

# Glossary of terms

We've compiled this glossary to help you understand the different air conditioning/cooling/HVAC industry terms and acronyms used across our website and literature. Click on the alphabetical links below to jump to the appropriate section. The online version of the glossary is available at [www.airedale.com/glossary](http://www.airedale.com/glossary).

**A B C D E F G H I K L M N O P R S T U V W Z**

## **A.**

### **Absolute pressure**

Gauge pressure + atmospheric pressure. (Sometimes referred to with "a" on end – e.g. Bara, Psia.)

### **Accumulator**

A storage tank that receives liquid refrigerant from the evaporator and prevents it from flowing back into the compressor.

### **AC fans**

Fans of various types driven by an AC (alternating current) motor providing air movement in heating, cooling and ventilation systems.

### **ACIS™**

[Airedale Controls Integrated Systems](#) (ACIS™) a building energy management system (BEMS) that operates and optimises a wide range of building services across multiple platforms and protocols. Also see [BEMS](#).

### **ACRIB**

Air Conditioning and Refrigeration Industry Board [www.acrib.org.uk](http://www.acrib.org.uk)

### **Adiabatic cooling**

Adiabatic cooling is the process of reducing heat through a change in air pressure caused by volume expansion.

### **Air conditioner**

An appliance, system, or mechanism designed to control temperature, humidity and air quality in a defined space.

### **Air-cooled system**

A type of air conditioning system that uses air as the transfer medium to reject heat from the refrigerant in the condenser. Typically, the air-cooled condenser is located and rejects waste heat to the outdoors.

**Air diffuser**

Air distribution outlet or grill designed to direct and develop balanced airstreams.

**Air handling unit (AHU)**

A central unit consisting of fan(s), heating and cooling elements, filter racks or chamber, dampers, humidifier, and other central equipment required to provide suitable ventilation and extract. Also see our [Air Handling Unit brochure](#).

**Ambient**

Normal atmospheric conditions of temperature & pressure.

**Application**

Location or site where an air conditioning/cooling system or unit is to be installed (applied).

**ASHRAE**

American Society of Heating, Refrigerating, and Air-Conditioning Engineers [www.ashrae.org](http://www.ashrae.org).

**Azeotrope/azeotropic mixture**

Product resulting from the combination of two or three compounds that have identical vapour and liquid compositions. An azeotrope cannot be separated into its parts by distillation. Azeotropes will fractionate slightly and experience temperature glide outside of the identified azeotropic points.

**Azeotropic point**

The temperature where a liquid mixture boils and produces a vapour with exactly the same composition as the liquid.

**B.****BEMS**

Building Energy Management System is a computer-based control system installed in buildings that controls and monitors the building's mechanical and electrical equipment such as ventilation, lighting, power systems, fire systems, and security systems. Designed to enhance system performance, drive down operational costs and aid decision making. Also see [ACIS™](#).

**Blend**

A refrigerant mixture of two or more refrigerants blended in a specific ratio which can be separated by distillation. Regular blends may have up to 10°C or more temperature glide.

**BREEAM**

(Building Research Establishment Environmental Assessment Methodology) is the world's longest established and most widely used method of assessing, rating, and certifying the sustainability of buildings [www.breeam.org](http://www.breeam.org)

**British Thermal Unit (BTU)**

The imperial measurement for the quantity of heat required to be given to or taken from 1lb. of water in raising or lowering its temperature by 1°F. This term is not commonly used other than on some equipment imported from the Far East or the USA.

**Bubble point**

The pressure at which a refrigerant liquid starts to vaporise.

## C.

### Capillary tube

A metering device consisting of a small diameter tube designed to restrict flow. This is best used in constant ambient conditions.

### Cascade system

A system with two or more refrigerant circuits working in series to provide the designated level of cooling.

### Cassette unit

**Cassette air conditioning units** are designed for **commercial** and residential applications. Ideal for large open plan areas or irregular shaped rooms they fit conveniently and discreetly into any area with a false or suspended ceiling.

### Centrifugal compressor

A compressor with a rotating wheel which pushes the refrigerant outwards towards the rim of the wheel and from there to the condenser. It compresses gas using centrifugal force.

