

# ORNL Roof and Attic System Shows Efficient Retrofit Option

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By Zaher Karp – Reuters, July 27, 2009

A new roof and attic system developed at the Oak Ridge National Laboratory Building Technology Center is promising efficient designs that can be applied affordably to existing buildings and new constructions.

Texas-based Billy Ellis Roofing funds the research through the Building Technology Center. The collaboration has been working on a new roof system that employs Thermadeck Styrofoam and can be installed under accessible shingle roofs.

I spoke with William Miller of ORNL, who has been testing the roof and attic system for over a year as a retrofit application, where shingles wouldn't have to be removed. Along with Billy Ellis, Miller took down the retrofit system and installed it as a new construction system: "Taking a foil-faced EPS insulation that is profiled to fit snugly over the top of existing roof rafters [under] plywood that serves as a new roof deck [and] new shingles and sheeting," Miller said.

Radiant barrier systems use reflective foils to reduce heat gain and loss in attics. They can also be utilized under roofs and in crawlspaces.

Miller was very satisfied with the versatility of the insulation material, which was key according to him, as it takes advantage of ventilation, insulation and radiation. He explained, "The material reduces radiation heat transfer and enhances convection heat -- both helping to mitigate heat into attics or conditioned spaces."

The system is effective when considering the entire life cycle, Miller said. "To argue cost effective [solutions], consider recyclability and life cycle costs." The roof system would cost about an additional \$6 per 100 square feet to install over an existing shingle roof, taking into consideration shingle costs (at \$100 per 100 square feet), with a new construction, costs of \$200 per 100 square feet are possible.

With green jobs spurring retrofitting efforts and significant support from the Recovery Act, demand is growing for technology that can be affordably attached to existing structures. Developments that could potentially satisfy needs for retrofitting for low-income structures on a mass scale, such as the solutions developed at ORNL, might be able to respond to the lack of support highlighted in recent sustainable reports.

Picture courtesy of Indoor Air Quality Experts.