



Frequently Asked Questions:

 What is the difference between open and closed cell foam insulation?

Open cell foam is usually more suitable for residential applications for several reasons. Open cell foam is more flexible than closed cell foam. When the framing members expand and contract with the weather, open cell foam will flex with the wood, but closed cell foam will get hairline cracks where it was connected to the framing members because it is not able to flex enough. Another difference between open and closed cell foam is that, when used at the roof rafters, if a roof leak develops, the closed cell foam will not allow the water to weep through the foam because it is a vapor barrier. This can lead to rotting of the roof deck before the roof leak is ever discovered. Open cell foam is not a vapor barrier, so it allows the water from the roof leak to weep through the foam to the space below. After the roof leak is repaired, the open cell foam can be allowed to dry and its thermal properties return, unlike other insulations that must be replaced when they get wet. In addition to these differences between open and closed cell foam, open cell foam is usually less expensive than closed cell foam.

 Is open or closed cell foam better for residential applications? Why?

Open foam is better for residential applications. See the answer to “What is the difference between open and closed cell foam insulation?” for reasons why.


 What is a vapor barrier and why do I need one in my walls?

A vapor barrier is also called a vapor retarder; this is a material that retards the movement of water vapor through a building element (such as walls, floors, and ceilings). It is important to have a vapor barrier such as building wrap or tar paper on the exterior walls of your home to prevent moisture from getting into your walls and causing mold and rot to occur. The building wrap should be located on the outside of the stud between the sheathing and the stud wall.

 What is the best type of insulation to use in my walls and attic?


The best insulation to use in our hot humid climate is open cell spray-in foam insulation. This foam seals all air leaks and insulates very well in the walls and at the roofline. Unlike other insulations, it is an air barrier, so air infiltration is greatly reduced when using spray foam insulation. Creating an un-vented attic, using foam insulation at the roof rafters instead of the ceiling joists, will offer the most energy benefits. This turns the attic into conditioned space, part of the building's thermal envelope. When this happens, the HVAC system no longer has to compete with the extreme temperatures found in vented attics, because most un-vented attics remain within 10 degrees of the home's living space temperature. This allows you to

downsize your HVAC equipment, saving money on the front end (by buying smaller equipment) and saving money every time the machine runs (because it is a smaller unit, using less energy). While spray foam insulation costs more than other insulations, its performance far surpasses that of any other insulation.


 What is the best way to insulate underneath the subfloor of my home?

In most circumstances, the best way to prevent moisture from entering your home through the sub-floor and to insulate effectively is to have half pound, open-cell foam insulation installed at the sub-floor. Because this foam is an air barrier, the moisture-laden air of southeast Louisiana cannot move through the insulation to bring heat and humidity into the home. Also, the foam insulation will not fall out or become home to small animals that might like to live in other types of insulation.


In a hot humid climate, there is a lot of misinformation about spray foam insulations. Many flooring companies suggest the use of closed cell foam under the sub-floor because they say it blocks all moisture from entering the sub-floor. This is a true statement that closed cell foam will block the air as well as vapor from entering the home via the sub-floor. However in most situations there are some problems with using closed cell foam under your home. When the floor joist flex from walking across the floor, open cell foam will flex with the wood, but closed cell foam will get hairline cracks where it was connected to the framing members because it is not able to flex enough. Another difference between open and closed cell foam is that, when used at the floor joist, if a water leak from a tub or dishwasher or washer machine develops, the closed cell foam will not allow the water to weep through the foam because it is a vapor barrier. This can lead to rotting of the flooring, sub-floor, and floor joist before the water leak is ever discovered. Open cell foam is not a vapor barrier, so it allows the water from the roof leak to weep through the foam to the space below. After the leak is repaired, the open cell foam can be allowed to dry and its thermal properties return, unlike other insulations that must be replaced when they get wet. In addition, building codes may require the use of a fireguard or ignition barrier to be applied when a closed cell foam is installed.

 What should I look for when purchasing windows for my home?

When purchasing windows for your new or existing home, you should pay attention to the type of glass used in the window. While the frame is important and vinyl is the best choice, the glass is even more important with regards to efficiency and comfort. The glass should have a Low E coating and a solar heat gain coefficient (SHGC) of no higher than .400. The type of Low E is called Low E sputtered or sputter coat. These are the terms used for the types of Low E appropriate for our southern climate.


 What is Low E?

Low E stands for "low emissivity". Low E glass is coated with a microscopic, virtually invisible, metallic oxide layer that improves thermal performance. The primary function is to reduce the U-value by suppressing radiative heat flow. A secondary feature is the blocking of short wave radiation to impede heat gain. Low E is not just effective at keeping heat out in the summer, but at keeping heat in in the winter time. See this website for more information: <http://www.efficientwindows.org/>

 What is more efficient to heat my home in the winter, a gas furnace or a heat pump?

A heat pump far surpasses the gas furnace in energy efficiency and even when gas prices were much cheaper, it was far less expensive to a heat pump than a gas furnace. An air-source heat pump can provide efficient heating and cooling for your home, especially in this hot humid climate. When properly installed, an air-source heat pump can deliver one-and-a-half to three times more heat energy to a home than the electrical energy it consumes. This is possible because a heat pump moves heat rather than converting it from a fuel, like in combustion heating systems. Take a look at the comparison of a heat pump to a gas furnace on the link below.

