

Green From the Outside In



Retrofit insulated panels make home weatherization quick and easy

With rising energy prices and a host of weatherization incentives available from federal, state and local governments, energy-efficient home retrofits are becoming one of the most active segments of the construction industry. Energy auditors have long recognized that adding insulation and controlling air leakage are two of the most effective ways to boost energy efficiency. As Washington-based builder Ted Clifton discovered, retrofit insulated panels are one of the quickest and easiest ways to add insulation and increase airtightness without even stepping inside the home.



PROJECT AT A GLANCE

LOCATION: **Oak Harbor, WA**

BUILDER: **CVH Inc.**

SQUARE FOOTAGE: **2,900**

SIP MANUFACTURER: **Premier Building Systems**

A longtime builder and construction educator, Ted Clifton has been building and remodeling homes for more than 45 years. Energy-efficient homes are his specialty and he received the Energy Value Housing Award from the Department of Energy in 2009 and 2010 for custom homes he built in Coupeville, Washington.

In 2009, Clifton was approached by a friend who had recently purchased a home in Oak Harbor, Washington with an excellent view of Skagit Bay.

“They loved the location but they really didn’t like the floor plan, and the house had some plumbing issues that would require a serious remodel,” said Clifton. “They asked if we could make the house energy-efficient during the process.”

The homeowners actually considered a complete tear down of the 2,900-sq.-ft. rambler, but Clifton calculated that he could remodel the home for a fraction of the cost using retrofit insulated panels on the exterior of the home to provide air sealing and additional insulation.

Retrofit insulated panels are easily installed over the existing sheathing and sealed to create a complete air barrier





(Left) Installation crews created an airtight envelope using expanding foam between panels and around window openings. (Below) Specialty SIP screws were used to attach retrofit insulated panels to the existing studs.

Retrofit insulated panels are a panelized insulation product made of expanded polystyrene (EPS) foam laminated to oriented strand board (OSB) sheathing. The EPS provides continuous insulation at roughly R-3.6 per inch, while the OSB creates a nailing surface for exterior finishes or roofing.

Clifton stripped the siding off the home and applied 4-inch-thick, R-14 retrofit insulated panels to the entire exterior of the home. He ordered the panels from nearby manufacturer Premier Building Systems in 9-foot lengths to cover the entire height of the exterior walls and the rim joist area.

“What is great about retrofit panels is that you get air sealing as well as insulation,” said Clifton. “We were able to cover the rim joist, which is typically a major source of air leakage in older homes.”

Retrofit insulated panels serve as an effective air barrier due to the low permeability of the OSB sheathing. Clifton’s crew used spray foam sealant between each panel and around window openings to create a complete air barrier.

Combined with other improvements, including new windows, attic insulation, HVAC system and other air sealing measures, Clifton was able to reduce the home’s annual heating cost by 83.5 percent.



Time and Labor Savings

Although Clifton gutted the house to modify the interior floor plan and address the plumbing issues, he points out that retrofit insulated panels allow insulation to be added to the walls of the home without requiring work on the interior.

“I want to emphasize that we can do this type of installation entirely from the outside without going inside the home,” he said. “It is a major advantage for people who want to weatherize their house but don’t want a crew inside their home.”

Clifton’s crews fabricated the panels onsite to fit around the existing doors and windows. The panels are sized to correspond with dimensional lumber so that blocking can be inserted around window and door openings. Clifton attached the panels to the existing studs using specially designed 6-inch screws commonly used in structural insulated panel installation.

“With retrofit insulated panels, you get a higher R-value and a quicker application than the alternatives,” said Clifton. “It is economical for both materials and labor.”

Nearly any type of siding or exterior finish can be applied over retrofit insulated panels. Clifton has attached everything from cementitious siding to brick veneer. He has also used the product to add insulation to residential roofs.

“If a house needs a new roof, we can rip the old roofing off, add ten to twelve inches of insulation, and screw it down to the existing trusses,” he said. “We then seal all the existing soffit vents with spray foam and close in that attic as part of the thermal envelope.”

For builders unfamiliar with retrofit panels, Clifton says that with minimal training anyone can undertake a deep energy retrofit.

“I would recommend that builders get some experience or find someone experienced with retrofit insulated panels and go for it,” he said. “You’ll find that you can be very cost effective doing deep energy retrofits with this product.”

Retrofit insulated panels are available from most structural insulated panel manufacturers. For a list of manufacturers in your area, visit www.sips.org.



Installing retrofit insulated panels, roof insulation and new windows helped cut the home’s heating cost by 83.5 percent



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