

Study Puffs Up Air Barriers

Air barriers can result in energy savings of 30% to 40% in heating climates and 10% to 15% for cooling climates, according to a new study by the National Institute of Standards and Technology.

The report shows a simulation study of the energy impact of improving envelope air tightness in U.S. commercial buildings. Despite common assumptions, measurements usually show building envelope leakage, which can result in significant heating and cooling loads.

To evaluate the potential energy savings of an effective air barrier requirement, annual energy simulations were prepared for three nonresidential buildings (a two-story office building, a one-story retail building, and a four-story apartment building) in five U.S. cities. A coupled multi-zone airflow and building energy simulation tool was used to predict the energy use for the buildings at a target tightness level relative to a baseline level based on measurements in existing buildings. Based on assumed blended national average heating and cooling energy prices, predicted potential annual heating and cooling energy cost savings ranged from 3% to 36%, with the smallest savings occurring in Phoenix, Az., and Miami, Fl.

"This study shows tremendous support for using an air barrier to construct an airtight building envelope," said Lisa Petsko, product manager for Sto Guard, Atlanta, Ga.