### CFC

Chlorofluorocarbon (e.g. R12), high ozone depleting and global warming gases. Banned from 2000.

### CFCs

Chlorofluorocarbons (CFCs) have been widely used as refrigerants. The manufacture and use of such compounds has been phased out and has been replaced with zero Ozone depleting products such as hydrofluorocarbons (HFCs).

### CFM

The abbreviation for cubic feet per minute, the imperial measurement for the rate of air flow in an air conditioning system. This term is not commonly used.

### Change of state

A change from one phase to another – solid, liquid or gas.

### Chilled water system

A type of air conditioning system using water (or glycol solutions) as a secondary cooling medium. The primary cooling medium (refrigerant) is contained in a chiller, which is located remotely. The chiller cools the water, which is then piped to the air conditioner to cool the space.

### Chiller

A **chiller** is a machine that removes heat from a secondary cooling medium (water, glycol solution, etc.) via a vapour-compression or absorption refrigeration cycle. The secondary cooling medium can then be circulated through a heat exchanger to cool air or equipment as required.

### CIBSE

Chartered Institution of Building Services Engineers [www.cibse.org](http://www.cibse.org)

### CITB

Construction Industry Training Board [www.citb.co.uk](http://www.citb.co.uk)

### Clean room

A **clean room** is an environment, typically used in manufacturing or scientific research, with a low level of environmental pollutants such as dust, airborne microbes, aerosol particles, and chemical vapours.

## **Close control/Climate control**

See [Precision Air Conditioning](#).

## **Coil**

Component providing heat transfer to air when mounted inside an air handling unit or ductwork. The term is normally associated with a fin and tube heat exchanger using refrigerant or water as the heat transfer medium.

## **Cold aisle**

Cold aisle is a layout design for server racks and other computing equipment in a [data centre](#). Cold aisle data center design involves lining up server racks in alternating rows with cold air intakes facing one way and hot air exhausts facing the other. The rows composed of rack fronts are called cold aisles.

## **Comfort air conditioning**

Comfort air conditioning systems are designed for the comfort of people, livestock, etc. and not for the protection of computer-based electrical systems or other process operations requiring close control of the environment.

## **Commercial air conditioning**

Air conditioning for large buildings such as hotels, hospitals and other commercial buildings, providing suitable ventilation and space conditioning.

## **Commissioning**

A service required after installation that ensures equipment is set up to function correctly, as per the specification, and to maximise system efficiency in order to provide optimal performance. Also see [Commissioning](#).

## **Compressor**

A key component of the refrigeration system, raising the pressure (and hence temperature) of the refrigerant and circulating it through a closed loop system.

## **Condensate**

Moisture removed from the air when it is cooled below its dew point; normally associated with moisture removal during the dehumidification process in air conditioning.

## **Condenser**

A vessel or an air cooled coil that removes the superheat of compression, condensing the refrigerant gas into a high pressure liquid.

## **Condensing unit**

Part of a refrigeration/air conditioning system comprising a compressor, motor and condenser heat exchanger; supplied as a single unit to be matched with a suitable evaporator. Also see [Condensers & Condensing Units](#).

## **Conduction**

The transfer of heat by the movement of electrons or by the vibration of molecules through contact of two or more bodies of differing temperatures.

## **Constant air volume (CAV)**

Constant Air Volume (CAV) is a type of heating, ventilating, and air-conditioning (HVAC) system. In a simple CAV system, the supply air flow rate is constant, but the supply air temperature is varied to meet the thermal loads of a space.

**Controls**

A control system that applies regulation to a heating and/or air conditioning system. A sensing device is used to compare the actual state (e.g. temperature) with a target state. Also see [Controls](#).

**Convection**

The transfer of heat by changes of density in a fluid or gas as two fluid streams pass across each other.

**Cooling tower**

A water conservation device used to supply water for cooling condensers.

**COP**

Coefficient of performance (COP) is the ratio of the refrigerant effect (total capacity) versus the work by the compressor over a unit of time; the higher the number the more efficient the system.

