

Texas Country Home



LEED Platinum home cuts energy use by 50 percent without breaking the bank

When the Sampson family bought land in a rural area outside of Cleburne, Texas, they originally envisioned building a getaway in the country. After having a child, their plans changed to creating a full-time residence that would be a healthy environment for raising their family. The Sampsons partnered with Ferrier Custom Homes, a Fort Worth-based builder specializing in energy efficiency and sustainability, to construct a structural insulated panel (SIP) home that will save them money for years to come.

PROJECT AT A GLANCE

LOCATION: **Cleburne, TX**

SQUARE FOOTAGE: **2,438**

ARCHITECT: **Healthy Home Plans**

BUILDER: **Ferrier Custom Homes**

SIP MANUFACTURER: **FischerSIPS**

“It turns out that we were ready to check out of the rat race and raise our daughter in a comfortable, healthy, rural environment,” said homeowners Jason and Chesney Sampson. “We feel like we’re planning for our future as a family by building efficiently and green.”

With energy efficiency at the top of their list of priorities, the Sampsons knew they had found the right builder—Ferrier Custom Homes has claimed five Energy Value Housing Awards from the U.S. Department of Energy and owner Don Ferrier was selected as the 2007 Green Builder Advocate of the Year by the National Association of Home Builders.

Producing a number of award-winning and extremely energy-efficient homes is the result of Ferrier’s thorough design process. He works with Guaranteed Watt Savers to perform an extensive cost-benefit analysis using energy modeling software to select the most cost-effective energy-efficient technologies on every home that he builds. And this was crucial for the Sampsons, who were building their home on a budget.

A well-planned passive solar design allows for plentiful daylighting.



In the Texas heat, cooling is the most significant obstacle to creating an energy-efficient home. The first things that Ferrier looks at are passive solar design strategies and a well insulated building envelope.

For the building envelope, Ferrier selected structural insulated panels (SIPs). SIPs are composed of insulating foam sandwiched between two structural facings, creating an effective thermal barrier that can save homeowners up to 50 percent on heating and cooling costs.

“We have really learned a system of how to replicate energy performance in all the homes we build,” said Ferrier. “I think SIPs give me the biggest bang for the buck in terms of energy efficiency. When you’re looking for great airtightness and insulation, nothing gives you that like SIPs.”

Using a plan set from Healthy Home Plans, Ferrier modified the design to fit the building site and limit solar heat gain. He reduced the windows on the west side of the home, added large overhangs on the south side, and took advantage of existing deciduous trees to provide shade in the summer while allowing natural daylighting and passive solar heating in the winter. The Sampsons also opted for a passive approach to cooling, so Ferrier situated the house to take advantage of the site's prevailing winds to limit the use of air conditioning.

For when mechanical cooling and ventilation are necessary, Ferrier specified an advanced dual zone air-source heat pump and an energy recovery ventilator. He further reduced solar heat gain with a highly reflective metal roof and low-emissivity windows.

Ferrier's pairing of a high performance building envelope and passive solar design resulted in significant utility savings for the homeowners. The home received a HERS Index of 47, making it 53 percent more efficient than an average code-built home.

Instructors from the SIPschool teach students how to properly seal wall panel plates.



For the Sampsons, building a sustainable home extended beyond just energy efficiency and reduced carbon emissions. Establishing healthy indoor air quality and limiting water use were also important considerations.

All paints and finishes used inside the home had minimal VOC content. The garage was separated from the house with a covered walkway to prevent exhaust emissions from entering the home. Building with SIPs helped maintain good indoor air quality by creating an airtight building envelope with no wall cavities where mold can often grow unseen in conventionally framed homes.

One-hundred percent of the home's water needs are provided by a rain collection system that is comprised of gutters and downspouts that lead to a 30,000 gallon rainwater catchment tank.

Like all homes that Ferrier builds, the Sampson residence was certified as Energy Star, LEED-H Platinum, Green Built Texas, met the Emerald level of NAHB National Green Building Standard, and is Builders Challenge qualified.

The Sampson home was also used to host a SIPs Installation Workshop during construction. Instructors from the SIPschool, a national SIP installation training program, guided local students through the installation of SIP wall and roof panels.

"Consumer and industry education is an integral part of our mission statement and marketing efforts," said Heather Ferrier, General Manager for Ferrier Custom Homes. "We use events such as this to provide an intimate setting for people to bring their questions and concerns regarding green building."

As for the Sampsons, their new sustainable home has more than met their expectations.

"We absolutely love the house and are really enjoying being in it," they said. "This home has turned into our dream home. Our dream green home."



(Above) Prefabricated SIPs from FischerSIPS reduce framing time by over 50 percent. (Below) A 30,000 gallon water catchment tank covers all the home's water needs.



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