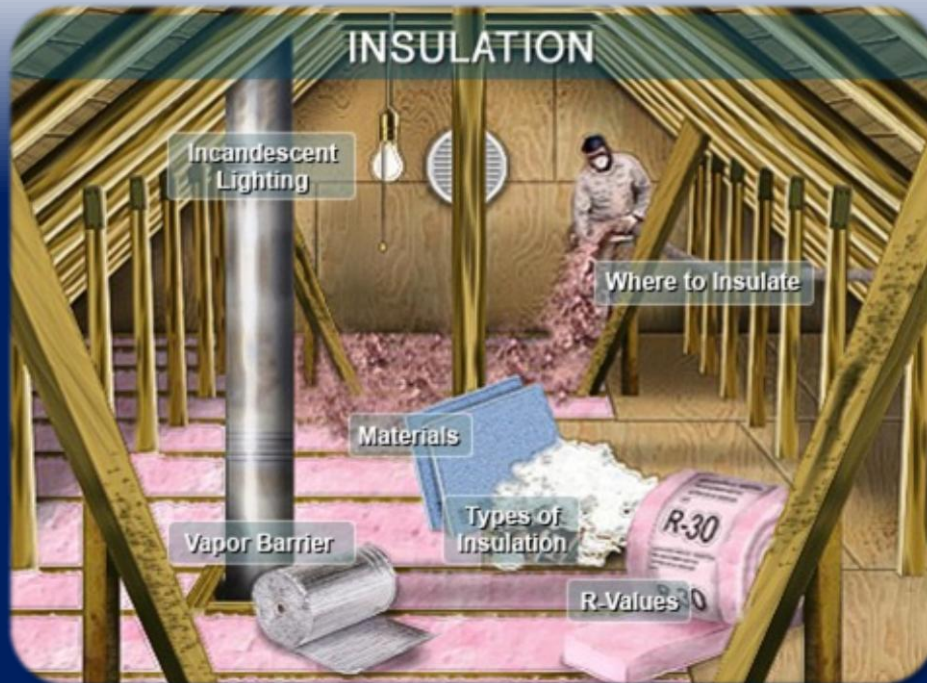




Insulation

Why Insulate Your House?

Don't let your hard-earned dollars go through the roof. Insulating your attic is the #1 way to save money on your energy bills. Heating and cooling account for 50 to 70% of the energy used in the average American home. Inadequate insulation and air leakage are leading causes of energy waste in most homes.



Insulation Facts:

- Saves money and our nation's limited energy resources
- Makes your house more comfortable by helping to maintain a uniform temperature throughout the house
- Makes walls, ceilings, and floors warmer in the winter and cooler in the summer.

If your home is 5 to 10 years old, you likely have one of the 46 million under-insulated homes in the US, according to the Harvard University School of Public Health.

Adding more insulation is easy. Plus, insulation is one of the lowest cost options for improving the energy efficiency of your home. It pays off fast and keeps paying off with better comfort and energy savings for as long as you own your home.

The benefits are great:

- Improved comfort
- Better energy efficiency
- Healthier environment
- Lifetime of savings

Cellulose insulation is blown or sprayed into place, preventing gaps and stopping air leaks better because of the way it's applied. And cellulose insulation is two to three times more dense than comparable fiberglass batts. That means heated air can't transfer through dense cellulose insulation as easily as it does through typically

installed fiberglass. Insulation may be used in walls and attics of residential or commercial structures. It may be used in cathedral or flat ceilings, crawl spaces, basements and as insulation under floors. Cellulose insulation may be blown in horizontal applications such as attics and crawl spaces, and professionally sprayed into wall cavities and attics in new construction.

R-Value

A material's resistance to heat flow is called its Resistance-value or R-value. Having high R-value insulation installed in the cavities of your home slows the flow of heat through walls, floors and ceilings.

The higher the R-value, the more effective the insulation. For example, heat flows through an R-8 wall twice as fast as through an R-16 wall. Different types of insulation have different R-values per inch, and have varying construction and insulation applications.

