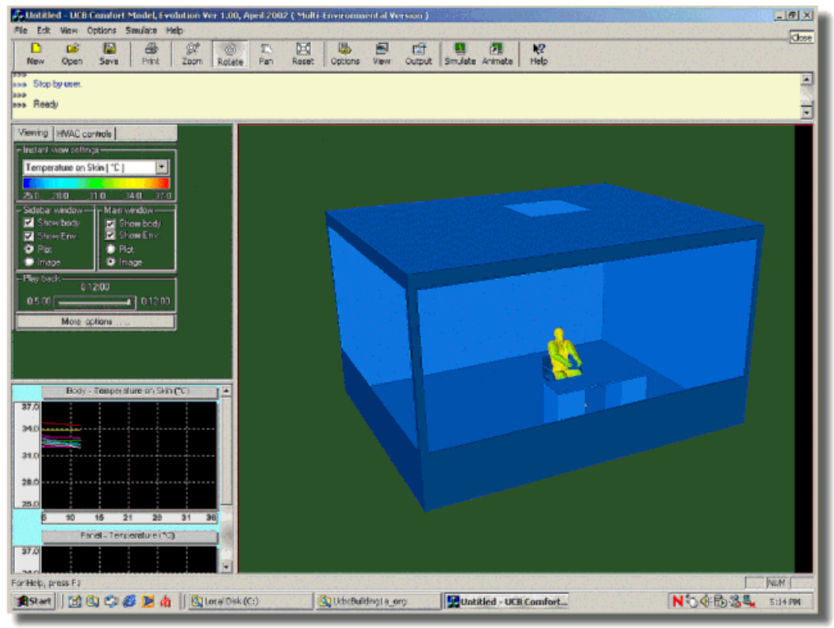
Engineering and Design Guidelines for Underfloor Air Distribution (UFAD) Technology



Underfloor Air Distribution (UFAD) technology has experienced rapid growth in North America because of the broad range of important benefits it offers over conventional ceiling-based air distribution. Correctly designed UFAD systems can: (1) reduce life-cycle building costs, (2) improve occupant comfort and productivity, (3) improve ventilation efficiency, indoor air quality, and health, and (4) reduce energy use. Until recently there was no standardized design protocol available to the building industry. A comprehensive design guide accessible to the design and engineering community was needed to support the continued development and growth of this promising technology. Responding to this need, CBE developed the Underfloor Air Distribution (UFAD) Design Guide. This guide provides guidance in the design of UFAD systems that are energy efficient, intelligently operated, and effective in their performance. The guide is written to assist design engineers, architects, building owners, facility managers, equipment manufacturers, utility engineers, and other users of UFAD technology. The design guide was published by ASHRAE (the American Society of Heating, Refrigerating and Air-Conditioning Engineers) in December of 2003.
For more information, e-mail cbe@uclink.berkeley.edu.

Human Thermal Comfort Model



Buildings are currently designed to achieve comfort by creating uniform interior environments. However in reality neither indoor environments nor building occupants are static. CBE has developed a simulation tool to evaluate thermal comfort over an entire year for a building, similar to the way energy simulation tools are used. This model is one of the most sophisticated thermal comfort models available. It is capable of analyzing human thermoregulation in non-uniform, transient conditions, and is capable of predicting local and overall sensations in real thermal environments. The model also has an integrated physiological model that can predict the overall comfort that results from these responses. The model was developed with a detailed building interface to allow building designers and engineers to evaluate the thermal comfort impacts of various design and system options, and may be used for evaluating the comfort of an indoor environment including the effects of nearby windows, surface temperatures, and air movement. For more information, e-mail cbe@uclink.berkeley.edu.