



By Casey Miner

When Sy Braswell starts a project, he thinks big. Like other, similar companies, Braswell and Lorne Dawes's Albany, N.Y.-based Engineered Spray Foam, Inc., sells and installs spray polyurethane foam (SPF) for homeowners. But Braswell doesn't stop there.

A mechanical engineer as well as a contractor with a background in heat-loss and heat-gain analysis, Braswell believes it's crucial to conduct an energy analysis on a project before going ahead with installation. Otherwise, he said, the customer might never realize all of his potential energy savings. And from a cost perspective, those are savings the customer can't afford to overlook.

"Everyone is interested in foam," he said. "But they're not sure they want to spend the money. So in doing our pricing, we're trying to get away from the typical cents-per-board-foot for closed-cell and open-cell. Clients don't understand board footage, but they do understand their bottom line. 'What is it going to cost for me to heat my home every year? Am I going to spend thousands of dollars for

spray foam, only to find it's not worth it?'"

To solve that problem, Braswell draws on his own expertise and that of other homebuilding professionals. Recently, his firm partnered with Ghent, N.Y.-based heating, ventilation, and air conditioning (HVAC) company Dells' Plumbing, Heating and A/C, Inc., to tackle a unique home restoration. The circumstances of the project, he said, made it a perfect test case for his collaborative approach.

The house in question was a raised-ranch style, built in the 1980s on the banks of the Hudson River. After nearly 30 years, it was beginning to show signs of wear, growing drafty and becoming more and more difficult to heat effectively through the cold and windy New York winters. Poorly insulated walls and thin, single-pane windows didn't help matters.

The owner wanted to renovate completely, but quickly realized that the upgrades he had in mind — installing a geothermal heating system, for example — would be far too costly and impractical.

TEAMING UP:

SPF and HVAC Come Together to Cut Down Costs

Since the house's foundation was still in great shape, he decided to tear down everything else and start from scratch.

Since good, environmentally-friendly insulation was high on the priority list, he called in Braswell to discuss spray polyurethane foam (SPF). The total remodel struck Braswell as an opportunity. This time around, he thought, the heating system could be designed to work together with the insulation, not against it.

"We see it happen all the time where people go ahead and spend the money for spray foam, then the HVAC contractor comes in and installs the same furnace or boiler they've put in every fiberglass-built house for the past 20 years," said Braswell. "What's unique about our approach is that we team up with the contractor and do the heat-loss analysis ahead of time. That way, they can size their system based on our numbers."

To do this analysis, Braswell turned to energy-analysis software, FoamGain, which Engineered Spray Foam is certified to use.

Going into the project, the client had expressed a wish to use



Home Drafty Home. The client's house, built almost 30 years ago, sits on the banks of the Hudson River in New York. It was becoming increasingly difficult to heat in the winter.



closed-cell foam, which Braswell took into consideration while conducting his analysis. To make sure the client fully understood his options, Braswell used FoamGain software to run a breakdown that also included a comparison to open-cell foam and an estimate of what effect leaving foam out of the basement would have. That last option, he quickly determined, was by far the worst choice: It would run the client an additional \$600 per year in energy costs over what he currently paid. On the other hand, using only closed-cell foam wouldn't reduce heat loss enough to outweigh the cost. The best option was a combination of closed- and open-cell foam,

Come Together. Sy Braswell's Albany, N.Y.-based Engineered Spray Foam, Inc. teamed up with Dells' Plumbing, Heating and A/C, Inc. to custom design the house's HVAC system.

with closed-cell foam in the basement and open-cell throughout the rest of the house.

Once the client agreed to Braswell's plan, Braswell contacted Dells' Plumbing, Heating and A/C, Inc. The company's owner Dave DellGrottaglia (known as Dave Dell for short) has known Braswell's business partner for nearly 20 years and Braswell himself for 10. Armed with Braswell's numbers, DellGrottaglia designed the furnace at a size appropriate to a house insulated with spray foam rather than with fiberglass.

