

Structural insulated panels help builders meet tough energy codes



WITH CONTINUOUS insulation and the ability to create an airtight building envelope, SIPs help builders meet the requirements of the nation's ever-tougher energy codes.

(Photo by Scott Homes)

THE VAST MAJORITY of builders in the U.S. now face demanding energy codes. As of May 2015, 39 states have adopted codes equivalent to or more energy efficient than the 2009 International Energy Conservation Code (IECC). Those 39 states account for 89% of the country's population, and include the top 5 most populous states—California, Texas, Florida, New York, and Illinois.

As an LBM dealer, your builder customers are always looking for ways to meet the tough requirements of ever-stricter energy codes. Among their challenges are how to better seal the building envelope against air leaks and provide continuous insulation. California's Title 24 Building Energy Efficiency Program requirements, which are likely to find their way into other state codes in the coming years, specifically require: "all joints, penetrations and other openings in the building envelope that are potential sources of air leakage shall be caulked, gasketed, weatherstripped or otherwise sealed to limit infiltration and exfiltration."

The IECC likewise sets tough standards against air leakage. As of the 2012 IECC, builders must demonstrate code compliance with a blower door test that achieves three to five air changes per hour at 50 Pascals of pressure (ACH-50), depending on the jurisdiction.

Energy codes focus on creating an airtight envelope as air leakage accounts for up to 40% of a home's energy load according to the National Association of Home Builders.

Meeting these code requirements with traditional building methods like stick framing requires builders to undertake heroic measures to search out and seal all gaps using caulks, expanding foams, and other sealants. Since homes, apartments and other light construction have hundreds of interfaces between framing members, this is no small feat.

Airtight Building Envelope Made Simple

When builders ask your sales staff for ideas on better sealing the envelope, one of the best recommendations they can make is to use inherently airtight systems like structural insulated panels (SIPs) or insulated concrete forms (ICFs).



SIPS HAVE far fewer gaps to seal than other framing methods.

(Photo by Premier SIPS)



BUILDER STAGES SIPs at a jobsite for rapid installation.

(Photo by Premier SIPs)

Testing by the U.S. Department of Energy (DOE) shows that SIP construction is about 15 times more airtight than stick framing. DOE's Oak Ridge National Laboratory (ORNL) found that the air leakage in a SIP structure was only 8 cu. ft. per minute at 50 Pascals compared to 121 cu. ft. per minute for a stick-framed building.

One reason for the superior airtightness is SIPs arrive at the jobsite in large, ready-to-install sections. Imagine a home with a 20-ft. wall section. With conventional stick framing, there would be 15 vertical cavities needing insulation along that wall (assuming 16-in. o.c. spacing of studs). With fiberglass insulation, those cavities have hard-to-seal gaps along the right and left side of each batt. Yet one 20-ft.-long by 8-ft.-tall SIP could comprise that entire wall, with gaps to be sealed limited to the panel ends, top and bottom. Another reason that SIPs are so airtight is because the connections are sealed with mastic. Each joint has multiple beads of mastic that work to stop the movement of air through the panel joints.

But, does SIPs' airtightness in lab tests hold up in the real world? Yes. In one powerful indication of this among thousands of SIP homes built throughout the U.S., California's Clarum homes built a 3,300-sq. ft., single-story home at a mid-price range using SIP walls and roof, that was rated at 0.2 ACH-50. That's up to 25 times more airtight than the IECC 2012 requirements, surpassing even the Passive House standard of 0.6 ACH-50.

Outstanding Insulation Performance

In addition to their ability to create a tight building envelope, SIPs also offer superior thermal resistance to other

structural and insulation assemblies. For example, ORNL tested the "whole-wall" R-values of SIPs and stick framing, taking into account thermal bridging through structural members. The SIP wall built with 3.5-inch thick foam core had a dramatically higher R-value of 14.09 compared to 9.58 R-value for a 2x4 stud wall at 16 inches o.c. and fiberglass insulation—that's 47% better thermal resistance for the SIP. A key reason SIPs far outperform stick framing is that SIPs offer continuous insulation across their height, width and depth and have far fewer thermal bridges.

What's In It for Dealers?

SIPs offer builders many advantages, but dealers may wonder about losing out on sales of insulation and sealants. Yet, it's important to remember the value LBM pros provide. When Amazon.com announced it would sell building products, many LBM dealers feared they would suffer the same fate as book publishers by being under-cut on price. But, savvy dealers realized that while Amazon might be able to sell builders cases of caulk cheaply, it will never be able to compete with their building expertise.

So, when a builder expresses frustration about the challenges with meeting ever tighter building codes, you can try to double down by selling him more sealants, or set yourself apart with real solutions such as providing insights on SIPs and other advanced building methods, which helps build loyalty over online sellers.

— Premier SIPs can be reached at www.premiersips.com.