SCIENCE

FROM THE GROUND UP

Geothermal heating expert speaks at SNARL

By Kirkner

In one of the most well-attended opening night lectures put on by the Sierra Nevada Aquatic Research Laboratory (SNARL), ground source heat pump expert and self-proclaimed "geo-junkie," John Geyer laid out the what and how of this geothermal technology. The lecture was co-sponsored by the High Sierra Energy Foundation.

Geyer claimed that the Eastern Sierra has "one of the best reservoirs [of geothermal ground source heat] I've seen," and explained that Mammoth should be tapping into this natural source of heat for tax-based buildings and schools.

"The proven, 60-year-old technology works as promised and is available everywhere," he explained to the audience.

The system, which is installed mostly underground, pulls a quarter of its energy from the grid while the remaining three-quarters is pulled from the heat in the ground. Ground heat depends on your latitude.

"Which means," Geyer noted, "that the system is 75 percent renewable, sustainable and honestly 'green.' There's elegance in its simplicity."

As a geothermal designer, trainer and consultant for 20 years, Geyer was able to say from experience that the system is 350-500 percent efficient.

"This is THE green technology," he said. "And I've worked with all the others except fuels cells."

The only downside of working with ground source heat pumps is the hidden nature of the system.

"It's disappointing when you take someone out to see your work and they have no idea it's there," Geyer joked.

Part of the novelty of a ground source heat pump system is that you "set it and forget it," Geyer repeated several times. He emphasized that unlike traditional heating and cooling systems, ground source heat is constantly on.

"You can't have the ground give you a quick shot of heat," he explained. So you set the system and let nature do the rest.

"You don't need a PhD to run it. A second grader can do it."

And once it's set, you won't even know it's on, Geyer promised.

However, in order to truly convince the crowd Geyer knew he had to talk money.

"It always comes down to money," he said knowingly. So he presented a chart, which displayed Mammoth energy costs at 1 million BTUs, over 4-5 days in a 2,000 square-foot home. The price for an electric furnace was $61.85, heating with propane was $50.92, natural gas was $18.75, and the cost to heat with a geothermal heat pump was $15.46.

So while the system will cost twice as much as a traditional system to install, it also costs half as much to operate, and the payback begins 30 days from installation when you pay your bills.

"The risks are minimal with a properly designed ground loop," Geyer said. "Get it right once and you're good forever." An added bonus for Eastern Sierra locals: there's nothing to put outside, aboveground that could become damaged by snow loads, critters or other natural phenomena.

As Geyer explained this type of system needs to be brought into the mainstream because it uses less electricity and our current system has a finite capacity. Plus California's electricity rates the third highest in the nation, according to Geyer, so why not geothermal?

"You can create your own infrastructure," Geyer concluded. "You get what you pay for."

The next SNARL lecture is scheduled for May 7, at 7 p.m. at the Green Church. Mammoth Hospital's own Dr. Jonathan Bourne will give an "Introduction to the Mushrooms of the Eastern Sierra." Lectures are free, but seating is limited so don't be late.