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BUTLER MANUFACTURING™ AND BAY INSULATION EMBARK ON EXTENSIVE THERMAL TESTING PROGRAM WITH NEW GUARDED HOT BOX

The Butler Research Center in Grandview, MO, is the site where Butler Manufacturing™ and Bay Insulation Company have embarked on an extensive test program using an apparatus known as a "Guarded Hot Box" that precisely measures thermal conductance through insulated roof and wall system assemblies, announced David E. Evers, P.E., Butler Vice President of Research & Development. The initiative represents a significant investment by Butler and partner Bay Insulation Co. to develop more sustainable, energy efficient buildings.

The Butler Research Center performs these tests in accordance with recognized standards (ASTM C-1363) and is accredited by the International Accreditation Service (IAS) for quality control and compliance with ASTM, ISO, and the National Bureau of Standards.

"The tests will produce the most accurate database yet for the in-place thermal performance of complete metal roof and wall assemblies and enable the development of newer and more thermally efficient building envelopes," Evers said.

Mike McLain, general manager of Bay Insulation Co. says, "The Guarded Hot Box will give us a myth-busting process for developing actual versus theoretical, or worse, perceived performance data. The information will also lead to the development of stricter field installation standards that could ultimately amend our building codes."

Unlike the "R value" customarily assigned to only the insulating material, the measurements of complete roof and wall assemblies are referred to as "U-factors" and are considered more relevant because the data reflects not only different types and thicknesses of insulation materials but includes the impact on thermal performance from other variables such as thermal short circuiting or insulation compression along structural members.

The 15'x15'x10' apparatus—unique in the metal building segment of the non-residential construction industry—is nearly four times larger than an earlier Guarded Hot Box developed by Butler. The Butler Research Center, for over 15 years starting in the 1970s, conducted over 1000 tests of 5' x 5' metered roof and wall assembly specimens. The new Hot Box represents a state-of-the-art design that can accommodate 8'x10'roof or wall sections. Each test can be fitted with up to 300 sensors that accurately measure temperature, humidity, and air flow. After dropping the temperature on the cold side of the box the total amount of energy required to maintain a constant temperature on the warm side of the box is

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measured using a sophisticated computerized data acquisition system. The energy consumed in this process determines the heat flow moving from the warm side to the cool side of the chamber resulting in the actual transfer of energy across the test specimen. Measurements are taken during an 8 to 12 hour period after the test has reached thermal equilibrium, which can take 2 to 3 days to achieve.

The earlier Butler thermal testing responded to the need for an overall improvement in the energy efficiency of buildings following the 1973-74 OPEC Oil Embargo. The new series of tests plays to the current trend toward building not only more energy-efficient—but environmentally friendly—buildings. Butler metal building systems offer inherent advantages as material solutions for sustainable (i.e. 'green') building design and construction practices, such as the LEED® Certification program developed by the US Green Building Council (USGBC).

Facilities still account for 39 percent of all energy used today in the United States, including 72 percent of the nation's electricity consumption, according to the USGBC. The test results will enable Butler Builder® contractors and mechanical engineers to more precisely size heating and cooling units for lowest initial cost and to ensure optimum operating efficiency. Less consumption by a building means less byproduct emissions by utilities supplying various energy sources.

A number of insulation industry companies are collaborating with Butler and Bay Insulation Co. as co-sponsors who will also benefit from the data that will reflect "real-world" conditions. They include: Certainteed, and Owens-Corning, both prominent fiberglass blanket insulation manufacturers; Lamtec Corporation, a leading vapor retarder supplier to the metal building construction industry; and Dow, which manufactures rigid-foam board insulation.

"We believe this investment will further advance the leadership position of both Butler and Bay Insulation Co. in developing high performance building systems. We're excited about the development opportunities this testing capability adds to our Research Center," says Evers.

Butler Manufacturing built the Research Center in 1959 on 11 acres to conduct quality control tests of materials and to support a formal Product Research, Testing, and Development Department. The company has since become a division of BlueScope Buildings North America, a division of BlueScope Steel, Australia's largest steel company.

For more information visit www.butlermfg.com.