

Oak Ridge National Laboratory Study Determines 2" EIF Systems 84% More Thermally Efficient

EIFS out-perform all other claddings in independent tests conducted by the Oak Ridge National Laboratory (ORNL).

The landmark report provides compelling technical support for using EIFS as a primary method of maximizing the energy efficiency of buildings in both new and retrofit construction.

The Findings

A clear wall comparison was performed by ORNL scientists at the ORNL facility in Oak Ridge, Tennessee. Seven common cladding types:

- 2" EIFS
- Brick
- Glass
- Stucco
- Concrete
- Wood
- Masonry

were evaluated to arrive at an effective "Clear Wall R-Value" for each cladding as used in their most common installed wall configuration. The Clear Wall R-Value considers the entire wall construction, including material discontinuities and thermal bridging effects. The overall opaque wall performance for a typical building is then measured using the "Whole Wall R-Value" concept, which additionally included effects from transition details at areas such as windows and doors, roof and floor lines, foundation and corners and others.

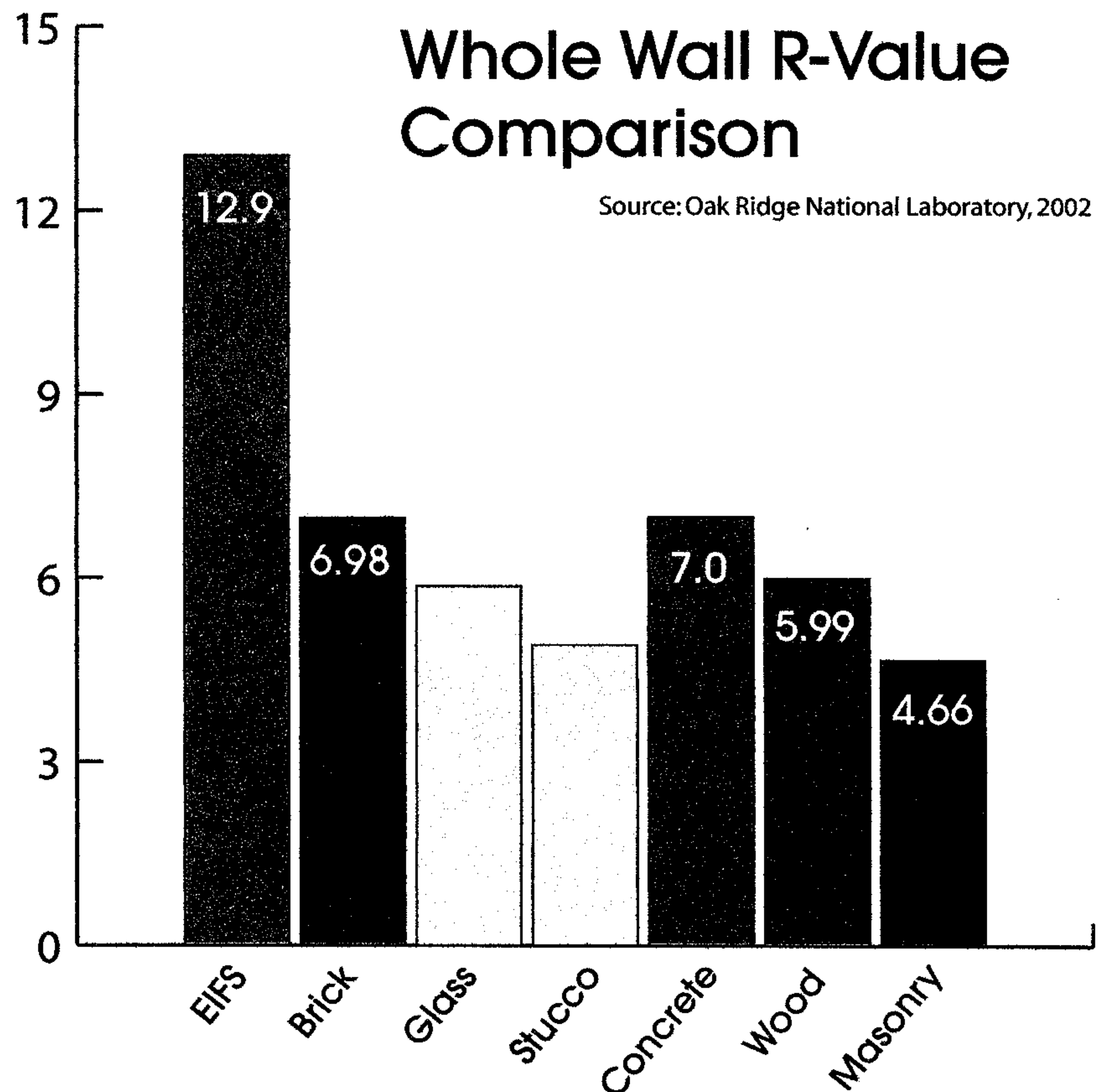
The result?

EIFS achieved an 84% higher R-value than the next best-performing cladding.

The Methodology

Hot-box test and finite difference computer modeling were used to analyze steady state thermal performance of the clear wall area and wall interface details for EIFS with 3 5/8-inch light gauge steel framing. Guarded hot box tests formed the basis for a finite difference computer model calibration. This computer model was then used to calculate local R-values for all typical wall interface details and the whole wall R-value. A one-story office building (140'x 60') was utilized for this analysis.

The thermal performance of EIFS was compared with six competitive wall technologies using the geometry of the office building (floor plan, area of elevation, windows, doors, etc.). Nine basic building envelope details were analyzed for each of the considered wall technologies. For all analyzed technologies, clear wall and local R-values for all wall interface details were computed based on three-dimensional finite difference modeling.

