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**U.S. Department of Energy's
Oak Ridge National Laboratory
Buildings Technology Center
"Nano-Scale Insulation at Work: Thermal
Performance of Thermally Bridged Wood and
Steel Structures Insulated Local Aerogel
Insulation."**

A 2005 - 2006 research study by the U.S. Department of Energy's Oak Ridge National Laboratory Buildings Technology Center analyzed an early generation of the Thermablok aerogel insulation material for use in building envelope applications.

The research study focused on three key target areas for thermal bridging solution; residential steel and wood framed walls and commercial steel framed low slope roofs.

Research Study Highlights:

"R-value of the 2x4 steel-framed wall containing wall R-13 (2.46 m2K/W) fiberglass insulation in the cavity was improved by about 29%."

"Hot box measurements performed on the through fastened metal roof insulated with 5-in (12.7-cm.) wide 3/ 8-in. (0.95-cm.) thick aerogel strips, showed an increase in the overall roof R-value by about 14%."

"For many building envelope applications with limited space aerogels can be an effective remedy for intense thermal bridging. High flexibility and good thermal insulation properties of fiber-reinforced silica aerogel composites make it a promising insulation candidate for future buildings."

"A 2002 report prepared by Enermodal Engineering for the California Energy Commission, reports 27% framing in current residential walls in California [CEC -2001]. A similar study performed by ASHRAE in 2003 concluded an average 25% of framing factor for all US residential buildings [Carpenter - 2003]."