**CRAC**

Computer Room Air Conditioning unit (see [Precision Air Conditioning \(PAC\)](#)).

**CRAH**

Computer Room Air Handling unit.

**CWR**

Chilled water return to a [chiller](#).

**CWS**

Chilled water supply to a cooling unit.

**D.****Damper**

A modulating device for controlling airflow rates through ductwork or air handling equipment.

**Data Centre**

A [data centre](#) is a facility used to house computer systems and associated components, such as telecommunications and storage systems.

**Decant/receiver**

Clean empty cylinders for temporary storage of refrigerant during maintenance.

**Dehumidification**

The process of removing moisture from the air within a conditioned space to maintain the required humidity level.

**Density**

The weight of a unit volume of a substance.

**Dew Point**

The pressure/temperature where refrigerant gas starts changing from vapour to liquid phase. Also use to define the point where the air is saturated.

## Direct Expansion Systems (DX)

This is a system using a refrigerant that passes through an expansion device prior to entering the evaporator. The system is used to extract heat in the evaporator and reject the waste heat through the condenser. This type of system is generally used in [chillers](#), refrigerant based air conditioning systems and refrigeration equipment.

## Downflow

Refers to a type of air conditioning system that discharges air downward, directly beneath a raised floor, commonly found in computer rooms and modern office spaces.

## Drop-in

A gas that can be retrofitted into a refrigeration system designed for another, without major system changes. For example, R422D is a drop-in replacement for R22 in many applications. However, hydrocarbon refrigerants are NOT drop-in alternatives for most fluorocarbon refrigerants due to substantial system changes needed to manage their differing characteristics (e.g. flammability).

## Duct

Ducts are used in heating, ventilation, and air conditioning (HVAC) to deliver and remove air including supply air, return air, and exhaust air.

# E.

## EC fan

[Electronically Commutated \(EC\) fans](#) use brushless DC motors which include in-built electronics to convert the AC supply to DC without the need for a separate DC supply. EC fans provide a more efficient (up to 30%) means of airflow through [Precision Air Conditioning \(PAC\)](#) units with the additional benefit of variable speed control via an output signal from the unit controller. Also see [EC Fan upgrades](#).

## Economiser

An economiser is a mechanical device used to reduce energy consumption. Economisers recycle energy produced within a system or optimise environmental temperature differences to achieve efficiency improvements.

## EER

Energy Efficiency Ratio (EER) is a measure of system efficiency at a given set of rating conditions. It is a ratio calculated by dividing the cooling capacity in kW by the power input in kW.

## Electronic Expansion Valve (EEV)

This performs the same function as the TEV but provides closer control as the DC stepper motor opens and closes the valve in response to an output from the controller; maintaining very close control of the evaporator superheat. Also see [Electronic Expansion Valves](#).

## Energy Technology List (ETL) / ECA Scheme

The Enhanced Capital Allowance (ECA) Scheme is a key part of the Government's programme to manage climate change. It provides businesses with enhanced tax relief for investments in equipment that meets published energy-saving criteria. See <https://etl.decc.gov.uk/etl/site.html>

## Enthalpy

The thermodynamic property of a substance defined as its total internal energy plus the total heat & heat content  $Pv/J$ . Sometimes called total heat and heat content.

## **Entropy**

The rate at which heat is absorbed into an object.

## **ESEER**

As with EER, the Seasonal Energy Efficiency Ratio is a measure of equipment energy efficiency, but defined to suit the Europe market. Rather than using a single condition (EER) the SEER assumes four seasonal conditions for variable load performance of [chillers](#), etc. and provides a suitable rating number for the equipment.

## **Evaporator coil**

An evaporator coil is usually located indoors as part of a split unit or within an air handler or duct system. Inside the coil, refrigerant evaporates as it absorbs heat from the air that passes over it.

## **Evaporating temperature**

The temperature at which a given refrigerant vaporises within an evaporator.

## **Expansion valve**

A device that regulates the amount of refrigerant flowing from the liquid line into the evaporator. Can be a thermostatically operated valve, a capillary tube or a fixed orifice device.

