

# Dunham Associates

Mechanical and Electrical Engineering Consulting

U.S.A.



www.dunhameng.com



ANSYS® Airpak™

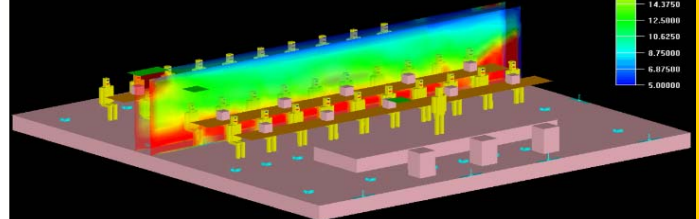
## Overview

Dunham Associates develops facility designs that maximize energy savings and optimize the quality of the indoor environment for building occupants. The company utilizes high-performance engineering strategies to reduce operating costs and to ensure the comfort of those using the facility. Dunham is committed to the principles of sustainable design; it works closely with its clients to achieve facility goals.

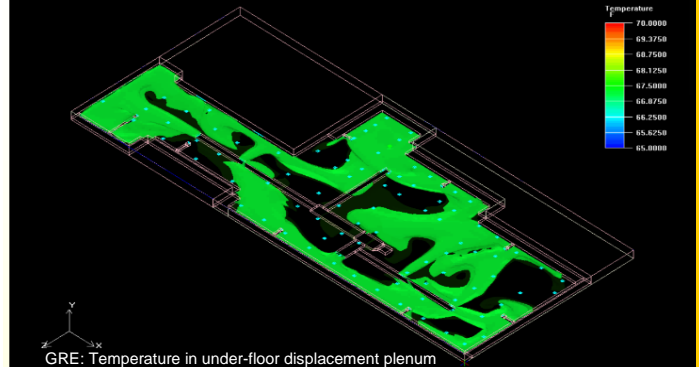
Dunham believes it can most effectively create the kinds of spaces that clients desire by interacting early in the design process with the project's owner and architect and by developing the design in a holistic approach. Dunham's design process for high-performance buildings includes computational fluid dynamics (CFD) airflow modeling, advanced design analysis and careful equipment selection. Dunham specializes in sustainable design and Leadership in Energy and Environmental Design (LEED) certification.



Great River Energy (GRE) corporate headquarters rendering



GRE: Percent of people dissatisfied in conference room



GRE: Temperature in under-floor displacement plenum

## Testimonial

"We have used ANSYS Airpak software for quite a few years, but just within the past two years we have been using it more often for many different projects. Simulation results assist us in the process of developing and evaluating design concepts as well as contributing to the evidence that a proposed design meets various rating criteria. Moreover, we use the software to produce visualizations for marketing purposes to enhance our communication with prospective clients. I don't see our use of this tool letting up any time soon. We recently made the shift to the latest release of ANSYS Airpak 3.0 within the last month, and the improved ease-of-use has been amazing. The software has an interface similar to CAD, which reduces the amount of time it takes to do many things. Therefore, our productivity using this new version has increased, and the release of the 64-bit version allows us to undertake even larger projects. Lastly, I can't say enough about the technical support that we receive. The new way of submitting technical questions online through the user services center Web site was something that I was hesitant about at first, but, after using this method for the past month, I see all of the benefits first hand."

John Costello, LEED AP  
Mechanical  
Dunham Associates

## Challenge

Dunham designs effective complex mechanical ventilation systems for large new-construction commercial office buildings. Today, many of these projects seek LEED certification and incorporate innovative under-floor air distribution (UFAD) or displacement ventilation systems to deliver improved indoor air quality (IAQ) and thermal comfort to the building's occupants. The ventilation system design must be optimized in terms of providing performance as well as energy efficiency.

## Solution

Through the use of ANSYS Airpak airflow modeling, Dunham explored the ventilation system performance in the design phase rather than having to wait until construction was complete. This enabled the company to streamline the selection of diffuser locations, to optimize supply flow rates and temperatures, and to quickly explore various design alternatives.

## Benefits

ANSYS Airpak assists Dunham in the process of developing and evaluating building ventilation system design concepts as well as contributing to the evidence that a proposed design meets various rating criteria. More specifically, it helps assess or develop optimal energy performance, increased ventilation effectiveness and compliance with standards for thermal comfort. Simulations using ANSYS Airpak technology are helpful in evaluating the best use of project dollars and in identifying potential areas of conflict in the design.