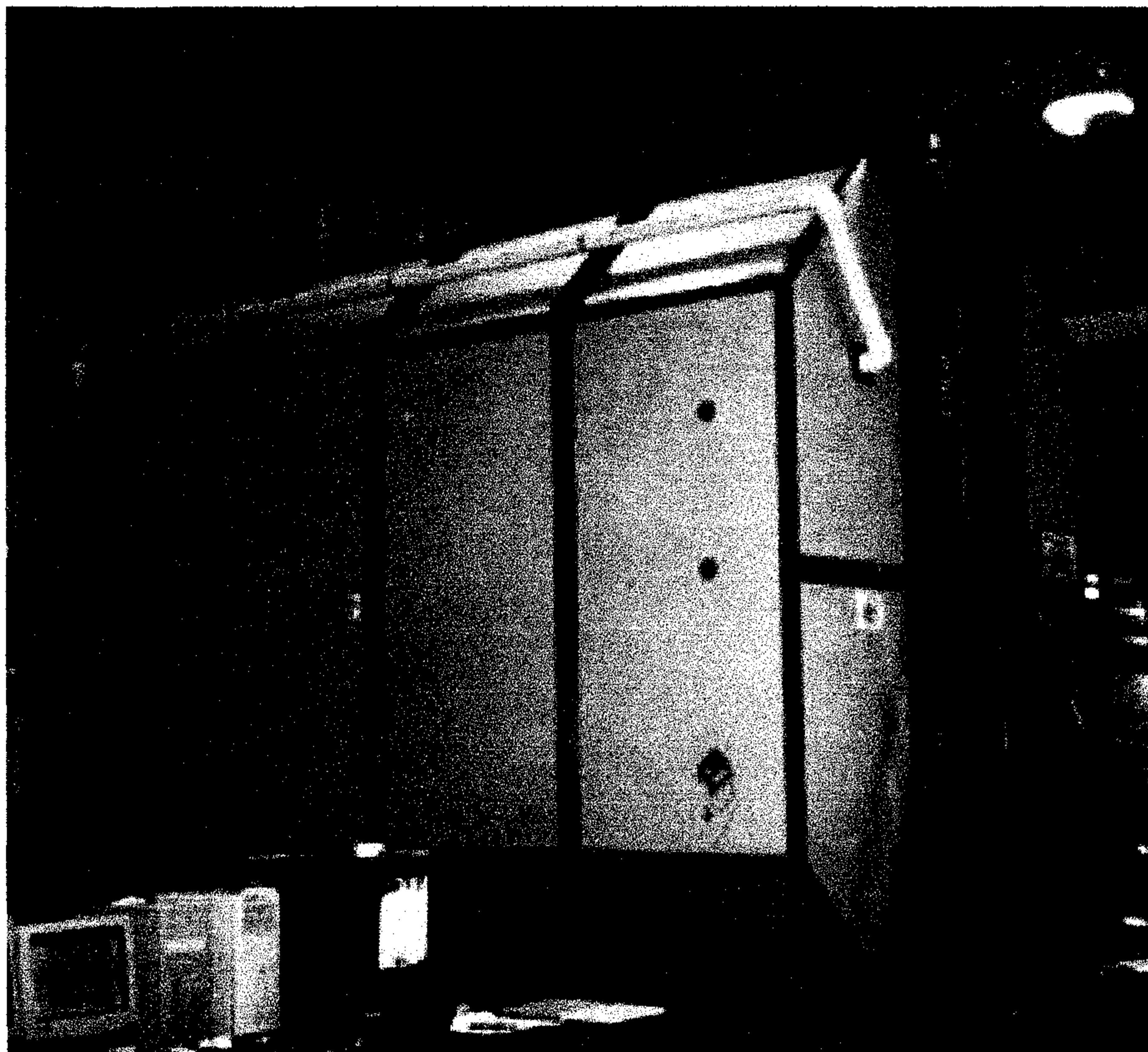


They served in the calculation of the whole wall R-value and analysis of distribution of heat losses through the building envelope area.

The ORNL report is significant because it considers a whole wall or through wall assembly, taking into account all the materials in the wall structure. What is unique about the ORNL study is that it compares all claddings as they would be used on a building, including thermal bridges and other discontinuities. The information contained in the study represents "real world" use and measures performance on an equalized footing.

A High-Performance Value

When building owners are seeking energy-efficient, high-performance building options, EIFS offer the best alternative to suit their needs. Combined with extraordinary design flexibility and lower installed cost, EIFS offers the best of all worlds. For more information or for a copy of the full report, please contact EIMA at 1-800-294-3462, or visit us on the web at www.eima.com.



The ORNL whole wall testing chamber. (ORNL photo)

The Oak Ridge National Laboratory is a multiprogram science and technology laboratory managed for the U.S. Department of Energy by UT-Battelle, LLC. Scientists and engineers at ORNL conduct basic and applied research and development to create scientific knowledge and technological solutions that strengthen the nation's leadership in key areas of science; increase the availability of clean, abundant energy; restore and protect the environment; and contribute to national security. ORNL was established in 1943 to carry out a single, well-defined mission: the pilot-scale production and separation of plutonium for the World War II Manhattan Project. From this foundation, the Laboratory has evolved into a unique resource for addressing important national and global energy and environmental issues. For more information visit www.ornl.gov.



EIFS INDUSTRY
MEMBERS
ASSOCIATION