Cellulose insulation is made from treated, recycled paper and is generally blown into finished walls, attic floors and other hard-to-reach enclosed cavities. Dense packed cellulose has an R-value of 3.8 per inch. Blown-in cellulose is not only the best insulator but the easiest to install by simply using an insulation blowing machine to blow the cellulose fiber into an attic or walls. A 10 inch layer is a minimum which will give about a R30 rating. About every 15 or 20 years you will need to check the depth in several places on a 10 inch layer because the dynamic shifting of the movement of the structure will cause packing and you may need to blow in another couple of inches to keep the R-value consistent.

Insulation can increase a wall's fire resistance by 22-57%. The boric acid flame retardant used in is infused in the natural fibers of the cellulose. During a fire, the retardant melts and holds the heat until the cellulose fibers char. The cellulose then becomes a layer of carbon protection, because the charred fibers won't burn. The density of the insulation prevents the passage of flames and hot gases, so fire does not spread as readily into cellulose-installed walls or ceilings, and it restricts the amount of oxygen available to support combustion.



Cellulose insulation is a non-toxic natural product made from 85% recycled paper fiber, reducing landfill waste. Each 40 sq. ft. bag contains the equivalent of about 46 Sunday newspapers. It is processed by electrically-driven mills that consume relatively little energy when operating.

SERVICES:

Air Handler

The outdoor unit, or condensing unit, is just a part of the air conditioning system that provides your home with central air conditioning year-round. But the outdoor unit also has an indoor unit, called the **air handler**. It is usually used in place of a gas furnace and is just as cost efficient. The air handler is the unit that circulates all of that lovely air we crave in the summer and the heat that's essential for those living in colder environments and it does so evenly throughout the home. One unit cannot work without the other, they work together to provide central air conditioning.

Air handlers operate in conjunction with an air conditioning or heat pump system, are simple to the naked eye and are generally used instead of a furnace. An air handler is a box made of sheet metal, with holes on each side and a fan that circulates the air. It also houses essential air conditioning parts, such as an evaporator coil and an air conditioning filter.

There are various sizes and efficiency ratings of air handlers, mainly due to the different air conditioning systems. Both are matched together to provide the very best central air conditioning for the size of the home or office building. Basically, it's the part of the air conditioning system that solely focuses on the cooling of the house, while the condensing unit, or "outdoor unit," focuses on the heating. Both have the same parts yet concentrate on different functions to provide both heating and air conditioning.



The air handler can also be referred to as an "indoor unit." Whenever you have to replace the outdoor air conditioning unit, you also have to do the same with the air handler because both are designed to provide the very best air conditioning system. Not matching these two air condition parts can result in insufficient heating and air conditioning you come to expect of your central air conditioning.

Something not entirely new to the market but an added perk are variable speed air handlers, which pretty much operate the same as the standard but have an added bonus: a variable-speed blower that can cool (or heat depending on if you have an added heating coil) in varying speeds throughout the home instead of an on/off stronger flow that is expected of the standard air handler.

UV LIGHTS WHAT THEY DO & HOW THEY WORK



TRANE Clean Effects: Removal of up to 99.98% of particles and allergens filtered from your indoor air. It removes particles as small as 0.1 microns – 1/1,000th the diameter of a human hair – a size that eludes most air cleaners.

- An industry-leading clean air delivery rate of 1,200.
- Low operating costs, with no replacement filters to buy.
- Cleaning indicators easily visible on the outside of the unit.
- Easy Installation

1. **Fights germs. Anti-microbial Germicidal effect disinfects the air.** Kills germs, bacteria, viruses, mildew, mold spores such as stachybotrys and black mold, etc. as they circulate through the ducts and past the UV lamps. Help stop the spread of diseases and sicknesses. Short wave (UV-C) kills or de-activates bacteria, viruses and other primitive organisms, *even if the organisms have become immune to other disinfection methods.*
2. **Stops Mold and Bacteria growth inside your central air conditioning system.** No more mildew and moldy odor from your air conditioner.
3. **Eliminate Odors.** Makes the air in your rooms smell fresh and clean while producing ZERO ozone.
4. **Destroys VOC's (volatile organic compounds) such as formaldehyde.**
5. **Eliminates the need to EVER clean the mold off your cooling coil (evaporator coil) again.** (details below) **Helps decrease cooling costs** by keeping the cooling coil from plugging up with mold and gel.
6. **ELIMINATES the need for periodic duct cleaning,** by keeping your ductwork clean and dust-free inside.

