

The Henking and Drummond family of Woodruff

Teacher slays dinosaur propane furnace in home built by her grandfather

Home Fast Facts

- Built in 1961
- 1,300 square foot, single-story home with carport
- Crawlspace with unconditioned basement and attic
- 3 bedrooms / 4 occupants
- Average monthly electric bill: \$200 (+ \$600/year for propane)



Erick Henking, Melissa Drummond, and their two children live in the home built by Melissa's grandfather and passed down from her parents to her family. Melissa is a teacher who cares about energy conservation and its effect on the environment. She knows her house needs help because the attic gets so hot it has warped the ceiling tiles, and the basement is not insulated.

Comprehensive Home Analysis

- Ray Griffin of MAX Building Performance conducted a comprehensive home energy analysis and found the duct work was drafty, the house was about twice as drafty as it should be, and there was no insulation in the floor above the crawlspace. Also, he found the furnace and air conditioner to be in poor working condition.

Heating and Air Conditioning

- Davis Services replaced the 20 year-old, 3-ton combination propane furnace and electric air conditioner unit located outside the home with a 2-ton SEER 15 Lennox heat pump split system. The smaller capacity system was made possible because of the improved insulation and ductwork significantly reduced the home's heating and cooling needs.
- A manual thermostat was replaced with a programmable thermostat.

Ducts

- Davis Services replaced almost all of the existing flexible ductwork with a system that included hard metal trunk with all seams sealed with mastic paste and flexible duct to each room that was no more than 10-feet in length. As a result, duct air leakage was reduced by 83 percent — from 300CFM to 50 CFM — exceeding the ENERGY STAR standard.
- Davis Services constructed a new return duct system to improve air flow.

Sealing and Insulation

- In the attic, Glenco Foam replaced the 3.5 inch fiberglass batts on the attic floor, rated at R-13 efficiency, with 5.5 inches of Icynene spray foam insulation under the roof deck equivalent to R-20 and 3.5 inches of foam at the roof gable ends equivalent to R-13. The attic area now meets the building code for today's construction.
- In the basement and crawlspace, the ceiling above these unconditioned areas, where there was no insulation, Glenco Foam sprayed 3.5 inches of icynene foam which also sealed electrical/plumbing penetrations and formed an air barrier for the conditioned living space above.
- Davis Services installed weather stripping and insulating foam around gaps at the front and back door, the attic entry door, and on the wall behind the washer and dryer.
- Davis Services showed the homeowners how to cap their wood stove chimney when not in use to better insulate the home from drafts.
- Glenco Foam installed a vapor barrier of 6 mil plastic on the exposed crawlspace ground that will block moisture that could cause mold and mildew.
- In the exterior laundry room wall, Glenco Foam added a layer of fire-retardant rock wool insulation to the wall behind the washer and dryer which had no insulation and was left exposed.

How the House Was Helped

Shape Up Your Home for Energy Savings

Presented by The Home Energy Audit

Other Measures

- The electrical service was undersized at 60-100 amps and a fire hazard with two electrical panels joined by unexposed copper and aluminum wires. If someone had touched the exposed wire, they would have received an electrical shock. Don Williamson Electrical upgraded the service to 200 amps and consolidated all the breakers within one covered panel with a new meter box and electric lines to the heat pump system.
- The cooperatives changed out most of the home's incandescent light bulbs with CFLs, which use 75 percent less energy to generate the same amount of light.

Results

The improvements reduced overall air leakage in the home by 43 percent. The improvements are expected to reduce the family's overall energy costs by more than 30 percent.

Costs

Actual Investment

- Heat pump and duct improvements by Davis Services Inc. with Lennox.....\$7,500
- Attic, Basement and Crawlspace insulation by Glenco Foam.....\$4,407
- Electrical service upgrade by Don Williamson Electrical.....\$960
- Comprehensive home energy analysis by MAX Building Performance.....\$500
- Door weather-stripping by Davis Services, Inc.....\$ 400

Total estimated value of weatherization efforts in this home.....\$13,767

NOTE: The value of work on this home exceeded the \$10,000 per-home target set for **Help My House!** energy makeovers because the statewide and local sponsors and installers who donated their time and materials on the project insisted on doing the job right. In their judgment, the additional effort and expense were necessary to weatherize this home to their high standards.

Who Helped

Heating and Cooling System installed by



www.davisservicesinc.com
(864) 578-9233

Heating and Cooling System provided by



www.lennox.com

Comprehensive Home Analysis conducted by



www.maxbp.net
(864) 706-9254

Attic, Basement and Crawlspace Insulation installed by



www.glencofoam.com

Participating Electric Cooperatives



Your Touchstone Energy® Cooperative



ELECTRIC COOPERATIVE, INC
Your Touchstone Energy® Partner



A Touchstone Energy® Cooperative



Your Touchstone Energy® Partner

Electrical service upgrade provided by

Don Williamson Electrical
(864) 431-0363

Media Partner



Home Energy Efficiency Makeover

Eric Henking, Melissa Drummond & sons, Woodruff, SC

On her Help My House! contest entry form, homeowner Melissa Drummond wrote, “I care about energy conservation and its affect on the environment. As a teacher, I do not earn enough to make all the necessary (energy efficiency) upgrades.”

BEFORE



The home’s combined propane furnace and electric air conditioner unit was 20 years old, costly to operate and an inefficient solution to heating and cooling.

AFTER



Davis Services installed a two-ton, 15 SEER Lennox heat pump split system, dramatically improving comfort and energy savings in the home.



Poorly wrapped and insulated ductwork was leaking conditioned air in the basement and crawlspace. The leaks made the entire system much less efficient—and wasted money.



A new system of sealed and insulated ducts replaced the old setup. Now warm or cool air leaving the family’s new HVAC unit flows efficiently throughout the home.



As with many homes, insulation in Eric and Melissa’s attic, basement and crawlspace was inadequate, having settled or deteriorated over time. Those problems compromised the home’s protective barrier against extreme hot and cold outside temperatures.



Glenco Foam applied Icynene foam under the attic roof deck and on unconditioned areas in the basement and crawlspace. They also sealed electrical/plumbing penetrations, forming an effective air barrier for the home.