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Building Envelope News

High performance meets high education

You can read books and attend conferences, but isn't the best way to learn about high-performance construction materials and technologies to see them in action first-hand?

At the Louisiana State University (LSU) Home and Landscape Center in Baton Rouge, that idea will soon be a reality. A showcase home and learning center, the LSU Louisiana House (LaHouse) is on the verge of becoming the south's premier center for high-performance building research. And it features ZERODRAFT® weatherization materials.

LaHouse will display practical and proven high-performance building solutions, to address construction challenges such as energy efficiency, severe-weather resistance, healthy indoor environments, waste management, and affordability. It will be a permanent, evolving showcase home with educational landscape exhibits and a teaching center for consumers, professionals and youth.

Constructed to look like a "real" home, the structure will incorporate a number of variations on high-performance design, including four different building foundations and nine different types of windows and doors.

"We want to be able to show the range of price points—low, medium and high—for all of the different building technologies," explains LaHouse project coordinator Sandra Scallan.

ZERODRAFT® two-component poly-urethane foam insulating air sealants and one-component poly-urethane foam sealants, specialty caulks and weatherstripping play key roles in the LaHouse. The products will be installed to seal and insulate hard-to-build areas, such as windows, door penetrations, parapets and soffits. ZERODRAFT will also be installed to create air barrier system continuity from the foundation up through the walls and across the ceiling.

Rocky Johnson, owner of ZERODRAFT Louisiana, approached the co-ordinators of the LaHouse when he first heard about the project, pitching the design team on the merits of ZERODRAFT. Upon reviewing ZERODRAFT's performance capabilities, the team selected it as a featured product in the home.

ZERODRAFT insulating air sealants stop uncontrolled air leakage to improve the energy efficiency of a building, prevent mold and mildew from forming, and greatly improve indoor air quality, durability and control over thermal comfort. Plus, ZERODRAFT insulating air sealants meet CAN/ULC standards, the first building material standards to be performance-based for durability and air permeability.

Somewhat surprisingly, says Johnson, the benefits of comprehensive weatherization and air sealing are still a bit of a shock to some people, even those in the industry.

"ZERODRAFT is an eye-opening concept to a lot of people, including architects and contractors," says Johnson. "I've got some builders who are constructing homes with ZERODRAFT and they're shocked with the scope of the product and how much air sealing you can do with it. Then they realize it totally makes sense."

LaHouse is slated for completion in early 2008 and will start serving as a functioning learning environment upon opening. The popularity of the home's open houses, which ran weekly during certain stages of the home's construction, indicate that there is a huge appetite for this type of knowledge in Louisiana. "This is a really high-profile project," says Johnson. "And I'm so proud ZERODRAFT is a part of it."

ALSO IN THIS ISSUE:

Supersized job? Supersize your diagnostics.

When it comes to air leakage diagnostics in large buildings, sometimes a standard blower-door fan just doesn't cut it. You need to supersize it.

So how do you upgrade your pressurization capability? You look to the new breed of high-powered pressurization fans and the extra-large fans we like to call "supersuckers."

Retrotec, a Vancouver-based manufacturer, makes one of the most innovative high-powered fans on the market. This innovative and flexible high-powered fan for large-building testing is based on using three or six, two-horsepower fans stacked together to create high-power pressurization comparable to traditional, trailer-mounted units. The three-fan configuration is used for a standard door, while the six-fan configuration is used for a standard double door.

Each fan can flow almost 9,000 cfm (4.2 m^3/s) into 50 Pa of building pressure. This can provide almost 54,000 cfm (25.5 m^3/s) of calibrated airflow—in a package that can fit into the back of a pickup truck or panel van. Individual fan flow, air changes (ACH) and other advanced calculations can be instantaneously read off of their DM-2 series of digital gauges.

This design provides a number of benefits, especially for small-business operators. For one, the fans can do double duty as testing systems for smaller spaces because they operate both independently and as one unit. For instance, when the fans are not being used together to test a large building, they can be split up and used separately for smaller commercial or residential spaces. Plus, the modularity of Retrotec's system permits the operator to mount some of the fans in one doorway and some of the fans in another. The flexibility of this system is ideal if your business covers both low-rise residential, institutional and high-rise residential and commercial applications.

Retrotec's high-powered multi-door fan for large building testing.

The trailer-mounted "supersucker" is another way to pressurize large buildings. Virginia-based Infiltec manufactures such a fan in the form of its G54 Mobile Calibrated Large-Building Airtightness Test Fan. It has a calibrated air flow of over 55,000 cubic feet per minute (cfm) (26 m^3/s) @ 0.30" wc (75 Pa), which can be varied and measured to within five percent accuracy over the range of 15,000 to over 60,000 cfm (7 to 29 m^3/s) @ 0.04 to 0.3" wc (10 to 75 Pa) building pressures. The fan is connected to the building by

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IN THE MEDIA

Thanks to several high-profile magazine story placements and speaking engagements, media coverage of Canam Building Envelope Specialists and ZERODRAFT® is as strong as ever.

Prominent magazine placements include a Steve Tratt-bylined feature story in the January/February 2008 issue of Home Energy Magazine, discussing some of the issues surrounding energy-efficiency retrofits and government incentives; a feature in Pushing the Envelope magazine, published by the Ontario Building Envelope Council (OBEC), with a cheeky take on improving homeowners' love lives via better building envelopes; and a back-to-basics piece on controlling air leakage in residential high-rise buildings for the September 2007 issue of Canadian Property Management (British Columbia edition).

