



## Glossary of Heating, Ventilation and Air Conditioning Terms

**Air Change:** Unlike re-circulated air, this is the total air required to completely replace the air in a room or building.

**Air Conditioner:** Equipment that simultaneously controls air temperature, relative humidity, purity and motion.

**Air Diffuser:** An air distribution outlet or grille that directs airflow into desired patterns.

**Air Handler:** The part of the central air conditioning or heat pump system that circulates heated or cooled air throughout a home's ductwork. Some furnaces perform this function.

**Annual Fuel Utilization Efficiency (AFUE):** A rating that measures the amount of heat your equipment delivers for every dollar spent on fuel. A higher rating indicates more efficient equipment.

**Balance Point:** An outdoor temperature, usually between 30° and 45° Fahrenheit, at which a heat pump's output equals the exact heating needs of the home. Below the balance point, supplementary electric resistance heat must maintain indoor comfort.

**Blower:** An air-handling device for moving air in a distribution system.

**BTU (British Thermal Unit):** The standard of measurement used for the amount of heat required to raise the temperature of one pound of water by one degree (Fahrenheit). BTUH = the number of BTUs per hour.

**Capacity:** The ability of a heating or cooling system to function in a given amount of space. Heating = BTUs. Cooling = tons.

**Central Air Conditioner System:** A system that treats air at a central location and carries it to and from the rooms by one or more fans and a system of ducts.

**CFM (Cubic Feet per Minute):** Commonly used to measure the rate of an air conditioning system's airflow.

**Compressor:** Known as "the heart of the system" because it circulates the refrigerant through the loop, the pump moves the refrigerant from the indoor evaporator to the outdoor condenser, then back to the evaporator.

**Condenser Coil:** A series or network of refrigerant tubes typically placed outside the home that removes heat from the hot, gaseous refrigerant and re-liquefies it.

**Condensing Unit:** Part of a refrigerating mechanism that pumps in vaporized refrigerant from the evaporator, compresses it, liquefies it in the condenser and returns it.

**Cooling Capacity:** A measure of a unit's ability to remove heat from an enclosed space. The COP, or Coefficient of Performance, of a heat pump measures the ratio of the rate of useful heat output that the pump delivers (excluding supplementary heating) to the corresponding rate of energy input.

**Cooling Load:** Heat that flows into a space from outdoors and/or indoors.

**Damper:** Found in ductwork, this movable plate opens and closes to control airflow and is used in zoning to regulate airflow to certain rooms.

**Defrost Cycle:** The removal of ice or frost buildup from the outdoor coil during the heating season.

**Dehumidification:** The reduction of water vapor by cooling the air below the dew point, as well as the removal of water vapor from air by chemical means, refrigeration, etc.

**Downflow Furnace:** Draws in return air from the top and expels warm air at the bottom.

**Duct:** Used for conducting air to and from an air-handling unit via a pipe or closed conduit made of materials such as sheet metal or fiberglass board.

**Ductwork:** Building-wide air delivery conducted through pipes or channels.

**Efficiency:** A fuel-efficiency rating similar to the miles-per-gallon rating on your car.

**Emergency Heat (Supplemental or Auxiliary Heat):** The backup heat built into a heat pump system.

**Energy Efficiency Ratio (EER):** The ratio of an air conditioning unit's cooling capacity in BTUs per hour to the total electrical energy consumed in watts.

**Evaporator:** Absorbs heat or liquid from the surrounding air and moves it outside the refrigerated area by means of a refrigerant. Also known as a cooling coil, blower coil, chilling unit or indoor coil.

**Evaporator Coil:** Located inside the home, a series or network of tubes filled with refrigerant that remove heat and moisture from indoor air as liquid refrigerant evaporates.

**Filter:** A device that removes dust and other air particles to comfort the respiratory system and protect the heating and cooling equipment. The higher the MERV rating, the better the filter.

**Freon:** R22 refrigerant, also known as Freon, has been the HVAC industry standard refrigerant used in the manufacture of central air conditioning systems. Because R22 refrigerant contributes to depleting the ozone layer, the U.S. government has enacted a policy requiring that air conditioners and heat pumps no longer use R22 refrigerant. If your existing A/C system has R22 refrigerant, it can be serviced and, if necessary, recharged up to 1/1/2020. However, after 1/1/2020, refrigerant manufacturers must cease all production of R22 refrigerant completely. If you are purchasing a new air conditioning system today, consider one that uses the more environmentally friendly R410A refrigerant.

**Furnace:** The part of an environmental system that converts gas, oil, electricity or another fuel into heat for distribution within a structure.

**Heat Exchanger:** Transfers heat energy from its source to the conveying medium.

**Heat Gain:** As measured in BTUs, the amount of heat gained from a space to be conditioned, at the local summer outdoor design temperature and specified indoor design condition.

**Heat Loss:** As measured in BTUs, the amount of heat lost from a space to be conditioned, at the local summer outdoor design temperature and specified indoor design condition.

**Heat Pump:** An air conditioner with a valve that permits alternate heating and cooling.

**Heat Source:** A body of air or liquid from which heat is collected. With any heat pump, the air outside the home is the source for the heating cycle.

**Heat Transfer:** The movement of heat from one place to another, between two substances, or within a substance.

**Heating Capacity:** The rate at which a specific device can add substantial heat to a substance, expressed in BTUH (British Thermal Units per hour).