"To put it in simple terms, instead of having a cookie-cutter, hundred-thousand BTU boiler or furnace, we're able to put in the proper size furnace by doing a complete heat-loss analysis," said DellGrottaglia. "We go into very minute detail: the walls, the ceiling, the windows, the glass, right on down the line. You can save 15 to 20 percent on fuel consumption just by doing that."

In addition to spraying 5.5 inches (14 cm) of E:zero's E:500 open-cell foam on the home's plywood walls, the three-man crew also added extra air sealing around the windows.



JOB at a GLANCE

COMPLETE HOME RESTORATION

PROJECT:

Using energy analysis software and a partnership with an HVAC company to insulate a New York home.

COATINGS CONTRACTOR:

Engineered Spray Foam, Inc.
PO Box 3
Kinderhook, NY 12106
(518) 758-1268
www.engineeredsf.com

WORKING WITH:

Dells' Plumbing, Heating and A/C, Inc.
1317 Route 217
Ghent, NY 12075
(518) 672-7068
www.dellsplumbing.com

SIZE OF CONTRACTOR:

Three-man crew

PRIME CLIENT:

New York homeowner

SUBSTRATE:

Plywood and concrete

SUBSTRATE CONDITION:

New

SIZE:

2,800 sq. ft. (260.1 m²)

DURATION:

Four days

UNUSUAL FACTORS:

- SPF contractor was involved in the project from the beginning, before home's reconstruction began
- Used energy analysis software to determine most cost-effective insulation option for homeowner
- Worked closely with HVAC company to fit the heating system to the insulation
- Homeowner wanted all closed-cell foam, but software analysis showed a combina-

tion of closed- and open-cell would be most cost-effective

MATERIALS/PROCESS:

- FoamGain energy analysis software used to design best insulation option
- Sprayed 2 inches (5.1 cm) of E:zero's E:2000 closed-cell foam in the basement
- Sprayed 5.5 inches (14 cm) of E:zero's E:500 open-cell foam on the home's walls
- Sprayed 10 inches (25.4 cm) of E:zero's E:500 open-cell foam on the home's ceiling
- Used Graco Fusion guns to spray closed-cell foam in one 2-inch (5.1 cm) pass. Sprayed 10 inches (25.4 cm) of open-cell foam on the ceiling in two passes and 5.5 inches (14 cm) of open-cell foam on the walls in one pass

SAFETY CONSIDERATIONS:

Crew wore full Tyvek suits, steel-toed shoes, and Allegro Safety full-face masks and supplied-air respirators



Spray Foam

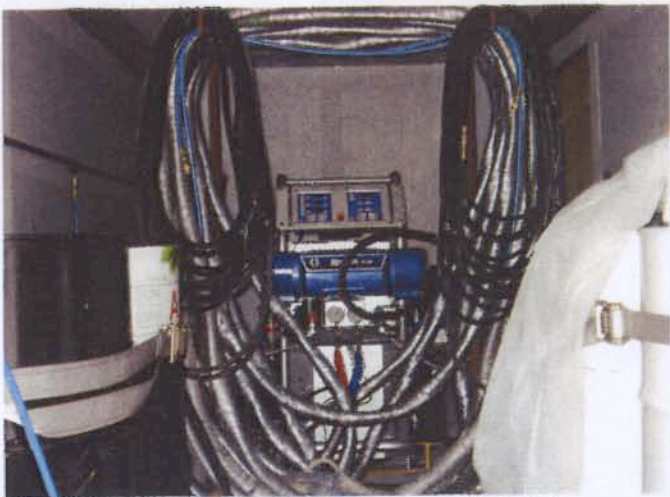
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Inside the Rig. Over four days in the summer of 2009, the crew used Graco SPF Fusion guns to spray E:zero's E:2000 closed-cell and E:500 open-cell foam.

It may seem obvious that the size of a furnace should correspond to a home's unique heating needs, but both Braswell and DellGrottaglia said that kind of communication among contractors isn't nearly as common as you might think. In fact, Braswell's insistence on coordinating with HVAC companies is one of the things that sets Braswell apart from other spray foam installers.

"Typically, we don't do this kind of collaboration," said DellGrottaglia. "Companies start projects hell-bent on fiberglass, and all their designs and loads are according to fiberglass, and the end result is that we wind up with too large a power plant or heating system for the house. The difference with Sy is that he's saying, 'If you bring me in right away, we can make sure the heating system is the right size.' He's looking at it as a total system."

