

REHVA



Federation of
European Heating,
Ventilation and
Air-conditioning
Associations

Contact information
REHVA Office
Washington Street 40,
1050 Brussels – Belgium
Tel: +32-2-5141171 | Fax: +32-2-5129062
www.rehva.eu | info@rehva.eu

**Definitions of
terms and abbreviations
commonly used in
REHVA publications and
in HVAC practice**

- 4th draft from 02/05/2012 -

The definitions formulated below are those of terms and abbreviations commonly used in REHVA publications and in HVAC practice.

Still, important terms are missing and some of the definitions can be improved.

We invite you to submit your suggestions for missing terms and improved definitions to al@rehva.eu .

Thank you in advance!

For higher productivity please use the alphabetical bookmarks (activate bookmarks panel) and use the “Find” tool of your pdf viewer software.

- this file has been downloaded from -

<http://www.rehva.eu/publications-and-resources/hvac-terminology/>

A

Absorbent

Usually solid substance with the ability to take up or absorb another substance (usually in gas).

Absorptance

The ratio of absorbed to incident radiation on a surface. Usually denoted with a symbol α .

Absorption

The process in which a substance in one state is incorporated into another substance of a different state (e.g. liquids being absorbed by a solid or gases being absorbed by a liquid).

Absorption chiller

Absorption chillers differ from mechanical vapour compression chillers in the fact that they utilize a thermal or/and chemical process to produce the refrigeration effect necessary to provide chilled water. There is no mechanical compression of the refrigerant taking place within the machine as it occurs within more traditional vapour compression type chillers.

Active tracer gas release

Controlled release of a tracer gas by a pressurized system or pump. (Term is used in ventilation rates measurement).

Actuator

Device, electrically, pneumatically or hydraulically operated, which acts as a motor to change the position of movable devices such as valves or dampers. (EN 12792)

Adsorbent

Substance with the property to hold molecules of gas or fluid without causing a chemical reaction.

Adsorption

The capability of all solid substances to attract to their surfaces molecules of gases or solutions with which they are in contact. Solids that are used to adsorb gases or dissolved substances are called adsorbents; the adsorbed molecules are usually referred to collectively as the adsorbate. An example of an excellent adsorbent is the charcoal used in gas masks to remove poisons or impurities from a stream of air.

Adsorption, chemical

The binding of gases to the adsorbent surface through chemical reaction after the physical adsorption.

Adsorption, physical

Physical adsorption resembles the condensation of gases to liquids and depends on the physical, or van der Waals, force of attraction between the solid adsorbent and the adsorbate molecules.

Aerosol

A suspension of liquid or solid particles in air.

Age of air, local mean

The mean time it takes for supply air to reach a certain indoor point.

Age of air, room mean

Mean of all the local mean ages of air.

Air change rate

Ventilation air flow rate divided by room volume. It indicates how many times, during a time interval, the air volume from a space is replaced with outdoor air.

Air change rate, nominal

The nominal air change rate is equal to the ventilation flow rate divided by the room volume.

Air changes per hour (ACH)

Ventilation air flow divided by room volume. It indicates how many times, during one hour, the air volume from a space is replaced with outdoor air.

Air cleaner

Device used for removal of airborne particulates and/or gases from the air. Air cleaners may be added to HVAC systems or stand-alone room units.

Air cleaner, electrostatic

A device that uses an electrical charge to trap particles traveling in the air stream.

Air cleaning

An IAQ controls strategy to remove various airborne particulates and/or gases from the air. The three types of air cleaning most commonly used are particulate filtration, electrostatic precipitation, and gas sorption.

Air cleaning system

A device or combination of devices applied to reduce the concentration of airborne contaminants, such as microorganisms, dusts, fumes, respirable particles, other particulate matter, gases, and/or vapours in air.

Air conditioning

A form of air treatment in which temperature is controlled, possibly in combination with the control of ventilation, humidity and air cleanliness.

