



Florida Home Wins With GeoExchange



Not your typical home

The Koehnemann Construction home in Panama City, Florida, is definitely not your typical home. Koehnemann Construction, Inc., along with homeowner Keith Swilley and Gulf Power, successfully created a 2,000 square foot wonder. The home, complete with energy saving features, won the 1997 Energy Value Housing Award for the custom home category for the hot, humid climate region at the National Association of Home Builders Conference in Houston and the 1996 Grand Aurora Energy Award at the Southeastern Builders Conference in Orlando.

Outstanding energy features

The Koehnemann Construction home is literally packed from floor to ceiling with energy efficient features. The walls are insulated with R-13 wet blown cellulose, ½ inch plywood sheathing and 3/4 inch Dow exterior, giving it a total value of R-19. Ceiling insulation is R-38 blown cellulose and there is additional internal wall insulation for sound proofing.

The attic kneewall, where 10 foot and 8 foot ceilings meet, is insulated with six inches of wet blown cellulose and 3/4 inch Dow sheathing. Additionally, all

air duct joints are sealed with mastic. The duct work was leakage tested by Gulf Power's "Duct Blaster" to ensure the tightest system possible. All plumbing, electrical hole penetrations, windows, door casings, and framing gaps are foamed or caulked.

The home has both Therma-Tru metal insulated doors and double glass french doors. The windows, double-pane Mayfair DH-R-40, were tested by Mid America Testing laboratory to have a leakage of .23 CFM/Linear foot of sash crack.

The home also boasts high efficiency lighting and cooking equipment. It contains halogen exterior flood lamps, compact fluorescent lamps and high efficiency T-8 fluorescent lighting with electronic ballasts. The kitchen uses the most efficient cooking equipment available. A convection oven was installed, reducing cooking temperatures and time by circulating heated air around the food in the oven. An induction cooktop (the best electric has to offer in speed and instant temperature control) transfers energy directly to the pan—using less energy. The induction cooktop has no hot elements—making it safer than traditional ranges.

Key Features

Square Footage: 2,000 (living space)
Type of System: Closed Loop
Number of Units: 1
Total Capacity (HVAC Tons): 2.25

However, the most energy saving feature in the Swilley residence is the WaterFurnace GeoExchange comfort system.

Heating and cooling

A WaterFurnace Premier™2 series GeoExchange unit with a desuperheater is used to heat, cool and provide hot water for the residence. The system boasts a rated cooling efficiency of 1 6.0 EER and a heating efficiency of 3.6 COP.

The WaterFurnace unit uses a closed loop system installed in the ground to transfer, rather than create, heat energy to and from the Earth by circulating water through the buried closed loop piping system. The loop consists of high density polyethylene 3408 piping.

This earth loop makes efficient use of the constant temperature of the earth by tapping into the free, renewable energy beneath the surface. The loop serves as a heat source in the winter and a heat sink in the summer.

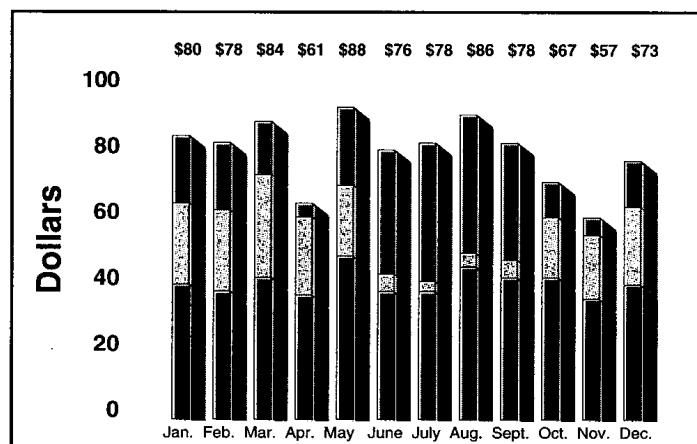
The desuperheater on the unit helps provide domestic hot water by using the excess heat from the Earth loop. The desuperheater actually helps the GeoExchange unit reach heightened levels of efficiency.

Energy costs

The GeoExchange system was submetered and has proven to be a valuable investment. As depicted on the graph, the home's total energy bill for 1996 was \$906. Amazingly, only \$253 of the total annual energy bill was used for heating and cooling the 2,000 square feet of conditioned space. "The energy bills are even lower than I anticipated," said Swilley, "and the comfort level in the winter and summer is much greater than expected. I never dreamed I could heat and cool my home for 69 cents a day!"

GeoExchange Operating Costs

2000 sf Good Cents Home - Panama City (Sub-meter 1996)



	January	February	March	April	May	June	July	August	September	October	November	December
Lighting Appliances ■	38	36	40	35	46	36	36	43	40	40	34	38
Water Heating	23	23	29	22	20	5	3	4	5	17	18	22
GeoExchange Unit ■	19	19	15	4	22	35	39	39	33	10	5	13

Family of Four (4) • Sub-metered by calendar month • Figures rounded to nearest dollar