

#1) Describe the use of the building

The ultimate end use of the home will be a single-family dwelling. However, that was not the only intent of construction.

Taking the lessons learned from the BASF Near-Zero Energy Home, BASF and Pepper Viner Homes teamed up to systemize the process of high performance home construction in order to demonstrate a repeatable business model for production builders.

The BASF Pepper Viner High Performance Home is the site for self guided tours, green seminars, meetings and trainings and is a featured project on BASF's website betterhomebetterplanet.com

#2) How did SIPS construction help you?

BASF started with a SIPs-optimized building envelope due to the corporation's previous experience with projects like the BASF Near-Zero Energy Home.

#3) Specify unique features of why the project is deserving of recognition (new construction techniques, customer problems solved, time/labor savings, financial savings, etc.)

The projected monthly energy cost for this 2080 sq. ft. home is about \$50. Lessons learned by Pepper Viner and BASF are being shared through the global outreach of BASF and their betterhomebetterhomeplanet.com website.

Establishing a repeatable process for integrating SIPs into production building was one of the primary goals of the project. Before construction therefore, the team coordinated a number of workshops with trade contractors including electricians, plumbers, drywall, stucco and framing crews as well as their engineers, architects, and building officials to better understand the issues and challenges they faced with SIPs construction. Each of these groups participated in several preconstruction sessions provided by BASF.

#4) What Energy efficient or green building products and/or techniques were incorporated into the building? Please list any local or national energy-efficient or green building certifications earned (ENERGY STAR, LEED, Built Green, etc.)?

Floor – The concrete floor included 40% recycle fly ash in place of cement along with concrete admixtures which reduced water content and increased strength. The concrete was permanently hardened and densified and serves as finished flooring throughout the home. This was poured directly on a complete under slab vapor barrier as part of the Indoor Air Quality Program of the EPA and to eliminate cracking and efflorescence.

Walls – Premier SIPs (EPS) for all exterior walls and between the garage and the home.

Insulation – BASF Enertite open-cell spray applied polyurethane foam insulation on the underside of the roof deck.

Roofing – 2” BASF Elastospray closed-cell polyurethane foam insulation and roofing on all flat roofing sections (65% of the total roof).

Lighting - Energy Star advanced lighting package achieved by a combination of pin type fluorescents and CFL's.

Appliances - Energy Star

Water management – All plumbing fixtures are WaterSense including dual flush toilets. An on-demand hot water recirculation system was installed to further reduce water usage.

A rainwater harvesting tank serves as the control point of the irrigation system insuring that all captured rainwater is used before using potable water.

The home is plumbed separately for grey water. Rain Bird, an Australian grey water reuse system, distributes harvested water to the trees on site.

Indoor Air Quality - Low VOC paints, caulks, sealants, and grouts were selected. Cabinets were certified to have no added formaldehyde. All tiles in the kitchen and bath were made with a high percentage of recycled glass.

Cooling – A 16 SEER AC unit with a high performance variable speed fan motor was installed. This was down-sized due to the tightness of the SIPs envelope.

Heating and Water Heating – An ultra-efficient Phoenix System was installed for heating. It features two solar thermal panels on the roof and a 96% efficiency gas burner for back-up power. A unique part of this system is that it not only provides the domestic hot water, but also replaces the furnace. When the demand for space heating is present, a pump is triggered to deliver the hottest water in the tank through a hydronic coil at the air handler. Air is blown over the coil and out into the home through the ductwork.

Photo Voltaics – A 2.4 KW solar power system was installed to further reduce the dependence on the electric grid.

- **This home is Energy Star rated with a HERS INDEX of 19**
- **Meets the DOE Builder's Challenge**
- **Meets the requirements of the Energy Star advanced lighting package**
- **Meets the requirements of EPA Indoor Air Plus program**
- **Uses all WaterSense fixtures**
- **First and only home to achieve the Emerald rating of the Southern Arizona Regional Green Building rating system**
- **Is slated to attain LEED platinum**

#5) What elements of the building (floors, walls, roof) were built with SIPs? What thicknesses of SIPs were used?

The exterior walls and the wall separating the home from the garage were built with SIPs. We used Premier 6.5" panels (EPS).

#6) Comment you would like in a news release on this building.

"Working with Pepper Viner allowed us to take the lessons learned from the BASF Near-Zero Energy Home, systemize the process and deliver a repeatable business model that will help Pepper Viner and other production builders grow the market for near-zero energy homes. Pepper Viner's overall reputation for quality management excellence, involvement in green building consortia and Energy Star program made the company a perfect fit for this BASF applied research and educational outreach initiative. You could say, Pepper Viner represents a microcosm of BASF's interest in building better homes."

- Jack Armstrong, Leader Construction Markets —NAFTA, BASF.