# **F.**

## **Fan coil unit**

A fan coil unit (FCU) is normally a chilled water device consisting of a heating and/or cooling coil, fan, valve/s and local controller. It forms part of a larger HVAC system found in residential, [commercial](#), and industrial buildings.

## **F-Gas**

Fluorinated gases ('F-gases') are a family of man-made gases used in a range of air conditioning and refrigeration applications. There are three types: hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF6). These were produced in response to the need to eliminate ozone depleting gases.

## **F-Gas regulation**

EU regulation introduced into European Law in 2007. Impacts the use of fluorine based refrigerants. Regulation leads to record keeping, leak detection and competence levels for engineers. See [F Gas Compliance](#).

## **Filter-Drier**

A device within a refrigeration system normally containing a desiccant designed to remove H2O.

## **Fluorocarbon**

A chemical containing fluorine and carbon. Most refrigerants are classified as fluorocarbons – CFCs, HCFCs, HFCs and HFOs are all identified as this.

## **Footprint**

The area or space that an air conditioning unit takes up when applied.

## **Free Cooling**

This may apply to a system using fresh air for cooling the space or a water cooled or glycol cooled system with an additional coil that provides chilled water cooling when the outdoor ambient is cold; thereby reducing or eliminating compressor operation. These systems may provide free cooling for up to 80% of their operating life, particularly when operating in Northerly climates.

## G.

### **Gauge pressure**

The reading taken from a gauge normally zeroed at atmospheric pressure (one bar absolute or 14.7 psi) so that pressures can be also be read as a negative when below atmospheric pressure. (Often referred to with “g” on end – e.g. Barg, Psig).

### **Glide**

The different boiling temperatures of the various components of a refrigerant blend, leading to a change in the relative components of the blend across a temperature range.

### **Glycol-Cooled System**

A type of air conditioning system using a water/glycol solution as a condensing medium. Typically, the glycol-cooled condenser is located inside the air conditioner with the rest of the refrigeration components. Water/glycol is piped to the unit from a [drycooler](#) or other suitable source. The glycol keeps the solution from freezing during winter operation.

### **GWP**

Global Warming Potential, measure of global warming relative to CO<sub>2</sub> = 1. CFCs often had GWP between 5,000 and 10,000. HCFCs and HFCs often have GWP between 1,000 and 4,000. Natural refrigerants and new HFO such as R1234yf normally have a GWP <20.

## H.

### **HCFC**

Hydrochlorofluorocarbon (e.g. R22), lower ozone depleting, global warming gases.

### **Heat capacity**

The amount of heat needed to raise the temperature of a given mass by 1 degree Kelvin.

### **Heat exchanger**

A heat exchanger is a piece of equipment built for efficient heat transfer between two physically separated fluids.

### **Heat pump**

A heat pump is a mechanical device that absorbs low grade heat from a lower temperature location and upgrades and transfers the resultant higher temperature medium, created by mechanical work, to heat a space to a sufficient comfort level. Heat pumps may be air to air, air to water, water to water or ground to water.

### **Heat transfer**

Heat transfer describes the exchange of thermal energy between two interacting media passing through a heat exchanger, such as refrigerants, air and water.

### **Hemi-anechoic chamber**

A room designed to completely absorb reflections of either sound or electromagnetic waves. Hemi-anechoic chambers have a solid floor that acts as a work surface for supporting heavy items such as large air conditioning units for testing sound levels. Also see [Test chamber 4 - Hemi-anechoic chamber](#).

### **HFC**

Hydrofluorocarbon (e.g. R134a), zero ODP, high global warming refrigerant gas.



## **HFO**

Hydrofluoroolefin (e.g. R1234ze), zero ODP, low global warming, 4th generation refrigerant gas.

## **High Performance Computing (HPC)**

High Performance Computing refers to the practice of aggregating computing power in a way that delivers much higher performance than one could get out of a typical desktop computer or workstation in order to solve large problems in science, engineering, or business.

## **Hot aisle**

A hot aisle is a layout design for server racks and other computing equipment in a [data centre](#). Hot aisle data centre design involves lining up server racks in alternating rows with cold air intakes facing one way and hot air exhausts facing the other. The rows the heated exhausts pour into are called hot aisles.

