

WEST ARCHITECTURAL

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Structural Insulated Panels

SIPs Help Decrease Carbon Footprint for Solar Decathlon Winner

by Frank Kiesecker, senior vice president sales & marketing, ACH Foam

In this decade of emerging technologies that seek to decrease our carbon footprint, structural insulated panels, or SIPs, have come of age. More and more architects and builders are designing with SIPs and are creating beautiful buildings that approach net zero energy use. Students of green design are taking note. Start.Home,

built by Stanford students with SIPs, won first place in affordability and third place for market appeal at the U.S. Department of Energy's 2013 Solar Decathlon, held in Orange County, California, last October. ACH Foam Technologies provided the R-Control SIPs for the winning home.

The SIPs were incorporated in Start.Home's floor, walls, and

roof. According to Stanford Start.Home team's project manager Rob Best, R-Control SIPs were instrumental in the team's construction schedule and transportation procedure. Best played a pivotal role in bringing the home's total estimated construction cost under \$250,000, winning a full 100 points in the affordability contest. "The Start.Home was designed from the very start to be both technologically advanced and affordable," said Best. "Through great design and engineering we were able to maintain the cost of our net-zero home at \$235,000, remaining affordable in many parts of the country."

Solar Decathlon began in 2002 as a U.S. competition and has since expanded to a



THE START.HOME CONSTRUCTION TEAM WAS ABLE TO PUT TOGETHER ALL THE WALLS WITHIN A COUPLE DAYS.



global competition hosted by the U.S. Department of Energy to promote solar technology. This year, 20 competing teams selected by the U.S. DOE designed 1000 sq.ft. homes for the Decathlon that were evaluated on ten criteria: architecture, market appeal, engineering, communications, affordability, comfort zone, hot water, appliances, home entertainment, and energy balance.

Mike Tobin, president of AFM Corporation, said that AFM

Corporation and ACH Foam Technologies, manufacturer of R-Control SIPs, have worked on numerous built projects with DOE and the EPA for years in developing the preferred envelope system for realizing Zero and Near Net Zero building designs. "The Solar Decathlon is simply an extension of our work with DOE and the EPA going back many, many years. We were attracted to the Stanford project due to the fact that these earlier developed Net Zero building concepts are being forwarded by Stanford," stated Tobin.

Structural insulated panels (SIPs) are prefabricated structural elements used to build walls, ceilings, floors, and roofs. The Start.Home construction team was able to put together all the walls of the Start.Home within two or three days. The intelligently designed structure saves time and money for the owner, reduces the environmental impact of the construction process, and results in less resource consumption.

Though SIPs cost about 15% more than standard stick frames, the tighter insulation can result in a 40-50% decrease in energy bills. According to Rob Best, the home's Market Appeal distinction came as a great validation of both the livability of this Bay Area home but also the marketability of the Stanford team's core concept. The judges commented: "The inside offered great open space and a well defined, functional floor plan. The high ceilings made the house seem more spacious. The integration of the indoor and outdoor spaces was exceptionally well done. The detail on user interface and fixtures of control system was notable." 

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