**Heating Seasonal Performance Factor (HSPF):** The total heating output of a heat pump in BTUs during its normal usage period for heating, as divided by the total electrical energy input in watt-hours during the same period.

**Horizontal Furnace:** A sideways furnace that draws in return air from one side and expels warm air from the other.

**HVAC:** Heating, Ventilation and Air Conditioning.

**Humidification:** The process of adding moisture to the air within a space.

**Humidistat:** Regulates humidity input by reacting to moisture content changes in the air.

**Humidity:** The amount of moisture in the air. Air conditioners remove moisture for added comfort.

**Indoor Unit:** Usually located inside the house, it houses the indoor coil, fan, motor and filtering device, sometimes called the air handler.

**Indoor Coil:** A refrigerant containing a portion of a fan coil unit similar to a car radiator, typically made of several rows of copper tubing with aluminum fins.

**Infiltration:** Airflow into a space usually through walls and leaks around doors and windows.

**Insulation:** Any material that reduces the speed of heat transfer.

**Kilowatt (kW):** Equal to 1,000 watts of electricity, a kilowatt-hour (kWh) is a common unit of electrical consumption measured by the total energy that one kilowatt creates in an hour.

**Latent Cooling Capacity:** An air conditioning system's capability to remove moisture from the air.

**Latent Heat:** The heat energy needed to change the state of a substance (e.g., from a liquid to a gas), but not its temperature.

**Load Calculation:** Determines a building's heat gain and loss to ensure installation of properly sized air conditioning and heating equipment.

**Matched System:** A heating and cooling system consisting of products certified to perform at promised comfort and efficiency levels when used together, in accordance with design and engineering specifications.

**Natural-Draft Furnace:** A furnace with natural airflow around it that supports combustion. It depends on the pressure that heat creates in the flue gases to force them out through the vent system.

**Operating Cost:** The day-to-day cost of running your home comfort equipment, based on daily energy use.

**Outdoor Coil/Condensing Unit:** The portion of a heat pump or central air conditioning system located outside the home. It functions as a heat transfer point for collecting heat from and dispelling heat to the outside air.

**Payback Analysis:** A general measure of your home comfort system's efficiency and value. By combining your purchase price with ongoing operating costs, it determines the number of years required before monthly energy savings offset the purchase price.

**Refrigerant:** A substance that produces a refrigerating effect while expanding or vaporizing.

**Refrigerant Lines:** Set of two copper lines connecting the outdoor unit and the indoor unit.

**Register:** Combination grille and damper assembly covering an air opening or end of an air duct.

**Relative Humidity:** The ratio of the amount of vapor contained in the air to the maximum amount the air could hold at that temperature, usually expressed as a percentage.

**Return Air:** Air drawn into a heating unit after having been circulated from the heater's output supply to a room.

**Reversing Valve:** A device in a heat pump that reverses the flow of refrigerant as the system switches from cooling to heating.

**SEER (Seasonal Energy Efficiency Ratio):** A rating that denotes the efficiency of air conditioning equipment in terms of the amount of cooling your equipment delivers for every dollar spent on electricity. The higher the SEER, the more efficient the unit and the lower the operating cost.

**Sensible Cooling Capacity:** An air conditioning system's capability to reduce the temperature by removing heat from the air.

**Sensible Heat:** Heat energy that raises or lowers the temperature of a gas, liquid or solid when added or removed from that material.

**Setpoint:** The temperature at which a thermostat is set for desired comfort level.

**Single Package:** A year-round heating and air conditioning system with all components encased in one unit outside the home.

**Split System:** The most common type of home central air conditioner, it consists of a compressor (the unit and condenser, installed outside the building) and a non-compressor (the air-handling unit installed within the building).

**Supplementary Heat:** Auxiliary or emergency heat, usually electrical resistance heat, provided at temperatures below a heat pump's balance point.

**Thermostat:** A temperature control device, typically found on an inside wall, that consists of a series of sensors and relays for monitoring and controlling a heating and cooling system.

**Tonnage:** The unit of measure used in air conditioning to describe the cooling capacity of a system. One ton of cooling is based on the amount of heat needed to melt one ton (2,000 lbs.) of ice in a 24-hour period, and equals 12,000 BTUH.

**Upflow:** A type of air conditioning system that discharges air into the conditioned space via a top-mounted discharge plenum or through an overhead duct system.

**Upflow Furnace:** A furnace that pulls return air in from the bottom and expels warm air from the top.

**Vapor Barrier:** A moisture-resistant layer applied to the surfaces of humid spaces that prevents moisture from traveling to a point where it might condense due to lower temperature.

**Vapor Seal:** A barrier essential to prevent moisture from infiltrating into, or migrating from, a data processing center or other "critical space" that contains sensitive electronic instrumentation. Vapor barriers may be created using plastic film, vapor-retardant paint, vinyl wall coverings and vinyl floor systems, in combination with careful sealing of all openings (doors and windows) into the room.

**Ventilation:** The process of supplying or removing air, by natural or mechanical means, to or from any space. Such air may or may not have been conditioned.

**Watt:** A unit of power that equals one joule per second. Named after the Scottish inventor and mechanical engineer James Watt.

**Zone System:** A method of dividing a home into zones that makes it possible to control the amount of comfort provided to each.

**Zoning:** The practice of providing independent heating and/or cooling to different areas within a structure.