## **Humidification**

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

## **HVAC**

HVAC (heating, ventilation, and air conditioning) is the technology of indoor and vehicular environmental comfort. Its goal is to provide thermal comfort and acceptable indoor air quality.

## **Hydrocarbon refrigerant (HC)**

A family of chemicals containing only carbon & hydrogen that are suitable for use as a refrigerant. Common examples include propane (R290), isobutane (R600a), and the CARE range. Zero ODP, very low GWP.

## **I.**

### **Internet Service Provider (ISP)**

An Internet service provider (ISP) is an organisation that provides services for accessing, using, or participating in the Internet.

### **Inverter compressor**

This type of compressor uses an inverter drive to control the compressor motor speed to modulate capacity as demand varies.

## **K.**

### **Kilowatt (kW)**

Measure of energy flow used to express the cooling capacity, heating capacity and power consumption of an air conditioning system.

### **Kyoto Protocol**

International agreement to regulate global warming signed in Kyoto Japan. This sets out goals for reducing greenhouse gas emissions thought to be responsible for global warming. Likely to be the framework for further HFC usage restrictions.

## **L.**

### **Latent Cooling Capacity**

The amount of energy added or removed from the air in order to increase or reduce the moisture content of the air during the air conditioning process. It is measured in kg/kg of dry air.

## **Low pressure stage**

The part of a single stage refrigerant system from the outlet of the expansion device to the compressor suction inlet. On a multi-stage system it is the part where the lowest temperature is achieved.

## **M.**

### **Microchannel coil**

The Microchannel coil design is based on technology from the automotive industry. It is constructed of parallel flow aluminium tubes that are mechanically brazed to enhanced aluminium fins, resulting in better heat transfer and a smaller, lighter, corrosion resistant coil.

### **Mineral oil**

A lubricant commonly used with HCFC and HFC refrigerants, with a low affinity for moisture.

## **N.**

### **N+1**

N+1 redundancy is a form of resilience that ensures system availability in the event of component failure. Components (N) have at least one independent backup component (+1).

### **Natural refrigerant**

Non fluorochemical refrigerants, such as ammonia (R717), carbon dioxide (R744) and hydrocarbons such as propane (R290) or isobutene (R600a). These products exist naturally in the environment. Alternative to fluorochemical refrigerants, often used due to their low direct GWP and ODP potential. (However it should be noted that commercial production of natural refrigerants is normally via man-made synthesis).

### **Near azeotrope**

This chemical product is formed by combining two or more compounds. Its vapour and liquid compositions are nearly identical. Near azeotropes have a temperature glide of less than 2°C (ASHRAE 34 definitions).

### **Non-condensable gas**

A gas in a refrigeration system that does not condense at the temperature and partial pressure that exists in the condenser, therefore leading to a higher head pressure. This is often the case if air has leaked into a system, and lowers system efficiency and leads to longer term reliability issues.

## **O.**

### **ODP**

Ozone Depletion Potential, measure of damage to the ozone layer relative to R11=1. CFCs tend to have ODP between 0.1 and 1. HCFCs between 0.01 and 0.1. HFCs, HFOs and Natural Refrigerants = 0.

### **Oil separator**

A device designed to separate oil from the refrigerant.

## **P.**

### **Packaged unit**

A self-contained air handling unit made specifically for outdoor installation; it includes all heating and cooling devices pre-assembled prior to installation.

## **Precision Air Conditioning (PAC)**

[Precision Air Conditioning](#) systems are primarily designed for process cooling such as [data centre](#) equipment or [manufacturing](#) rather than for the comfort of people. These systems offer excellent reliability and typically have a high ratio of sensible-to-total cooling capacity (COP).

## **Pressure and strength tests**

Tests designed to prove the integrity of a system prior to evacuation and the addition of refrigerant.

## **Psychrometric Chart**

The psychrometric chart represents factors relating to the condition of air and its change of state, based on 1kg of air.

