

Doug Rye *says ...*



What is COP?

May I wish you a happy springtime? We have warmer weather, pretty flowers, biting fish and it seems we are all more cheerful.

Those of you who read this column and listen to our “Home Remedies” radio program probably think that Professor Tom and I are greatly excited about the General Electric Hybrid water heater (now called GeoSpring) and you are right. Why are we excited? Because rarely does a new product come along that actually performs as well as advertised and is feasible, as well as good for the consumer. Tom and I have been in the energy efficiency field for a combined 50 years and we have seen many so-called miracle products come and, mostly, go. We have seen the magic black boxes, the many different room heaters, the unbelievable sheets of aluminum foil, and many others. In my opinion there are individual cases where these products may actually help but almost never will they perform at the advertised 30, 40, or 50 percent savings.

I believe that the GeoSpring will perform exactly as we wrote about in last month’s column. By the way, that column drew a big response from you, the readers. The most often asked questions were, “What is the price?” and “How can it be 200 percent efficient?” Well, you can call your local electric cooperative for the current price and I will handle the efficiency question.

The engineering term that is used to state the efficiency is “coefficient of performance” or “COP.” I like to say that the “COP” tells us how efficient the product converts a unit of electricity to heat. Here are three examples.

As you try to move electricity through a metal wire it meets resistance. In some metal coils the resistance is so great that the coil glows red hot. You would recognize this in a toaster, a hair dryer, some electric room heaters and in an electric furnace. Most electric heaters have a COP of 1.00 or an efficiency of 100 percent. One unit of electricity in and one unit of heat out.

A heat pump is totally different. It uses a compressor to move heat from one location to another and it does it at higher efficiencies. Think of your refrigerator as the compressor runs and takes the heat out of the milk and puts that heat in the kitchen from the back of the refrigerator. The COP of a properly installed heat pump is about 2.5 or about 250 percent efficient at 40 degrees or warmer. One unit of electricity in and 2.5 units of heat out.

A geothermal heating system has a COP of about 4.00 and one model has a COP of 5.00. One unit of electricity in and 4 or 5 units of heat out. Wow, what do you think of that?

When someone asks me how a heat pump works, I usually just say “really good.”

Gas water heaters do not have COP ratings because they are not electric. They have an Annual Fuel Utilization Efficiency (AFUE) rating. The AFUE rating of most gas water heaters is 57 percent or less. That simply means that about 43 percent of the gas goes straight up the flue to the sky above.

I honestly believe that the GeoSpring will deliver you hot water at over 200 percent efficiency. It’s your choice.

See you in April when the crappie are really biting.

Doug Rye, a licensed architect living in Saline County and the popular host of the “Home Remedies” radio show, works as a consultant for the Electric Cooperatives of Arkansas to promote energy efficiency to cooperative members statewide. To order Doug’s video or ask energy efficiency-related questions, call Doug at 1-501-653-7931. More energy-efficiency tips, as well as Doug’s columns, can also be found at www.ecark.org