DellGrottaglia said that as far as he knows, Braswell's company is the only one in the area that emphasizes this collaborative approach. Braswell also said his methods are fairly unique to the industry.

Unique or not, their approach seemed to pay off. The companies did their jobs over the course of about four days in the summer of 2009, and things couldn't have gone more smoothly. Braswell's three-man Engineered Spray Foam crew used Graco SPF Fusion



Although the client wanted all applied foam to be closed-cell, Braswell's analysis showed a combination of open and closed would work best for the home's energy efficiency. The crew sprayed 10 inches (25.4 cm) of the open-cell foam on the ceiling.

guns to spray E:zero's E:2000 closed-cell and E:500 open-cell foam. In one pass, they hit the concrete substrate in the home's basement with 2 inches (5.1 cm) of the closed-cell foam. They also sprayed 5.5 inches (14 cm) of the open-cell foam on the home's plywood walls in one pass and 10 inches (25.4 cm) of the open-cell foam on the ceiling in two passes. Because the foam would be covered with either plywood or sheetrock, no thermal barrier was required.

The crew didn't need ladders to do their work, so harnesses weren't necessary, but the team was still well-prepared for safety. They wore full Tyvek suits, steel-toed shoes, and Allegro Safety full-face masks and supplied-air respirators.

Since Braswell's crew had been involved with the project from the very beginning, they knew what to expect and had time to consider additional ways to help make the house more insulated.

"Another thing we always recommend is to caulk all the headers over the doors, just to try to reduce infiltration," Braswell said. "It costs more money, but it pays off in the end."

Braswell visited the house recently, and said it looks great. Despite the cold winter, the house is using very little propane.

Another advantage, said DellGrottaglia, is less immediately obvious but still critical over the long term: Spray foam doesn't seem to appeal to the kinds of animals that normally nest in insulation.

"It doesn't invite mice and moles and all the usual critters that like to live in insulation into the house," he said. "Fiberglass makes great nesting for those animals, and within 10 years, it's useless, full of pee and droppings and all chewed up. It's much nicer to deal with the foam because it's all sealed and tight, so they don't tend to chew on it."

The quality of life for the homeowners is better too, said Braswell.

"Where you're saving money with foam is that you're not getting air infiltration," he said. "And that's good as far as heat loss. But where it's bad is that you're not getting any fresh air to breathe. You're breathing essentially the same stale air over and over again."

Sealing in the Heat. The crew hit the concrete substrate in the home's basement with 2 inches (5.1 cm) of E:zero's E:2000 closed-cell foam.



Safety is a Priority. The crew wore full Tyvek suits, steel-toed shoes, and Allegro Safety full-face masks and supplied-air respirators because they were working indoors.

That fresh-air challenge is yet another reason to start working with HVAC contractors early, Braswell said.

"We're big proponents of installing HVAC systems that bring in controlled outdoor air, and warm it with the air going out," he said. "You're not losing heat, but you bring in fresh air to breathe, which helps with indoor air quality and is great for people who have asthma and things like that."

With the job complete, DellGrottaglia now takes pride in explaining how he installed exactly that HVAC system, including the Heat Recovery Ventilator (HRV), or air exchanger, in the house he worked on with Braswell.

"We came up with the proper size air exchanger, which gives you a controlled method of air exchange instead of just leaky windows and walls like most houses," he said.

As a result, the homeowner can have a warm house and fresh air year-round.

Braswell's approach may not yet have caught fire in the SPF

After Braswell's FoamGain software showed that the client would spend an additional \$600 per year in energy costs if no SPF was applied in the basement, the client opted to have 2 inches (5.1 cm) of closed-cell foam sprayed.

industry, but it's certainly getting the attention of homeowners. He said lately he's been receiving a number of calls from people who are interested in using spray foam for their basements and attics. Although his business is only in its second year, he says, word is starting to get out.

"It's very wise of him to take this proactive approach," said DellGrottaglia. "I'm looking forward to collaborating with him in the future." **SF**

