

H.H. "Hoot" Haddock, inventor of the ThermaSave Panel System.



The ThermaSave panel is a unique variation on the SIP, with cementitious skins, patented spline system for assembly and glueing under pressure.



Unlike some structural insulated (SIP) panel systems, the ThermaSave panels vary in size, including both length and thickness, to meet the structural requirements of the building.

Easy installation, strength and cost effectiveness combined:

ThermaSave Panel Shaping Up As Super SIP

FLORENCE, AL—The ThermaSave Panel, from IHSN, Inc. is a variation of the SIP. Using its own high-strength glue dried under extreme pressure to bind inner and outer skins to the EPS core together with a patented spline connection system makes it a one-of-a-kind structural insulated panel.

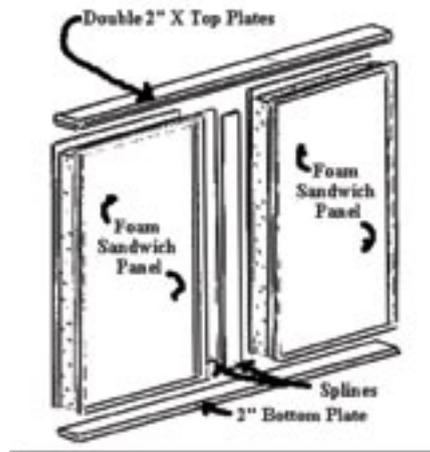
The company notes that the most cost-efficient finish material is cement board, which has its own fire rating, so interior drywall is not necessary. The panels can be taped and finished with paint, or for the exterior, coated with vinyl or synthetic stucco, or finished with brick or siding.

With cement board, rotting and moisture absorption are eliminated, and the panels are also vermin-resistant. The panel is ICC accepted.

ThermaSave offers the panel as a complete structural system – to build foundations or basement walls below grade, load-bearing walls to four stories, floors spanning 16' and roof panels with spans up to 24'. The ThermaSave panels have been produced as large as 4'X42'.

The thickness of the cement board skins and foam (thickness and density) is dictated by the structural requirements of the building. Where cement board is used, panels are fastened together with power-driven screws.

The company puts a strong emphasis on the panel system's ability to provide superior thermal efficiency. The ThermaSave System uses splines to join the panels, which are usually the



Panel Assembly Detail Diagram 1

The ThermaSave Panel System uses patented plastic splines to join the panels and reduce the use of wood in the building frame.

same type and thickness as the material of the panel skins. Plastic splines can be used to eliminate more wood parts. The spline system eliminates wood parts extending through the panels, except at openings, corners, beams and roof edges. The company claims that a building fabricated completely with the ThermaSave system will typically have up to 75% less heat loss or gain than standard construction.

The system is environmentally desirable for a number of reasons: with cement board skins, it eliminates the use of wood resources, the expanded polystyrene (EPS) foam does not contain unstable gases and the blowing agent used in producing it is pentane,

which is free of chlorofluorocarbons (CFCs).

The strength of SIPs has been tested and proven and the ThermaSave version may just be a super SIP. In an earthquake shake test commissioned by the Federation of American Scientists (FAS), Washington, D.C., and conducted by Trentec Labs, Cincinnati, OH, on January 19, 2005, the two-story 12'X12'X16' house built with ThermaSave panels passed a 7 G force stress and beyond, on a triaxial shake table. Asked to take the structure to failure, increasing the force damaged the tie-downs on the shake table, but not the test house.

The Federation of American Scientists has studied the ThermaSave panel extensively because they are searching for 'the house of the future,' meaning one built with superior energy efficiency, strength, durability and health characteristics. The organization's interest in this system came by way of Afghanistan.

With millions of refugees returning to the country following the war, housing is a major issue. The earthquake in neighboring Bam, Iran which took 26,000 lives convinced Henry Kelly, president of the FAS, that rebuilding in Afghanistan with traditional mud/adobe was tantamount to building death traps. Kelly asked engineers at MIT, Berkeley and other institutions to find a better way.

One of Kelly's friends, the late Roger Rasbach, an architect and engi-



Two-story model ThermaSave panel structure couldn't be damaged by the shake test at the Trentec Lab in Cincinnati, OH.



Hoot Haddock (right) confers with Gary Chapman, manager, at the Trentec Lab during the shake test.

neer, promoted the idea of using expanded polystyrene foam (EPS) because it was lightweight, cheap, strong, and easily molded and cut. Further, a SIP panel system does not require skilled labor to assemble and it goes up fast. Rasbach then introduced Kelly to H.H. 'Hoot' Haddock, who had spent 20 years refining his ThermaSave Panel system.

Haddock developed the ThermaSave panel in 1984 while in Alaska, following a career as an electrician. Haddock has built homes, a church, library and a Ford showroom with the system and all these structures remain in good condition decades later.

Meanwhile, under the auspices of the FAS, model mini-houses were built, tested with simulated weather stress, wind-loading, burning (the foam backs away from flame) and the shake table testing. Then test homes were built in Kabul, Afghanistan.

Kelly describes his organization's goal as a way "to find a housing technology that meets a variety of specifications simultaneously. The technology might not be perfect in all areas, but it would be optimized. We wanted something that would work in markets like Afghanistan."

Kelly's group worked through a range of ideas, including steel framing, straw bale, compressed earth and others.

"This is it," says Kelly, "because if you do it right you can



Haddock has built homes, a church, a Ford dealership, library and other structures over the past 20 years with his panel system. This two-story located in Birmingham, AL, was built in 2001.



This home in Birmingham was built in 1998 and shows roof panel components clearly. Panels are light in weight and easily assembled.

cut costs while improving quality. The cementitious panel can do that. There have been problems with OSB (SIPs) when they get wet, but this panel is coated at the factory. We've run it through all kinds of moisture penetration tests without problems.

"One of the features we like is that it is harder to install it incorrectly than correctly. It would be cheaper to glue it together, but building inspectors can't tell if a panel has been glued. But they can see if it has been screwed together. So that's a practical consideration."

As a result, Kelly says, "We would like to put this technology into the mainstream building community."

At press time, a full demonstration home using the ThermaSave system is planned for construction in Houston, TX, sponsored by the Citizens League for Environmental Action Now (CLEAN) in conjunction with the FAS. They will keep records of costs and the time required for each part of the building process, and report to the community, the Department of Energy, HUD and PATH personnel.

CLEAN's mission statement is to inform and educate citizens about environmental abuses so that they will be able to take action to protect their children, future generations and endangered species. More information is available at www.cleanhouston.org.