Air conditioning (alternate definition)

Form of air treatment in which temperature, humidity, ventilation and air cleanliness are all controlled, if any of these features (excluding ventilation) is not controlled the system is termed as partial air conditioning. (EN 12792)

Air conditioning installation

Combination of all components required to provide air conditioning. (EN 12792)

Air conditioning system

A combination of all components required to provide a form of air treatment in which temperature is controlled or can be lowered, possibly in combination with the control of ventilation, humidity and air cleanliness. (EPBD, 2002/91/EC)

Air contaminant

Any material in the atmosphere that affects persons and their environment (pollutant includes materials such as liquids, solids, aerosols, gases and odours). Term is used interchangeably with air pollutant.

Air curtain

A planar jet that provides a climate separation between zones with different conditions of indoor air quality and climate

Air diffusion

Distribution of the air in a space by means of air terminal devices, in a manner so as to meet certain specified conditions, such as air change rate, pressure, cleanliness, temperature, humidity, air velocity and noise level.

Air diffusion (alternate definition)

Distribution of the air in a space, called the treated space, in a manner to satisfy certain specified conditions such as air change rate, pressure, cleanliness, temperature, humidity, air velocity and noise level, in a specified zone within this treated space which is called the occupied zone. It is usually achieved by means of air terminal devices, which form the common boundaries between the treated space and the air distribution system. (EN 12792)

Air diffusion, displacement

Air diffusion where the mixing of supply air and indoor air is very low. Usually supply air is a few degrees cooler than room air and supply velocity low.

Air diffusion, displacement (alternate definition)

Air diffusion where the mixing of supply air and room air external to the air terminal device is intended to be at a minimum. (EN 12792) see also Air diffusion and Terminal device, air

Air diffusion, mixing

Air diffusion where the mixing of supply air and room air is intended. (EN 12792)

Air distribution

Transportation of a specified air flow to or from the treated space generally by means of ducts. Along the ducts devices for the purpose of treating the air (e.g. cleaning, heating, cooling, humidifying or dehumidifying, etc.) and known as air treatment devices may be inserted. (EN 12792)

Air douches

A jet of air at specific conditions discharged at low velocity in a space in order to provide locally needed conditions.

Air extract, mechanical

The process of extracting air with the aid of powered air movement components, usually fans.

Air extract, natural

The process of extracting air by means of wind forces or density differences or a combination of the two.

Air flow

Movement of air usually within boundaries. (such as ducts) (EN 12792)

Air flow rate

Mass or volume flow of air passing a given plane divided by time. (EN 13053, EN 12792)

Air flow rate, mass

Mass flow of air over specified time, usually expressed in kg/s or kg/h.

Air flow rate, primary

Mass or volume of air entering a supply air terminal device in unit time from an upstream duct or a plenum box. It can also be the air leaving through an opening and entering a space. (EN 12792)

Air flow rate, supply

Air quantity entering a supply air terminal device from an upstream duct. (EN 12792)

Air flow rate, total

Mass or volume of air entering a space and being the total of the primary and secondary flow rate. (EN 12792)

Air flow rate, volumetric

Volumetric flow of air over specified time, usually expressed in l/s or m³/h.

Air handling unit (AHU)

Assembly consisting of sections containing a fan or fans and other necessary equipment to perform one or more of the following functions: air circulation, filtration, heating, cooling, heat recovery, humidifying, dehumidifying and mixing of air, and necessary controls functions.

Air handling unit (AHU) (alternate definition)

Factory made encased assembly consisting of sections containing a fan or fans and other necessary equipment to perform one or more of the following functions: circulation, filtration, heating, cooling, heat recovery, humidifying, dehumidifying and mixing of air. (EN 12792, EN 13053)

Air handling unit, blow-through

Air handling unit with a section or sections downstream of the supply air fan. (EN 12792, EN 13053)

Air handling unit, casing of an

Enclosure of the unit, within which the components are mounted. (EN 12792, EN 13053)

Air handling unit, component of an

Smallest functional element of an air handling unit. (EN 12792, EN 13053)

Air handling unit, recirculation

Air handling unit where only recirculated air is treated. (EN 12792)

Air handling unit, section of an

Functional element of an air handling unit, consisting of one or more components contained in a single casing. (EN 12792, EN 13053)

Air handling units, decentralised

In contrast to the central air-handling units, these units are allocated to a single room or group of rooms, supplying secondary air or outdoor air to that room.