<http://www.progress-energy.com/custservice/carbusiness/builders/costheatpump.asp>

 How does a heat pump work?

A heat pump's refrigeration system consists of a compressor and two coils made of copper tubing (one indoors and one outside), which are surrounded by aluminum fins to aid heat transfer. In the heating mode, liquid refrigerant extracts heat from the outside coils and air, and moves it inside as it evaporates into a gas. The indoor coils transfer heat from the refrigerant as it condenses back into a liquid. A reversing valve, near the compressor, can change the direction of the refrigerant flow for cooling as well as for defrosting the outdoor coils in winter. When outdoor temperatures fall below 40°F, a less-efficient panel of electric resistance coils, similar to those in your toaster, kicks in to provide indoor heating. This is why air-source heat pumps aren't always very efficient for heating in areas with cold winters.

 What is a manual j-load and why do I need one?

Air Conditioning Contractors of America (ACCA) Manual J is used primarily to size the HVAC system. It is an accurate procedure which can be used to estimate the heat loss and heat gain for conventional residential structures. Residential heating and cooling systems must be selected and designed to provide comfort conditions in all occupied spaces regardless of season. Temperature, humidity, air movement and ventilation must be controlled by the system. In addition, the system must perform these functions at maximum efficiency in order to minimize energy consumption.


The load calculation is the basis for the system design. Loads must be analyzed if the furnace, condensing unit, fans, coils, ducts, and air terminals are to be sized correctly. Comfort, efficiency and reliability are closely related to correct sizing and selection of equipment. A load calculation must be made for each room so that the room cooling and heating requirements can be determined. This information is needed for terminal selection, fan and duct sizing. A load calculation must be made for the entire structure in order to properly size the heating and cooling equipment.

◆ **Oversizing can lead to:**


- ★ Higher equipment cost
- ★ Excessive loading/unloading
- ★ Frequent cycling
- ★ High indoor relative humidity
- ★ Large conditioned-space temperature swings
- ★ Low efficiency and high operating costs
- ★ Shorter equipment life
- ★ Poor indoor air quality

◆ **Advantages of proper sizing as opposed to over sizing are:**

- ★ Lower initial equipment cost
- ★ Ease of obtaining proper airflow
- ★ Can lead to greater occupant comfort
- ★ Can lead to longer equipment life
- ★ Quieter equipment operation
- ★ Leads to greater operating efficiency
- ★ Lower operating costs
- ★ Can lead to lower maintenance cost


 How do I know if I am hiring a good contractor or subcontractor?

When hiring a (sub)contractor, make sure to ask for references. Check out other jobs that the contractor has completed and speak with past customers to see if they were satisfied with the contractor's work, if he showed up when he said he would, and if he made promises to the customers that he failed to fulfill. Ask the contractor for his contractor's license number and for proof of liability coverage. The insurance company should send the proof of insurance directly to you so that you know that the contractor's policy is in force. Get everything in writing so that you have a contractual agreement with which to base your decisions and payments on.


 What should I look for when making a decision on what type of water heater to purchase and install?

Storage tank water heaters are being made more and more efficient every year. There are two things to consider when making a decision between a storage unit and a tankless unit.

Do you have a problem with not having enough space to fit a storage tank water heater? Also, does your family use large amounts of hot water all at once, such as two adults and three kids all taking showers in the morning from 6:00 AM to 7:00 AM each day? If you answered “yes” to either of these questions, then you may want to consider paying the extra money to install a tankless water heater. However, If you answered “no” to both questions, then, chances are, that you would not benefit from a tankless water heater any more than you would from a storage tank heater and the storage tank costs significantly less to purchase. When choosing between using a gas water heater or an electric one, consider that the electric tank is more energy efficient than a gas water heater. Also, if your water usage in your home is fairly predictable, the electric water heater can be attached to a timer to save even more money. The bottom line is that electric storage tanks are the most cost effective for the average homeowner.

 Why are energy efficient homes also more comfortable than energy hog homes?

Energy efficient homes are usually built tighter and have properly sized heating and cooling equipment, so it is easier to heat and cool them. They are not drafty, do not have high humidity, and are quieter. Also, because they are tighter, less outside air carrying allergens, dust, and humidity, can pass into the home through the usual cracks and holes in the thermal envelope of the home. Therefore, the energy efficient home is significantly more comfortable than a less efficient home.

 Why should I hire LaGrange Consulting to help me with my new or existing home?

While the information given on this website is good, is solid advice, it is only the tip of the iceberg when it comes to building an energy efficient home in a hot humid climate. Each home is unique in its needs and design, so each homeowner needs specific advice on his or her home. Each house works as a system, so, for example, if the efficiency of the windows is increased, this could affect the way the HVAC functions. LaGrange Consulting can offer that specific advice on how to make your home work as a whole system. We can offer the following services to make sure your home or office building is as comfortable and as energy efficient as possible.

- Residential and light commercial energy audits
- Preparation of Residential Energy Code Compliance Documentation
- Manual J Calculation (Heating/Cooling load calculation per ASHRAE procedures)
- Home Energy Ratings
- United States EPA Energy Star Certification
- Investigations and Consultations
- Energy Efficient Mortgages
- Residential training on energy efficiency, indoor air quality and moisture (mold) prevention
- Design Development

- Cost Benefit Analysis
- Energy Needs Analysis
- Resource Allocation
- Contract Documents / Specifications
- Indoor Air Quality
- Diagnostic Testing