## **PUE**

Power usage effectiveness (PUE) is a measure of how efficiently a computer [data centre](#) uses energy; specifically, how much energy is used by the computing equipment (in contrast to cooling and other overheads).

# **R.**

## **R1234ze (HFO Refrigerant)**

One of the 'fourth generation' refrigerants, R1234ze is a hydrofluoroolefin (HFO) based refrigerant rated by the International Panel for Climate Change (IPCC) with a GWP lower than one, better than CO<sub>2</sub>. It is seen as a replacement for R134a. Also see [Low GWP refrigerant TurboChill™ R1234ze cools John Lewis](#).

## **R134a (HFC Refrigerant)**

R134a (Tetrafluoroethane) is a haloalkane refrigerant with zero ozone depletion potential designed to replace R12. Its major usage is automotive air conditioning, refrigerators and chillers.

## **R22 (HCFC Refrigerant)**

R22 is a refrigerant gas found in the majority of air conditioning equipment over 10 years old. R22 is a hydrochlorofluorocarbon which have ozone depleting potential (ODP) if leaked into the atmosphere. The use of R22 for maintenance or repair will be banned from 1st January 2015.

## **R407C (HFC Refrigerant)**

R407C is a zeotropic hydro-fluoro-carbon refrigerant and is a blend of difluoromethane (R32) providing the heat capacity, pentafluoroethane (R125) decreasing flammability and tetrafluoroethane (R134a) to reduce pressure. Difluoromethane serves to, pentafluoroethane and tetrafluoroethane. R407C was developed as a replacement for the ozone depleting R22.

## **R410A (HFC Refrigerant)**

R410A is one of the third generation hydro-fluoro-carbon refrigerants designed to replace earlier ozone depleting substances. It is a zeotropic, but near-azeotropic mixture of difluoromethane (CH<sub>2</sub>F<sub>2</sub>, called R32) and pentafluoroethane (CHF<sub>2</sub>CF<sub>3</sub>, called R125), which is used as a refrigerant in air conditioning applications.

## **Rack**

A computer rack (commonly called a rack) is a metal frame used to hold various hardware devices such as servers, hard disk drives, modems and other electronic equipment.

## **Reclaim**

The re-processing and upgrading of refrigerant by filtering, drying, distillation and sometimes chemical treatment of the recovered refrigerant. The re-processed substance will require laboratory analysis to verify that it meets a specific quality standard, normally that of new refrigerant. This normally involves processing "off-site" at a re-processing or a refrigerant manufacturing facility.

## **Recovery**

Taking used gas out of a fridge system and filling it into packages. Avoids release into the environment – an action that is environmentally irresponsible and illegal in many countries. This process is usually performed by a refrigeration contractor. This occurs during maintenance or when removing a refrigerant permanently due to equipment decommissioning or retrofitting to a new gas.

## **Recycle**

To improve the quality of recovered refrigerant before re-use. This is to clean refrigerant by oil separation, distillation and single or multiple passes through filter-driers to remove moisture, acidity and particulate matter. Recycling may be done on or off site.

## **Refrigerant**

The fluid used for the heat transfer within a refrigeration system. The refrigerant absorbs heat at low temperature and pressure and transfers heat at high temperature and pressure. The refrigerant can be many materials, commonly fluorocarbon compounds, but also natural refrigerants such as ammonia, CO<sub>2</sub>, hydrocarbons as well as other compounds such as water and air.

## **Refrigerant charge**

The amount of refrigerant in kg in a closed system.

## **Refrigeration Cycle (Vapour compression cycle)**

The vapour compression refrigeration cycle is accomplished by continuously circulating a constant volume of refrigerant gas in a closed system. By varying pressure and temperature within different parts of the system the refrigerant absorbs waste heat from the conditioned space in the evaporator and rejects it through the condenser.

## **Relative Humidity (%rh)**

Relative humidity is the ratio of the partial pressure of water vapour in an air-water mixture to the saturated vapour pressure of water at a prescribed temperature. In prevailing Northern European conditions relative humidity and percentage saturation (ratio of moisture content) can be considered the same as the divergence is <1%. In high temperature areas they should be treated differently as the divergence may be as high as 10%.

