



Glossary of Terms

Term	Description
Actuator	A controlled motor, relay or solenoid in which the electric energy is converted into a rotary, linear, or switching action. An actuator can effect a change in the controlled variable by operating the final control elements a number of times.
AHU	Air Handling Unit. The component of an HVAC system that is responsible for conditioning and delivering air through the system. Within the AHU, a portion of the return air from the conditioned space is recirculated and mixed with incoming outside air for conditioning and delivery to the space, and the remainder is exhausted to the outside. The AHU typically contains one or more supply and return fans for maintaining air movement, and heating/cooling coils and filters to condition the air. The cooling coil and other equipment, as necessary, are used to control the moisture content of the air.
Air Conditioning	The process of treating air so as to control simultaneously its temperature, humidity, cleanliness and distribution to meet the comfort requirements of the occupants of the conditioned space.
Authority	The ratio of the wide open pressure loss through a valve to the system pressure loss (including the valve) across the subcircuit in which the valve is installed.
Backflow	Movement of water (or other liquid) in any direction other than that intended.
Boiler	A closed container used to heat water or to make steam.
Butterfly Valve	A valve composed of two semicircular plates hinged on a common spindle, used to permit flow in one direction only.
Bypass	A pipe or duct, usually controlled by valve or damper, for conveying a fluid around an element of a system.
Ceiling-based systems	A ceiling-based air distribution system supplies air to, and removes air from, a conditioned space at ceiling level. Both supply and return grilles are located in the ceiling plane, above which there will be a ceiling plenum of sufficient depth to accommodate the extensive supply ductwork, as well as other building services. Relying on the principle of mixing-type air distribution, ceiling-based supply and return systems are designed to condition the entire volume of the space (floor-to-ceiling), thereby providing a single uniform thermal and ventilation environment. This control strategy provides no opportunity to satisfy different thermal preferences among the building occupants.
Check Valve	A check valve is a mechanical device, a valve, that normally only allows fluid to flow through it in one direction. A double check valve is often used as a backflow prevention device to keep potentially contaminated water from siphoning back into municipal water supply lines.
Chiller	Equipment designed to produce chilled water.
Coil	A cooling or heating element made of pipe or tubing.
Commissioning	The advancement of an installation from the state of static completion to working order to specified requirements.
Compressor	In a vapor compression cycle, the device that increases the pressure and temperature of refrigerant vapor. It continuously draws low pressure refrigerant vapor from the cooler, adds energy to increase the refrigerant pressure and temperature, and discharges the high pressure vapor to the condenser.
Condensation	The process by which a gas is changed into a liquid at constant temperature by heat removal.
Conduction (Thermal)	The transmission of heat through and by means of matter.
Convection	The transmission of heat by the circulation of a liquid or a gas such as air. If natural, it is caused by the difference of weight of hotter and cooler fluid.
Convertor	A piece of equipment for heating water with steam without mixing the two. It may be used for supplying hot water for domestic purposes or for a hot water heating system.
Cooling Coil	An arrangement of pipe or tubing that transfers heat from air to a refrigerant.
Cooling Tower	Equipment designed to reject heat from a refrigeration cycle to the outside environment through an open cycle evaporative process; an exterior heat rejection unit in a water-cooled refrigeration system.
Design Heat Load	The total heat loss from a house under the most severe winter conditions likely to occur.
Differential	Difference in pressure measured between inlet and outlet of trap or similar equipment.