Air leakage

If the duct and air handling system is not airtight, air will leak from, or into, the system depending on the pressure in the system, and reduce the air delivery efficiency of the system.

Air leakage (alternate definition)

Unwanted air flow paths in the installation. (EN 12792)

Air leakage factor

The air leakage per unit envelope area.

Air leakage factor (alternate definition)

Air tightness expressed as the air leakage rate per unit envelope area. (EN 12792)

Air leakage factor (f) (alternate definition)

Air tightness expressed as the air leakage per unit envelope and pressure difference (external air leakage). (Term refers to AHUs) (EN 13053)

Air leakage of an installation

In-flow or out-flow through cracks in a specific part of a ventilation or air conditioning installation, due to pressure differences. (EN 12792)

Air leakage rate

Air leakage of a component or components subjected to air pressure. (EN 12792)

Air leakage rate (q_{v1}) (alternate definition)

Air leakage of the air handling unit, subjected to air pressure (external air leakage). (Term refers to AHUs) (EN 13053)

Air leakage, internal

Air leakage between two air streams in an air handling component like heat recovery unit.

Air leakage rate, internal (alternate definition)

Air leakage between the two air streams within a section. (Term refers to AHUs) (EN 13053)

Air pollutant

see Air contaminant

Air pollutant (alternate definition)

Any material in the atmosphere that affects persons and their environment (pollutant includes materials such as liquids, solids, aerosols, gases and odours). (EN 12792)

Air pollution

Result of the presence of air pollutants in the atmosphere. (EN 12792)

Air quality, indoor (IAQ)

IAQ deals with the health and comfort of the air inside buildings and characterize the indoor climate of a building, including the gaseous composition, temperature, relative humidity, and airborne contaminant levels. IAQ is the expression for both the concentration of impurities in the air and an expression of how people signify their perception of the air (perceived air quality) in the form of e.g. smell and irritation (sensory measurements).

Air quality, indoor (IAQ) (alternate definition)

Attributes of the respirable atmosphere (climate) inside a building including gaseous composition, humidity, temperature and contaminants. (EN 12792)

Air quality, perceived (PAQ)

Perceived air quality is an indoor air quality as it is perceived by humans.

Air stratification

The layering of air within a space, due to density differences caused by temperature distribution of the air

Air supply, displacement

Air supply where the mixing of supply air and indoor air is at a minimum.

Air supply, mechanical

The process of supplying air with the aid of powered air movement components, usually fans

Air supply, mixed

The supply of mixed air.- see also mixed air

Air supply, natural

The process of supplying air by means of wind forces or density differences or a combination of the two.

Air throw

The distance an air jet travels upon leaving a diffuser before its velocity is reduced to a specific value, usually to the velocity which does not cause draft, 0,15-0,25 m/s depending on the temperature.

Air tightness class A, B, C and D (of a duct)

Measure of the tightness of a ductwork system, defined at the upper limit of the air leakage factor f . (EN 12792) see also Air leakage of an installation

Air treatment

Process by which the state of the air is modified with respect to various properties such as temperature, moisture content, dust content, bacterial count, gas and vapour contents. (EN 12792, EN 13053)

Air type

Designation of the air moving through a ventilation, air conditioning or air treatment installation as a function of its location relative to the installation, e.g. outdoor air, exhaust air, extract air, etc. (EN 12792, EN 13053)

Air vent

A valve, either manual or automatic, that is used to remove unwanted air from the highest point of a piping system.

Air, conditioned

Air that has been heated, cooled, humidified or dehumidified to maintain an interior space within the "comfort zone". (Sometimes referred to as "tempered" air)

Air, exhaust

Air removed from a space and discharged to outside the building by means of mechanical or natural ventilation systems.

