



This Thermal Imaging photo of a home shows excessive heat loss (red, orange and yellow areas) and preventable heat loss (green areas). Our Intelligent Walls system can correct these heat loss problems, and prevent many other potentially nasty problems, too.

Why You Need INTELLIGENT WALLS

Q What is "Intelligent Wall"?

△ "Intelligent Wall" is simply a thin exterior wall with Styrofoam® sheathing that out-performs thick walls and reduces the chances of wall condensation.

Q How can a thin wall save more energy than a thick wall?

△ Coverage. OSB wood-sheathed walls leave the frame (25% of the wall) uninsulated. You would not knowingly buy a 1600 square foot home that left a 40' wall uninsulated, but that's what a wood sheathed house offers.

Q Doesn't extra thickness make up for the uninsulated frame?

△ It could, but it's difficult because the first amount of insulation does the most good. In fact, an insulation R value of 39 (the higher the R rating the better) would be needed between the studs to make up for the heat loss of not having Styrofoam® sheathing with an R 5 covering the entire wall. An R value of 44 would be needed to make up for the heat loss of not having Styrofoam® sheathing with an R 7.5 covering the entire wall. The back page features other problems with thick wood-sheathed homes.

Q How can a heavily insulated thick wall be a problem?

△ The thick layer of insulation placed between the frame members hinders the heat produced in the house from getting to the sheathing, leaving the outside of the wall cold.

Q Why is cold sheathing a problem?

△ Any cold surface can act as a dehumidifier. Wood sheathing like OSB is susceptible to moisture and rot. The thicker the wall and cavity insulation the colder the sheathing is and the possibility that moisture can condense in the walls resulting in mold, mildew or rot.

Q Why haven't we heard about this before?

△ Wood sheathing has been used for years. Fortunately, we do not build them like they used to. Our homes are more energy efficient, lighter homes with high efficiency furnaces reduce air change and keep more moisture trapped inside. In older homes drafts of cold, dry, outside air kept wood sheathed walls and interiors of homes dry. We even had to use humidifiers. We cannot afford that today.



This photo shows the same house after it was remodeled with Intelligent Walls. Notice the dramatic change.

Q Are there any independent studies to back up what you are saying?

△ Plenty. Three of the best are; USDA Forest Products Laboratory Research Paper FPL 433, National Bureau of Standards Report DE-79-3 No. 3, and Northwest Wall Moisture Study. George A. Tsongas PhD, PE. More are coming all the time.

Q "Intelligent walls" with Styrofoam® sheathing are drier and warmer than thick wood sheathed walls, is there anything else?

△ Thin "Intelligent walls" with Styrofoam® insulation are not only extremely energy efficient and make the house last longer; they reduce wall-bowing, increase comfort levels and affordability and preserve our forests. Using 2 x 4s rather than 2 x 6s in the exterior walls allow more homes to be built from fewer trees. Styrofoam® insulation may be blue, but it's really a "green" product.

Q Is the Intelligent Wall strong enough compared to a wall sheathed in OSB?

△ Yes, and in certain ways it is stronger. The Intelligent Wall is engineered to have the right amount of OSB wall sheathing underneath the Styrofoam®. Our method of installation is the key: Our wall sheathing is one continuous piece starting at the sill plate bolted to the foundation, and is installed to bridge the weakest points in the construction of your home: From the foundation, over exposed basement walls, floor framing, and to the strongest part of the first floor walls.

In comparison, a wall sheathed in OSB

usually has no overlapping connection from the walls, to the floor, to the foundation. Our wall system is designed—Intelligently!

W I S C O N S I N



ENERGY STAR
HOMES



The intelligent wall provides a seal from the bottom of the foundation all the way to the roof! Styrofoam® panels insulate the foundation and seams in the wall sheathing are taped and sealed, to keep the conditioned air inside the house and the wind outside. Ventilation techniques assure indoor air quality.



This photo shows rotted OSB sheathing caused by poor window flashing on a house with no housewrap installed. This damage will not occur when a Styrofoam® intelligent wall is built because the foam cannot rot. Proper flashing is used in conjunction with an intelligent wall to ensure that water does not intrude into the wall framing, either.



Condensation occurred inside of an OSB-sheathed wall, froze into solid ice, and then thawed in the spring and ran out through the outlet. Again, the Intelligent Wall keeps the entire wall warm, so that moisture will not condense and freeze. Under normal circumstances, any stray moisture vapor that bypasses the vapor barrier will be able to escape through the top and bottom plates of the wall system.



This photo shows mold in the insulation of a house sheathed with OSB and housewrap. Condensation occurred inside of the wall, because the OSB allowed the wall cavity to cool, and the moisture vapor to condense. In a world where vapor barriers are not perfect, the Intelligent Wall will help keep the interior of the wall system warmer, so that stray vapor will not condense and create mold.

Intelligent, elegant design to fit your life. Enjoy life to the fullest in a new home custom-crafted to fit you by Degnan Design Builders.

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