7. Generates safe and highly effective **Negative hydroxyl ions**, the natural compound that scrubs pollution from the earth's atmosphere. **Hydroxyl ions are the main air pollution destroyer in earth's atmosphere.** Hydroxyls and hydroxyl radicals are formed when the UV-C from the sun strips hydrogen atoms from water molecules (H₂O) forming hydroxyl (OH)-.
8. These helpful **negative hydroxyl ions** are spread out of your cooling and heating vents and into your living space by your central air conditioner's fan or blower.

No more air conditioner coil cleaning. The high-energy UV-C ultraviolet rays from the probes shine on the cold air side of the air conditioner evaporator coil.

This eliminates the normal mold, algae, slime, and gel formations that:

- Act as breeding areas for bacteria
- Can be blown out into the room, where they can be inhaled and cause sinus infections, sickness, and allergies.
- Can plug the coil, inhibit air flow, and increase cooling costs.

What is Air Conditioning?

Technically the term air conditioning refers to a wide range of processes to heat, cool, ventilate and de-humidify air. All these process alter the “condition” of the air. But in practical terms an air conditioner, or A/C, has come to refer mainly to cooling warm air.

An air conditioner uses a process of heat transfer, similar to a refrigerator, to pull heat energy away from the air replacing it with cool air. The process also removes moisture from the air. The drier air that AC produces also helps to keep us cool. We sweat so the moisture can evaporate from our skin as part of our bodies own heat transfer process. Drier air makes the evaporation process more efficient. The relatively high humidity that occurs with the hot weather here in Houston region makes the dryer air produced by AC an added bonus.

Today's central air conditioning units are part of the entire heating, cooling and ventilation systems for your home or commercial building. Air is ventilated and filtered through the buildings duct work and the temperature control unit automatically decides when the A/C should turn on to cool the air down or the furnace to turn on to warm it up.

DEFINITIONS

AFUE- Annual Fuel Utilization Efficiency. The formula for conversion of a gas furnace from fuel into energy. The higher the rating, the more efficient the unit.

Air Handler – The indoor component that moves the heated or cool air throughout the duct work in your home. An air handler is usually a blower coil or a furnace.

BTU – British Thermal Unit. The amount of energy needed to change the temperature of one pound of water by one degree Fahrenheit. In your home, this represents, the measure of heat given off when fuel is burned for heating or the measure of heat extracted from your home for cooling.

CAE – Combined Annual Efficiency. The measurement of heat produced for every dollar of fuel consumed for both water and home heating.

Capacity – The output or producing ability of a piece of heating or cooling equipment. Heating and cooling capacities are referred to as BTU's.

Carbon Monoxide – A poisonous, odorless, flammable gas produced when carbon burns with insufficient air. This gas is deadly to humans.

CFM – Cubic Feet per Minute. A standard measure of air flow. A conventional system requires 400 CFM per ton of air conditioning.

Compressor – It is part of the outdoor unit and is the central point of a heat pump or air conditioning system. The compressor pumps down the refrigerant into the condenser, coil, then out into the evaporator coil and back to be re-circulated. This cycle occurs to meet the cooling requirements of the system.

Condensing Unit – The outdoor component consisting of; compressor, condenser, coil and fan.

Condenser Coil or Outdoor Coil – The coil is in the air conditioner and its function, is to release heat from the refrigerant. The cooler outdoor air that passes through the coil condenses, that is, changes the refrigerant from vapor to liquid.

DB Decimal Level – Sound Level

Damper – A movable plate that opens and closes to control air flow. Often times, dampers are used to balance airflow in a duct system. They can also be used in a zone system to regulate airflow to different rooms.

DOE – The Department of Energy is a federal agency responsible for establishing industry efficiency standards and monitoring the consumption of energy sources.

Ductwork - Pipes that carry air throughout a home/office. The performance of your HVAC system is dependent upon these long cylinder like tubes to carry airflow.