Tony Woods and Steve Tratt also shared their sought-after expertise at several major industry events. Well-attended speaking engagements included Construction Canada in Toronto (Nov 28-30, 2007), the 10th international conference on Thermal Performance of the Exterior Envelopes of Whole Buildings in Clearwater Beach, Florida (Dec. 2-7, 2007), and the Thermal Solutions conference (Jan 21-24, 2008) in Florida as well.

Look for more Canam Building Envelope Specialists Inc. and ZERODRAFT experts sharing their knowledge in the media in 2008. If you have a job story that you think might be a good topic for a profile or magazine story, please let us know. We're always excited to hear your ideas.

Finding the pain

Interviewing occupants key to selling energy-efficient technologies

Selling energy efficient technologies and services, such as building envelope retrofits and weatherization materials, can be tough. The majority of homeowners like the idea of a more energy efficient home, but are hesitant to invest money in it because the benefits seem intangible or too far in the future to enjoy. So how do you sell energy efficiency without selling energy efficiency?

The key is to turn energy savings into a justification rather than a motivation. To do this, you have to investigate the customer's true reason for seeking you out—a process we like to call "finding the pain." If you can discern the root concerns of the occupant, then you can make the link between that concern and their home's performance.

For example, if they called your company about insulation, what exactly is the problem that sparked the concern? Was it a particularly high utility bill? Drafts? Are they too hot in the summer and too cold in the winter?

What kind of 'solutions' do they have in place already? Is there a humidifier in the bedroom? A rolled-up carpet against the basement door? These are useful clues to homeowners' hidden concerns, the problems they don't know are connected to the energy efficiency of their homes.

Once the motivation for contacting your company is uncovered, you can help the homeowner decide the best course of action. The sale is made on improving the day-to-day life of the customer and in turn, energy efficiency, and the associated financial savings, becomes a feel-good side benefit of the investment.

If high energy cost is their pain, that's your 'in.' If concerns about pollution and air quality are their pain, that's your 'in.' If drafts, mold, or ice damming are their pain, there you go. It's up to you, the contractor, to link mental and physical comfort with energy efficiency.

It has been said that comfort is the state of mind of being comfortable. If the things that make homeowners uncomfortable—whether it is a guilty environmental conscience, high utility bills, or health concerns—are taken away, we are in the unique position of promoting the benefits of energy efficiency without even really trying.

Energy efficient homes are healthy, safe, durable, and comfortable. They have the lowest operating cost achievable without affecting any of the above parameters. In short, energy efficiency is about making people comfortable with the protection their home affords them from the world outside. Energy efficiency should be about improving quality of life. The fact that it is a positive move for society and the environment is just icing on the cake.

Code & incentive news

Three years, over 40 addenda and countless meetings later, it's official: ASHRAE has mandated continuous air barrier systems for new commercial construction under the 2007 version of ANSI/ASHRAE/IESNA Standard 90.1, *Energy Standard for Buildings Except Low-Rise Residential Buildings*. The addendum sets stringent performance characteristics for the continuous air barrier system that include:

- Continuity throughout the envelope (at the lowest floor, exterior walls, and ceiling or roof), with all joints and seams sealed and with sealed connections between all transitions in planes and changes in materials and at all penetrations
- Joining and sealing the air barrier component of each assembly in a flexible manner to the air barrier component of adjacent assemblies to allow for the relative movement of these assemblies and components
- The capability to withstand positive and negative combined design wind, fan and stack pressures without damage or displacement, and to transfer the load to the structure while not displacing adjacent materials under full load.

Material and assembly requirements in the new Standard include the use of:

- Individual materials that have an air permeance not exceeding 0.004 cfm/ft^2 under a pressure differential of 0.3" w.g. (1.57psf) (0.02 L/s.m^2 @ 75 Pa) when tested in accordance with ASTM E 2178; or
- Materials and components assemblies that have an average air leakage not to exceed 0.04 cfm/ft^2 under a pressure differential of 0.3" w.g. (1.57psf) (0.2 L/s.m^2 @ 75 Pa) when tested in accordance with ASTM E 1677; or
- Tests of completed building demonstrating that the air leakage rate of the building envelope does not exceed 0.40 cfm/ft^2 at a pressure differential of 0.3" w.g. (1.57 psf) (2.0 L/s.m^2 @ 75 Pa) in accordance with ASTM E 779 or an equivalent approved method.

For more information, visit www.ashrae.org

Supersucker

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a durable 60" (1.5 m) diameter by 250" (6.5 m) long flex duct. Fan flow and building differential pressure measurements are displayed on built-in analog gauges, or they can be measured with a custom calibrated dual-sensor DM4 digital micromanometer.

Out in the field, these high-powered fans have proven their worth in accurately measuring the air leakage of large commercial buildings, says Ron Fox, executive vice president of Maryland-based Energy & Environmental Consultants Inc., a ZERODRAFT Authorized Applicator.

The company recently purchased a supersucker so that they could specialize in commercial diagnostic applications. As the diagnostic side of their business grew, so too did the size of the buildings being tested, requiring the investment in the super-sized fan. Job sites currently waiting to use the fan include an airplane hanger, two prisons and two colleges.

"More and more people are interested in air leakage in commercial buildings and in the measurement verification of the project," explains Fox. "That's because the more the value of energy goes up, the more the value of your savings goes up."

Awareness of air leakage in commercial buildings is on the rise and large-building testing has become a valuable market for building science and weatherization specialists. High-powered diagnostic equipment can help you capture more of this lucrative business.

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