

Color This Radiant Home

Green

Thanks to the mechanical system expertise of Hot Rod Rohr and Gemma McKee-Bartholomew, this new home in the Ozarks now has a radiant heat comfort (with air conditioning and domestic water heat) sourced from a geothermal system.

Hot Rod Rohr is Phc News magazine's hydronic columnist and president of Rogersville, MO-based Show Me Radiant at the time of the project installation. McKee-Bartholomew is a nationally-acclaimed geothermal expert who owns Kimberling City-based High Tech Homes Construction, Consulting & Seminars and Air Brokers HVAC, LLC.

McKee-Bartholomew has fiddled with plans for a near-zero-energy home design for several years. Her plans finally took shape when she completed the home she built for herself near Branson.

Popular Mechanics magazine was so impressed with the plan and the combination of talents bringing it to fruition that they sent a columnist to develop a story; it appears in the January '08 issue.

McKee-Bartholomew describes the plan as a formula, one she now offers to clients far and wide. They've also become the focus of "High Tech Homes" training she conducts for professionals and homeowners alike.

She's reluctant to ignore any key facet of a home's design, so she often incorporates SIPS or ICF structural components to create an air-tight envelope. She opted for ICF for this slab-on-grade project and is currently in the process of building another model home of SIPS for comparisons.

The 3,570 s.f., single-level home received about **2,700 lineal feet of RadiantPEX** in just two heating zones embedded in heavy concrete. One zone is comprised of the great room, office, master bedroom and all bathrooms. The second heating zone is made up of the dining room, living room, kitchen and guest bedroom. They also needed **1,200 lineal feet of WaterPEX** for domestic water lines by Watts.

The home was designed for superb energy efficiency, so McKee has electrical submeters to carefully measure energy use by the geothermal and domestic water heating systems continuously. Sadly, the home's radiant system



About . . .

Location: Branson, Missouri
Installer: Robert "Hot Rod" Rohr, Show-me Radiant
Products: RadiantPEX®, Manifolds, WaterPEX®

had not yet been connected for the first winter season ('05/'06). All of the home's space and domestic water heating needs (and several months of air conditioning) from August 1 '06 until July 17 '07 required 7,400 kWh @ .08 per = \$592.00 for the 11 month, 2 week period, or \$51.48/month.

"But this winter will be different," said McKee-Bartholomew. "The first winter heating of the home was provided strictly via the 2-ton DX system that was originally intended for use only as a cooling system. This year's heating will be done with the radiant system, providing us the data needed to determine the actual cost of geothermal heating with forced air, versus geo heating with radiant. We expect 10 to 15 percent better efficiency, and a whole lot more comfort inside."

Inspired by the success of mechanical systems in this home, McKee now hopes to take green construction into the affordable housing

market nearby. "Why should sophisticated, energy-wise homes be available just to people of greater means?" she asks.

She's now preparing to develop a subdivision of small, energy efficient homes in the 960 - 1,400 SF range with the goal of providing heat, air conditioning and domestic hot water production for as little as \$12.00 - \$15.00 per month.

Project Profiles