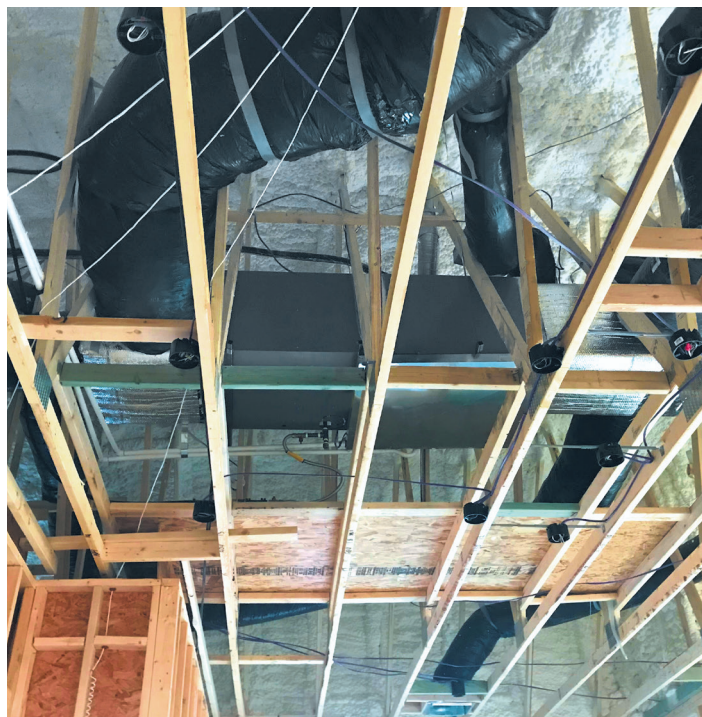


Energy Savings with Spray Foam Insulation in Phoenix Community

BASF High-Performance Envelopes contribute to as much as 45% cooling cost reduction



PROJECT INFORMATION

Locations

Phoenix, Arizona
BASF High-Performance
Building Envelopes

Mesa, Arizona
Builder's Standard
Construction

Study Dates

May – August 2020

The objective of this project was to observe the performance differences between homes with a robust building envelope using spray foam insulating air barrier materials, to those with the builder's standard construction package and compare the utility (electric) usage of each, to determine any energy cost savings.

BUILDING CHARACTERISTICS/PRODUCTS

Builder Standard Models

- 2x4 Exterior Walls with cellulose wall spray and 1-coat stucco with one-inch white EPS continuous insulation
- Attic – Vented R-30 Blown Cellulose Attics with Radiant Barrier roof sheathing

High-Performance Models with BASF products

- 2x4 Exterior Walls – a hybrid BASF HP+™ Wall system with 1.5 inches of WALLTITE® closed-cell spray foam and 2.0 inches of spray-applied cellulose with 1-coat stucco system using 1.0 inch NEOPOR® GPS continuous insulation
- Attic – Sealed unvented attic with ENERTITE® Series open-cell spray foam installed to the underside of the roof deck at R-22

Four models were chosen from 1463 to 2562 sq ft (1-story and 2-story homes)

- 1463 sq ft / 2-story home
- 1801 sq ft / 2-story home
- 2050 sq ft / 1-story home
- 2562 sq ft / 1-story home

All other building components were identical including framing (16" oc), fenestration, type of ventilation strategy, 100% LED lighting, identical 15 SEER ratings, all duct work and air-handling systems were located in attic space and ENERGY STAR appliances. The refrigerators were the only appliance used in each model.

Although the high-performance homes had a sealed-combustion 90+ AFUE furnace, and the standard vented attic models were 80 AFUE, this study only assessed efficiencies during the cooling season.

Every home in each community were certified as ENERGY STAR, Environments For Living and compliant with the 2018 IRC/IECC (International Residential Code/International Energy Conservation Code).



