

Sustainability – Real “Green” House Design

The Right Solution for Affordable Heating and Air Conditioning

Affordable Electric Bills by Design

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If you use the correct HVAC design, you can substantially reduce your electric bill. Our new home has approximately 5,500 square feet heated and cooled...7,200 square feet under roof (including porches and garage). Our six month average electric bill was \$139.77...that's May through October...in NW Arkansas. Harold Kimrey and his crew at Paschal Heating and Air in Springdale, AR had all the technical tools and software skills to quickly model our new home's HVAC system. We were able to select the proper balance of equipment within a couple of days. I had confidence in the design, Harold's crews did an excellent job with the installation, and we have been very pleased with our home's comfort and the affordable electric bills. Not everyone has the educational training and experience to make sense of all the HVAC tech talk. And, it is even harder to know which HVAC contractor / manufacturer's dealer to work with when you start to design your new HVAC system. There are so many details, that even a licensed engineer can get lost in the details. So, where and how do you begin...what's the priority of right things to consider in the design? Here is a short list of the basics...

THE HOME

INFILTRATION:

The biggest energy hog in your home is infiltration. There is no way to achieve HVAC efficiency with a leaky structure. The fix for infiltration in the construction of a new home is more than insulation. Installing physical barriers between outside air spaces and inside air spaces is critical...such as the space between attic space and above porches. Close up these spaces. Seal around all the windows and doors.

The fix for remodeling an existing home requires a thorough inspection, a prioritized plan and thermal imaging expertise to see what the eye cannot. The best times for the use of thermal imaging are when outside temperatures are significantly different than where your home's thermostat is typically set...the heat of summer or the cold of winter.

INSULATION:

Only after the air spaces have been physically separated can insulation be properly done. A good insulation contractor will seal all structural cracks and gaps in the walls, floors, ceilings, attics, windows and doors. The contractor that insulated our home foam sealed all our structural cracks and gaps before installing the cellulose. One of the unique features of our home is the semi-conditioned attic space and non vented soffit with the attic insulation against the roof decking. Our attic is much cooler in the summer and much warmer in the winter...which means reduces our cooling and heating load for the house.

SOLAR HEAT GAIN:

If the sun shines through your windows and puts bright beams of light across your floors, you will need to make sure your windows are protecting your house from becoming a green house. You can buy windows with low e glass. This will significantly reduce the amount of heat that comes in through the windows. Another option to reduce the heat gain through windows is to build porches that shade the windows...particularly on the south and west sides of the home.

THE HVAC SYSTEM

SEER RATING:

HVAC manufacturers offer a wide variety of equipment to meet the variety of physical challenges and financial limits. There are several measures of a HVAC system's energy performance. The only way to make a good decision is to look at the same measure for several systems. The SEER is one of the more common A/C system performance references...with the higher the rating, the more energy efficient the system. The SEER rating for our HVAC systems is 19...and for air cooled condensing DX HFC system, that's pretty good. The best performance will come from a HVAC system with a variable speed fan.

HEAT PUMP with CONDENSING FURNACE:

The measure of energy performance for a HVAC system is different for cooling than for heating. In cooling mode, the SEER rating applies. In heating mode, the AFUE! Rating applies...with the higher the number, the more energy efficient the system. Heat pumps offer very affordable heating of the home, but are limited to outside air temperatures down to about 25 F...depending on the system and equipment settings. A backup source of heat will be necessary when the outside air temperatures drop below the heat pump's limit. The most energy efficient backup heat is a condensing furnace that burns propane or natural gas. The hidden merit for choosing the condensing furnace as a backup heat source is the ability to adjust utility costs during winter heating.

ZONING:

Within your home, there are private, social and work areas. If your home is more than 2,000 square feet, it makes sense to not cool or heat the whole house based on a single thermostat. Zone the private areas of your home with one thermostat and the social and work areas of you home with additional thermostat(s). Most HVAC manufacturers offer zone controllers, but it takes a more qualified HVAC contractor with the design software and experience to properly size the system for energy efficient zone control performance.

If you want the most energy efficient HVAC system value, deal with people that have integrity and all the right tools and skills...contact Harold at Paschal Heating and Air. I have been extremely pleased with all my dealings with Harold.

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