EAC Electronic Air Cleaner – A piece of equipment that filters out large particles and bio-aerosols in indoor air.

Energy Star – A label used to identify that an HVAC system meets or exceeds the EPA guidelines for energy efficiency.

EPA – The Environmental Protection Agency. The EPA develops and enforces, federal environmental regulations. In addition, the EPA's responsibility is to oversee the Energy Star Program nationwide.

Gas Furnace Heat Exchanger – The heat exchanger transfers heat to the surrounding air from the blower. It is then circulated throughout the home.

Heat Pump – An HVAC unit that cools or heats by moving heat. In the winter, a heat pump draws heat from outdoor air and circulates it through your home or office air duct system. During the summer, it reverses the process and removes heat from your home or office and releases it outdoors.

HSPF – Heating Seasonal Performance Factor. A rating used to measure the heat efficiency of a heat pump. The higher the number, the more efficient the unit.

Humidifier – An indoor quality, piece of equipment, that deposits moisture to heated air as it passes from the furnace into the duct work to distribute throughout the home.

Humidistat – An automatic device used to maintain the humidity at an adjustable or fixed set point.

HVAC – Heating Ventilation and Air Conditioning.

Indoor Coil or Evaporator Coil – This indoor coil will get cold as the blower from your furnace passes warm air across it, consequently cooling down the indoors. The warm indoor air will evaporate the refrigerant from a liquid to a vapor.

ISO 9000 – A unit of international standards for quality management and assurance.

MERV Rating – Minimum Efficiency Reporting Value. Used to rate a filter, describing the size of the holes in the filter that allows air to pass through. The higher the MERV rating, the smaller the holes are in the filter and the higher the efficiency.

Micron – A unit of measure equal to one millionth of a meter, or one thousandth of a millimeter.

Odors/Chemicals – Air contaminants in the form of gases.

Package Unit – A cooling and heating system that come together in one package.

Particles – Any substances measuring less than 100 microns in diameter. According to the EPA, small particles that are smaller than 2.5 microns cause the greatest health concern.

Programmable Thermostat – A thermostat that has the ability to record different temperatures and time settings for a heating and cooling system.

Refrigerant – What consumers refer to as Freon or Puron. The fluid and gas that evaporates and condenses throughout a system; absorbing heat in the evaporator coil and then releasing heat in the condenser coil. R-22 refrigerant is used in 95% of residential air conditioning equipment. R-22 is regulated by international controls under the Montreal Protocol and in the United States, by the Environmental Protection Agency. R410 A (Puron) is rapidly becoming mainstream for residential systems.

R410 A Refrigerant – A chlorine-free refrigerant that meets the EPA's most up to date, stringent environmental guidelines.

Refrigerant – A chemical that produces a cooling effect, when expanding or vaporizing.

Refrigerant Lines – Two copper lines that connect the heat pump or outdoor air conditioner to the indoor evaporator coil.

Scroll Compressor – A compressor specially designed that operates in a circular motion as opposed to up and down piston action.

SEER – The Seasonal Energy Efficiency Ratio . A rating referring to the energy efficiency of an air conditioner. The higher the SEER, the superior the energy performance, resulting in savings.

Single Package – A heating and cooling system contained in one outdoor unit.

Split System – A combination air conditioner or heat pump with indoor components. For example, a blower coil or a furnace.

Thermostat – Monitors humidity and temperature and adjusts cooling or heating system to preferred levels.

Thermostat – A device consisting of a series of sensors and relays that monitor and control the functions of a cooling and heating system, in order to regulate indoor temperature.

Ton – Unit of measurement for determining cooling capacity.

Two-Stage Operation – Provides two levels of heat output for greater temperature control.

Upflow – A type of furnace that draws cool air from the bottom and blows the warm air out the top in the duct system. This type of furnace is designed for closet or basement installations.

Variable Speed Motor – Automatically adjusts the control of heat airflow for supreme comfort.

Ventilator – A system that exchanges stale, re-circulated indoor air with fresh, filtered outside air.

Zoning – A method of dividing a home or office into independently controlled comfort areas for enhanced comfort and efficiency.