Pressure	
Domestic Hot Water	Hot water used for purposes other than house heating such as laundering, dish-washing, bathing, etc.
Evaporator	The heat exchanger in which the medium being cooled, usually air or water, gives up heat to the refrigerant through the exchanger transfer surface. The liquid refrigerant boils into a gas in the process of the heat absorption.
Expansion Tank	Designed to absorb excess pressure due to thermal expansion, e.g. closed system
Fan Coil Unit	A fan terminal unit with a heating (electric or hot water) and/or cooling (chilled water) coil on the discharge of the unit.
Filter	A device to remove solid material from a fluid.
Flow Rate	The quantity of fluid in motion per a unit of time. Flow rate is expressed in mass per unit time or volume per unit time.
Flushing	The washing out of an installation with water to a specified procedure in order to remove manufacturing and construction detritus.
Gate Valve	A gate valve is a valve that opens by lifting a round or rectangular gate out of the path of the fluid. Gate valves are sometimes used for regulating flow, but many are not suited for that purpose, having been designed to be fully opened or closed. When fully open, the typical gate valve has no obstruction in the flow path, resulting in very low friction loss.
Globe Valve	Globe valves are named for their spherical body shape. The two halves of the valve body are separated by a baffle with a disc in the center. Globe valves operate by screw action of the handwheel. They are used for applications requiring throttling and frequent operation. Since the baffle restricts flow, they're not recommended where full, unobstructed flow is required.
Head Pressure	Head Pressure is used in designating the capacity of a circulating pump, and is merely another way of expressing Pressure Drop. The maximum Head of a pump is actually the maximum Pressure Drop against which the pump can induce a flow of liquid. Head is synonymous with pressure.
Heat	The form of energy which transfers from one substance to another by virtue of the temperature difference which exists between the two substances.
Heat Exchanger	A device for the transfer of heat energy from the source to the conveying medium.
Heat Transmission, Coefficient	They are used in the calculation of heat transmission by conduction, convection, and radiation through various materials and structures.
Humidity	Water vapor within a given space.
HVAC	Heating, ventilation, and air conditioning. A system concerned with the temperature, humidity, cleanliness, and distribution of air.
Index flow rate	The flow rate in any given place in the system in the index state.
Index pressure rate	The pressure in any given place in the index state.
Index state	Describes the state where flow, pressure and temperature in the whole system are dimensional for the system design.
Legionella	A bacterium of the genus legionella, especially pneumophila, that can cause Legionnaires disease - an acute, sometimes fatal respiratory disease caused by and characterized by severe pneumonia, headache and a dry cough.
Life-cycle costs	A measure of the total costs involved in a building project, calculated by including initial costs (e.g., construction and installation) and those estimated over the lifetime of the building (e.g., long-term operation and maintenance). Considerations of life-cycle costs are important when making decisions at the initial design stage.
Load	The amount of heat per unit time imposed on a refrigerant system or the required rate of heat removal.
Manometer	An instrument for measuring pressures: especially a U-tube partially filled with a liquid, usually water, mercury, or light oil, so constructed that the amount of displacement of the liquid indicates the pressure being exerted on the instrument.
Mixing Valve	Mixes hot and cold water to achieve a specified delivery temperature
Modulating Control	A mode of automatic control in which the action of the final control element is proportional to the deviation, from set point, of the controlled medium.
Normally Open (or Normally Closed)	The position of a valve, damper, relay contacts or switch when external power or pressure is not being applied to the device. Valves and dampers usually are returned to a "normal" position by a spring.

Panel Heating	A method of heating involving the installation of the heating units (pipe coils) in the walls, floor or ceiling of the room.
Panel Radiator	A heating unit placed on, or flush with, a flat wall surface and intended to function as a radiator. Do not confuse with panel heating system.
Pressure	Force per unit area such lb. per sq. inch.
Pressure Drop	Pressure drop is the term which expresses the fact that power is consumed in moving liquids through pipes, heating units, fittings, etc. Or, expressed in another way, pressure drop is the amount of pressure lost between any two points in a system.
Pump	A device used to circulate fluid from one location to another.
Pump Curve	The design capacity of a pump's ability to circulate fluid.
Radiator	A heating unit located within the room to be heated and exposed to view. A radiator transfers heat by radiation to objects "it can see" and by conduction to the surrounding air which in turn is circulated by natural convection.
Refrigerant	A substance that produces a refrigerating effect while expanding or vaporizing.
Regulation	The process of adjusting the rates of fluid flow in a distribution system to achieve specified values.
Riser	A vertical tube or pipe which carries refrigerant in any form from a lower to a higher level.
Specific Heat	In the foot-pound-second system, the amount of heat (Btu) required to raise one pound of a substance one degree Fahrenheit. In the centimeter-gram-second system, the amount of heat (cal.) required to raise one gram of a substance one degree C. The specific heat of water is 1.
Steam Boiler	A closed vessel in which steam is generated or in which water is heated by fire or electricity.
Steam Heating System	A heating system in which the heating units give up their heat to the room by condensing the steam furnished to them by a boiler or other source.
Strainer	Used to remove foreign material from the water flow. The mesh size determines the size of the material / debris being removed.
Thermostat	An instrument which responds to changes in temperature and which directly or indirectly controls the room temperature.
Two-Pipe System (Steam or Water)	A heating system in which one pipe is used for the supply main and another for the return main. In a two-pipe hot water system each heating unit receives a direct supply of the heating medium.
Valve	A valve is a mechanical device that regulates the flow of fluids by opening, closing or partially obstructing various passageways.
Vapor	A substance in gas form, particularly one near equilibrium with its condensed phase and which does not follow the ideal gas laws; in general, any gas below its critical temperature.
Ventilation	The process of supplying and removing air by natural or mechanical means to and from any space. Such air may or may not be conditioned.
Water Hammer	Water hammer is one of the chief causes of noise in steam heating systems and also the major cause of damage to thermostats and floats in traps. It is a wave transmitted through a pipe filled, or partially filled, with water. It may originate as waves set up by steam passing at a high velocity over condensate collected in piping.

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