THE STUDY

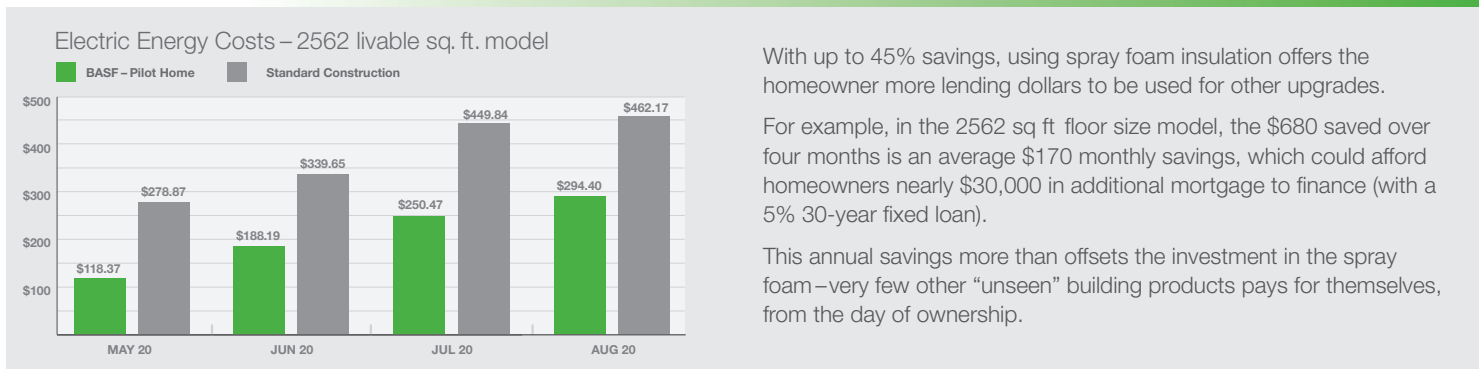
In early 2020, this local builder had a hybrid BASF HP+™ Wall system installed into the walls of four model homes in a west-side community of Phoenix. To complete the high-performance building envelope, ENERTITE® open-cell spray foam was installed to the underside of the roof deck (with no radiant barrier sheathing). The unvented attic design allows for the mechanical systems to operate more efficiently in this semi-conditioned space, where they are not subjected to extreme Arizona conditions. In fact, in August 2020, when outdoor temperatures exceeded 115°F, data-loggers in the unvented space never exceeded 83°F.

At a different community in the east valley, the builder insulated four model homes of the same floor plans with their standard construction package that included 2x4 exteriors walls with cellulose wall spray, stucco and white EPS continuous insulation. The vented attic was insulated with blown cellulose and radiant barrier sheathing was used.

From May – August 2020, energy usage for the four different floor plans were compared between the two communities. It’s important to note that this was done during the height of the COVID-19 pandemic and the model homes involved in the study were visited on an appointment-only basis by prospective buyers, which resulted in minimal human impact during the study.

The chart below shows the electrical costs for one of the models with the BASF High-Performance insulating package, compared to their above-code Standard Construction with their all-cellulose insulation package.

THE RESULTS



With up to 45% savings, using spray foam insulation offers the homeowner more lending dollars to be used for other upgrades.

For example, in the 2562 sq ft floor size model, the \$680 saved over four months is an average \$170 monthly savings, which could afford homeowners nearly \$30,000 in additional mortgage to finance (with a 5% 30-year fixed loan).

This annual savings more than offsets the investment in the spray foam – very few other “unseen” building products pays for themselves, from the day of ownership.

In addition to the energy savings that is the primary value offered by these materials, the spray foam insulation products contribute the following additional benefits:

- Improved Comfort
- Consistent Temperatures
- Improved Run Time
- Less Air Leakage, for a Cleaner Indoor Environment (reduced fibers and dust)

	FLOOR PLAN (SQ. FT.)	PERCENT SAVINGS	ELECTRICITY SAVINGS	kWh SAVINGS	
Upon comparison of each floor plan in the two communities, the study shows an average of 32% less electricity was used in homes insulated with the BASF High-Performance products. This results in not only reduced energy but offers the home owner considerable cost savings. (Chart shows total savings over four month period, May 2020 – August 2020.)	1463	15%	\$112.26	996	
	1801	41%	\$436.27	3,769	
	2050	29%	\$370.39	3,163	
	2562	45%	\$679.10	5,687	
	Total		130%	\$1,598.02	13,615
	Average		32%	\$399.51	3,403.75
	Average per month		\$99.88	850.94	

“We are constantly looking for ways to improve our homes and make them more comfortable for our homeowners. Through the BASF pilot homes, we have reaffirmed that the better our building envelope is, the better our home environments can be. The energy savings these homes showed confirms our move to spray foam is a good choice for our homeowners.”

DIVISION PRESIDENT OF LOCAL BUILDER

www.spf.basf.com **1-888-900-FOAM**



Download our Spray Foam app today!



WALLTITE®, ENERTITE® and Neopor® are registered trademarks of BASF.

Data presented in this document is based on tests and information, which we believe to be reliable. This document is provided for information purposes only and without any representation, warranty or condition, expressed or implied, regarding its accuracy or completeness. Whether or not this data is used or relied upon is within the sole discretion and judgement of user. Since BASF Corporation has no control over the conditions of handling, storage, use and disposal of the products, BASF Corporation does not assume any responsibility or liability and expressly disclaims all liability for any claim, loss, damage, injury or expense resulting therefrom.