Air, exhaust (alternate definition)

Air flow discharged to the atmosphere. (EN 12792)

Air, extract

Air flow leaving a treated space. (EN 12792)

Air, indoor

The air in an enclosed occupiable space.

Air, indoor (alternate definition)

Air in the treated room or zone. (EN 12792)

Air, induced

Air volume or flow that is set into motion by the primary air supplied to a space

Air, mixed

The mixture of outdoor air and recirculated return air.

Air, mixed (alternate definition)

Air which contains two or more streams of air. (EN 12792)

Air, outdoor

Air taken from outside the building which therefore has not previously circulated through the ventilation system.

Air, outdoor (alternate definition)

Controlled air entering the system or opening from outdoors before any air treatment. (EN 12792)

Air, primary

Conditioned and dehumidified outdoor air supplied to the terminal unit such as chilled beam, induction unit etc. through a duct from the air handling unit.

Air, primary (alternate definition)

Air entering a treated space. (EN 12792)

Air, recirculation

A part of extract air which is not exhausted from the building, but it is recirculated back to spaces.

Air, recirculation (alternate definition)

Extract air which is returned to an air handling unit. (EN 12792)

Air, secondary

Air volume flow rate extracted from a room and being supplied again to the same room after having been conditioned. (EN 13779) - also referred to as transfer air.

Air, secondary (alternate definition)

Air prevailing in a treated space. (EN 12792)

Air, standard

Atmospheric air having a density of $1,2 \text{ kg/m}^3$ at $20 \text{ }^\circ\text{C}$, $101\,325 \text{ Pa}$ ($1013,25 \text{ mbar}$) and 65% relative humidity. (EN 12792)

Air, supply

Air delivered by mechanical or natural ventilation to a space, composed of any combination of outdoor air, recirculated air or transfer air.

Air, supply (alternate definition)

Air flow entering the treated space, or air entering the system after any treatment. (EN 12792)

Air, transfer

Air moved from one indoor space to another.

Air, transferred

Indoor air which passes from the treated room to another treated room. (EN 12792)

Air, ventilation

Outdoor air which is supplied to a room for ventilation purposes.

Airflow, induced

The secondary airflow from the room induced into a terminal unit such as chilled beam, induction unit etc. by the primary air.

Airing

Natural ventilation by window opening. (EN 12792)

Allergen

A substance capable of causing an allergic reaction because of an individual's sensitivity to that substance.

Anemometer

Device used for measuring air velocities. (EN 12792)

Area, gross floor

The total area of all the floors of a building, including intermediately floored tiers, mezzanine, basements, etc., as measured from the exterior surfaces of the outside walls of the building.

Area, internal gross

A term used in the United Kingdom, defined in the RICS Standard, for the area of a building measured to the internal face of perimeter walls at each floor level.

Area, net floor

A term used in the ISO standard to express the Interior Gross Area less the areas of all interior walls.

Area, occupied

Area within the heated or cooled surface occupied for long periods. Normally the floor area within 1,0 m from external walls-windows and HVAC equipment and 0.5 m from internal walls.

Area, peripheral

Area of a building, next to the exterior walls, which has a different heating or cooling load than the rest of the building.

Area/space, living floor

Total area of rooms falling under the concept of rooms. (OECD Glossary of statistical terms)

Area/space, useful floor

Floor space of dwellings measured inside the outer walls, excluding cellars, nonhabitable attics and, in multi-dwelling houses, common areas. (OECD Glossary of statistical terms)

Arrestance, ASHRAE

A measure of the ability of a device to remove ASHRAE standard test dust from test air. Also see ASHRAE dust.

Arrestance, filter

The amount of particles of non-specific size captured by the filter. The arrestance describes how well an air filter removes larger particles (total mass) such as dirt, lint, hair and dust.

B

Background concentration

The level of a contaminant present in the ambient air

Balance point

An outdoor temperature, usually between 0° C and 7° C, at which a heat pump's output exactly equals the heating needs of the heated building. Below the balance point, supplementary heat, or from other sources, is needed to maintain indoor comfort.

