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CELEBRATING 55 YEARS

Arthur Hance - The 2012 Energy Code

June 23, 2011 - Green Buildings

The U.S. Department of Energy has adopted a 2012 International Energy Conservation Code (IECC) that has many commercial property owners and builders electing to dramatically increase the amount of insulation they are putting in commercial walls and roofs. But there is a far more economical and environmentally friendly way to comply with the new code, which aims to increase energy savings by 30% over the previous version of the IECC.

Many central Heating, Ventilation and Air-Conditioning (HVAC) systems are designed without tested data on energy efficiency as a basis and that creates tremendous waste. Builders can now access the most accurate database yet for testing the in-place thermal performance of complete metal roof and wall assemblies. The data supports newer methods for achieving more thermally efficient building envelopes. Builders and mechanical engineers can more precisely size heating and cooling units for the lowest initial cost and optimum operating efficiency. Less energy consumption by a building directly translates into less byproduct emissions by utilities and refineries supplying sources of energy.

Butler Manufacturing recently announced their Butler Guarded Hot Box test program utilizing a device that can test actual 8' x 10' roof and wall sections, assembled just as they would be in planned buildings. Replacing an earlier version of the device that tested smaller sections, the Guarded Hot Box has nearly 300 sensors that measure the temperature, humidity, airflow and energy consumed during a test. A complete test can take about 3-4 days in order to acquire steady state data over an 8 to 12-hour test period.

The Guarded Hot Box is a great asset for builders and property owners because IECC compliance can be demonstrated through its test data. Showing the data is particularly important for commercial buildings because although the overall goal of the IECC is to increase energy savings by 30% for every building, the requirements are actually more stringent for metal walls and roofs, approaching 45% in many cases over the 2006 IECC version, in order to compensate for energy loss through much lower performing doors and windows. And the future will only hold even greater energy efficiency requirements with talks already underway that will implement even stricter energy standards.

The first and most important step is knowing your local code. Each state may establish its own energy code and in some cases they elect to adopt the IECC or adapt it to some extent. Many states around the country have adopted IECC 2009, but some still refer to earlier versions of the code. Find local codes on the Web at www.energycodes.gov/states .

Generally, property owners can meet energy requirements by complying with the IECC or alternatively the American Society of Heating, Refrigerating & Air Conditioning Engineers (ASHRAE) standard known as ASHRAE 90.1, which serves as the technical basis for most state and federal energy codes. Any building that is not air-conditioned and whose heating system capacity is less

than 3.4 Btu/hr/sf is considered "Low Energy" or "Unconditioned" and need not comply with the IECC or ASHRAE standard. Consideration should still be given for a certain level of insulation to help control condensation, noise, and basic level of comfort, but it's not required by code. ASHRAE also recognizes the semi-heated category for certain minimally heated only buildings not specifically covered in IECC. For semi-heated buildings the ASHRAE option is less stringent than the requirements for fully conditioned buildings.

Butler Manufacturing's tests using the Guarded Hot Box represent the metal building industry's most precise values yet for several different types of insulation alternatives addressed in the ASHRAE 90.1 standard. The test procedure begins by lowering the temperature on the cold side of the box and then measuring the total amount of energy required to maintain a constant temperature on the warm side of the box. A sophisticated computerized data acquisition system measures the transfer of energy in the form of heat flow from the warm side to the cool side.

Unlike the R-values customarily assigned to an insulating material, the measurements of complete roof and wall assemblies are expressed as U-factors. R-value denotes the potential insulation value of a single product versus the U-factor, which denotes actual insulation values of full wall or roof assemblies

Know your numbers and eliminate waste in your next building.

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