## **Remote Electronic Expansion Valve (REEV)**

An EEV that can be installed with a remote control panel in purpose designed evaporators. Also see [Electronic Expansion Valves](#).

## **Retrofit**

To remodel the refrigerant system to improve the performance, i.e. fit new refrigerant gas, add energy saving components, etc.

## **R-number**

Official number assigned to a refrigerant upon accreditation by ASHRAE.

## **S.**

## **Screw compressor**

A Compressor utilising the action of two synchronised screws to pressurise the refrigerant vapour. Typical capacities are 50 – 1000kW and they have a modulating performance band of between 10 and 100% making them particularly suitable for use in [chillers](#).

**Scroll compressor**

A type of compressor fitted with two compliant scrolls, one fixed and one oscillating to compress refrigerant as it passes between them. Used extensively in air conditioning systems the scroll compressor may be fixed or variable capacity using digital unloading or inverter control.

**Sensible Cooling Capacity**

The amount of heat energy removed from the air without changing the actual moisture content of the air.

**Sensible Heat Ratio (SHR)**

The ratio of sensible heat to total heat.

**Server**

A server is a system that responds to requests across a computer network to provide, or help to provide, a network service.

**Split System**

A split air conditioning system consists of two main parts: the outdoor (condensing) unit and the indoor unit. Although any size of unit could be defined as a split system it normally refers to smaller equipment, specifically air to air heat pumps.

**Sub cooling**

The removal of heat from a liquid to a point lower than the saturation temperature at that pressure. This normally occurs in the condenser heat exchanger.

**Super heating**

Heating a vapour so that its temperature is higher than the saturation temperature at that pressure, e.g. steam at >100°C is superheated. This normally occurs in the evaporator.

**T.****Thermostatic expansion valve (TEV)**

A precision control device, designed to control the evaporator superheat by regulating the rate at which liquid refrigerant flows into the evaporator.

**Thyristor**

A thyristor is a semiconductor device which can be used to switch electric currents and is often used to control the output of electric heaters.

**Turning Vane**

Turning vanes are devices inside mechanical ductwork used to smoothly direct air inside the duct where there is a change in direction, thus reducing resistance and turbulence.

**U.****Upflow unit**

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.

**UPS**

An uninterruptible power supply (UPS) is an electrical apparatus that provides emergency power to a load when the input power source, typically mains power, fails.

## V.

### **Vacuum test**

A test to check the gas tightness of a refrigeration system before charging it with refrigerant, by drawing a vacuum upon it.

### **Vapour**

The gaseous form. In refrigeration terminology, often referred to gases at near equilibrium with liquid phase that does not follow gas laws – in gaseous state below the critical temperature.

### **Vapour barrier/seal**

A vapour seal is an essential part of preventing moisture infiltration into or migration out of a critical space, such as a data processing centre or other room that contains sensitive electronic instrumentation. Essentially, a vapour seal is a barrier that prevents air, moisture, and contaminants from migrating through tiny cracks or pores in the walls, floor, and ceiling into the critical space. It is also used extensively on pipe insulation to prevent moisture ingress that may cause deterioration of the insulation or freezing in cold conditions.

## W.

### **Water-Cooled System**

A type of refrigerant based air conditioning system that uses water as a condensing medium. Typically, the water-cooled condenser is located inside the air conditioner with the rest of the refrigeration components. Water is piped to the unit from a cooling tower or other suitable source.

### **Watt**

The watt is a derived unit of power in the International System of Units (SI), named after the Scottish engineer James Watt (1736–1819). The unit is defined as joule per second and can be used to express the rate of energy conversion or transfer with respect to time.

### **Wet Bulb Temperature**

The wet-bulb temperature is the temperature a parcel of air would have if it were cooled to saturation (100% relative humidity) by the evaporation of water into it, with the latent heat being supplied by the parcel.

## Z.

### **Zeotrope**

Refrigerant blends consisting of a combination of two or more different chemical compounds, often used individually as refrigerant for other applications. Unlike azeotropes, zeotropic blends separate more easily into their original parts via distillation.