Balancing

Process of adjusting the flow rates in each circuit of an installation to comply with the design values. (EN 12792)

Barrier, radiant

A thin, reflective foil sheet that exhibits low radiant energy transmission and under certain conditions can block radiant heat transfer; installed in attics to reduce heat flow through a roof assembly into the living space.

Barrier, vapour

A moisture-impervious layer applied to the surfaces enclosing a humid space to prevent moisture travel to a point where it may condense due to lower temperature.

Bimetal

Two metals with different rates of expansion fastened together. When heated or cooled they will warp and can be made to open or close a switch or valve.

Boiler

The combined boiler body and burner-unit designed to transmit to water the heat released from combustion. (EPBD, 2002/91/EC)

Bouncing

Particles hitting the fibres of the filtering media for air cleaning and bounce back into the air stream.

Boundary conditions

Values of physical parameters (e.g. temperature, heat flux, mass flux, velocity, etc.) that are specified at the boundaries of a solution domain and are required for solving the discretised equations in a CFD (computational fluid dynamics) solution or any other physical problem.

Breakthrough curve

Curve of penetration vs. time for an adsorbent under specified condition and for specific pollutant.

British thermal unit (BTU)

The amount of heat that must be added to one pound of water to raise its temperature one degree Fahrenheit. 1 BTU = 1055.06 J = 2.931 10⁻⁴ kWh.

Building automation and control (BAC)

Products, software, and engineering services for automatic controls, monitoring and optimisation, human intervention, and management to achieve energy-efficient, economical, and safe operation of building services equipment.

Building management system (BMS)

A Building Management System is a computer-based system that controls and monitors a building's mechanical and electrical installations, fire alarms and security systems.

Building services

Services provided by technical building systems and by appliances to provide indoor climate conditions, domestic hot water, illumination levels and other services related to the use of the building.

Building, commercial

A commercial building is a building that is used for commercial use. Types can include office buildings, warehouse, or retail (i.e. convenience stores, 'big box' stores, shopping malls, etc.).

Building, nearly net zero energy (nZEB)

Technically reasonable achievable national energy use of > 0 kWh/(m² a) primary energy achieved with best practice energy efficiency measures and renewable energy technologies which may or may not be cost optimal.

Building, nearly zero energy

A building that has very high energy performance, as determined in accordance with Annex I of the EPBD recast. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby. (EPBD recast, 2010/31/EC)

Building, net zero energy (ZEB)

Energy use of 0 kWh/(m²a) primary energy. NOTE 1_ A net ZEB is typically a grid connected building with very high energy performance. A net ZEB balances its primary energy use so that the primary energy feed-in to the grid or other energy network equals to the primary energy delivered to ZEB from energy networks. Annual balance of 0 kWh/(m² a) primary energy use typically leads to the situation where significant amount of the on-site energy generation will be exchanged with the grid. Therefore a net ZEB produces energy when conditions are suitable and uses delivered energy during rest of the time.

Building, public

Building owned or occupied by any public body.

Building, residential

A structure used primarily as a dwelling for one or more households. Residential buildings include single-family houses (detached houses, semi-detached houses, terraced houses (or alternatively row houses) and multi-family houses (or apartment blocks) which includes apartments/flats.

Buoyancy

The vertical force exerted on a volume of air that has a density different from the ambient air caused by temperature differences.

Bypass factor

Ratio of the diverted air flow to the sum of the main air flow and the diverted air flow. (Term refers to AHUs) (EN 12792, C157EN 13053)

Bypass leakage

Unwanted and uncontrolled passing of untreated air into the treated air between the components within a casing, such as filters and coils. (Term refers to AHUs) (EN 13053)

C

Capacity, thermal

The output or producing ability of a piece of cooling or heating equipment. Property of a material to hold heat. Measured usually in J/kgK.

Certificate, energy performance

A certificate recognised by the Member State or a legal person designated by it, which includes the energy performance of a building calculated according to a methodology based on the general framework set out in the Annex of Directive 2002/91/EC. (EPBD, 2002/91/EC)

Certificate, white

Certificate issued by independent certifying bodies confirming the energy savings of market actors as a consequence of energy efficiency improvement measures. (ESD, 2006/32/EC)

Chilled beam

A cooled element or cooling coil situated in, above or under a ceiling which cools convectively using natural or induced air flows. The cooling medium is usually water.

Chilled beam, active (ventilated)

The cooled element or cooling coil with integrated air supply where primary air, induced air or both pass on their exterior surface. The cooling medium in the coil is usually water.

Chilled beam, closed

An active chilled beam where there is an integrated secondary air path directly from the room space. Closed chilled beams are usually installed within a suspended ceiling. The cooling medium is usually water.

Chilled beam, open

An active chilled beam where secondary air is taken in into the top of the beam. Open chilled beams are mainly used without a suspended ceiling. The cooling medium is usually water.

Chilled beam, passive (static beam)

The cooled element or cooling coil fixed in, above or under a ceiling that cools mainly convectively using natural airflow.

Chilled ceiling (radiant ceiling)

Ceiling panels that are made up of elements that connect together and cool primarily through radiation. The cooling medium is usually water.

Chimney effect

The tendency of heated air or gas to rise in a duct or other vertical passage, such as in a chimney, small enclosure, or building staircase, due to its lower density compared to the surrounding air or gas.

Clean room

Specially constructed, enclosed area environmentally controlled with respect to airborne particulates, temperature, humidity, air pressure, air pressure flow patterns, air motion, vibration, viable organisms and lighting. (EN 12792)

Cleanliness

Cleanliness of the ventilation system and/or its components: the condition of the ventilation system and/or the components, in which the amount or concentration of contaminants is below a specified level.

CO₂ emission coefficient

For a given energy carrier, quantity of CO₂ emitted to the atmosphere per unit of delivered energy. (EN 15603:2008)

Coefficient of performance (COP)

The ration between the output energy and the energy required to produce it. It is used for heat pumps in heating mode.

Cogeneration

Simultaneous production of two or more forms of useable energy from a single fuel source, e.g., heat energy and electrical or mechanical power, in the same facility. Because a typical cogeneration facility uses thermal energy which is generally wasted in a traditional power plant, the process can be 50 to 70 percent more efficient. Fuels used in cogeneration facilities may take the form of natural gas, biomass, oil or coal. Cogeneration systems are designed to simultaneously produce electric power and thermal heat for industrial processes or the heating and cooling of buildings. Cogeneration plants can be any size, from 10 kilowatts to 1,000 megawatts or more. see also Combined heat and power (CHP)

Coil

A cooling or heating element (heat exchanger) made of pipe or tubing, often including fins or plates, through which a fluid is passed, exchanging thermal energy with another fluid surrounding it for heating or cooling.

Coil, cooling

Heat exchanger that extracts heat from the air stream by means of a heat transfer medium. see also Coil

Coil, cooling (alternate definition)

Heat exchanger that extracts heat from the air stream by means of a heat transfer medium. (EN 12792)

Coil, heating

Heat exchanger which adds heat to the air stream by means of a heat transfer medium. see also Coil

Coil, heating (alternate definition)

Heat exchanger which adds heat to the air stream by means of a heat transfer medium. (EN 12792)

Collection efficiency

The ratio of the mass of the particles collected in an ESP (electrostatic precipitator) to the mass of particles entering the ESP. It is often expressed as a percentage.

Colony forming unit (CFU)

A laboratory measure of fungal concentration, indicating the quantity of viable organisms collected for a given unit sample.

Combined heat and power (CHP)

The simultaneous conversion of primary fuels into mechanical or electrical and thermal energy, meeting certain quality criteria of energy efficiency. (EPBD, 2002/91/CE) see also Cogeneration

Comfort condition

Environmental condition in a space such that the majority of the occupants should, on a statistical basis, be comfortable. (EN 12792)

Comfort zone

The range of temperatures, humidities and air velocities at which the greatest percentage of people feel comfortable.

Comfort, acoustical

Sound pressure levels and frequency distribution of ambient noise and other acoustic conditions that do not cause unpleasantness.

Comfort, thermal

The totality of conditions (air temperature, relative humidity, air velocity, pressure, clothing, activity) for which a person would not prefer a different thermal environment.

Comfort, thermal (alternate definition)

Condition of mind, which expresses satisfaction with the thermal environment. (EN 12792)

Commissioning

The testing of HVAC systems prior to building occupancy to check whether the systems meets the operational needs of the building within the capabilities of the system design. Start-up of a building that includes testing and adjusting HVAC, electrical, plumbing, and other systems to assure proper functioning and adherence to design criteria. Commissioning also includes the instruction of building representatives in the use of the building systems.

Component of a ventilation or an air conditioning installation

Single functional element forming a part of a ventilation or an air conditioning installation. (EN 12792)

Compressor

A reciprocating or rotary pump for raising the pressure of a fluid; this may be a single-stage or multistage unit. Reciprocating Compressor: a machine that compresses gases, composed of one or several cylinders; each cylinder contains a piston that is moved by a crankshaft through a connecting rod. Rotary Compressor: a machine having a rotating member that directly compresses fluid in an enclosed housing; the fluid pressure rises as the volume of the closed space decreases.

Concentration

The quantity of one substance (gas or particles) dispersed in a defined amount of another substance (usually air or water).

Condenser

A device that transfers unwanted heat out of a refrigeration system or a heat pump to a medium (either air, water, or a combination of air and water) that absorbs the heat and transfers it to a disposal point. There are three types of condensers: air-cooled condensers, water-cooled condensers, and evaporative condensers. The evaporative condenser uses a combination of air and water as its condensing medium. Most residential systems have an air-cooled condenser.

Confidence interval

The range of values around an estimate where the exact value of the estimate can be expected to be located with a given level of certainty, usually 95%.

Contaminant

An unwanted airborne constituent that may increase the health risks and reduce acceptability of the air.

Contaminant removal effectiveness (CRE)

A measure of how effectively an airborne contaminant is removed from the room.

Control device

Device which can be used to control other components within the air terminal unit such as a fan, heat exchanger, etc. (EN 12792) (Term refers to terminal units)

Control system

Arrangement of elements interconnected and interacting in such a way as to maintain or influence in a prescribed manner specified conditions. (EN 12792)

Convection

The movement of heat by fluid flow (air or water).

Cooker hood (range hood)

Device intended to collect contaminated air from above a cooking appliance and either discharge it into the room or remove it from the room, it may or may not incorporate one or more of the following components: filters, fan, fire damper, non return flow damper. (EN 12792)

Cooling

Removal of latent and/or sensible heat. (EN 12792, EN 13053)

Cooling capacity

The quantity of heat that a cooling appliance is capable of removing from a room.

Cooling load

The rate at which heat must be extracted from a space in order to maintain the desired temperature within the space.

Cooling load (alternate definition)

Amount of cooling per unit time required by the space being controlled. (EN 12792)

Cooling system, free

Typically 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.

Cooling tower

A heat transfer device, which cools warm water using outside air or water. Usually used to reject heat from the cooling process to the atmosphere.

Cooling, active

Cooling process in which energy consuming mechanical components like compressors, pumps and fans are used.

Cooling, district

Means the distribution of thermal energy in the form of chilled liquids, from a central source of production through a network to multiple buildings or sites, for the use of space or process cooling. (EPBD 2010/31/EC)

Cooling, mechanical

Mechanical cooling is cooling with compressor cycle

Cooling, passive

Cooling process in which energy consuming mechanical components like pumps and fans are not used.

Cost-benefit analysis

A process in which a measure's benefits are weighted against its costs. The term is often used when a measure is analysed from a socio-economic perspective but also in engineering analysis while comparing the alternatives.

Cost-effectiveness analysis

An analysis in which the most cost-effective method of reaching a specific objective is calculated.

Cost-optimal level

Cost-optimal level means the energy performance level which leads to the lowest cost during the estimated economic lifecycle. (EPBD, recast, 2010/31/EC)

D

Damper

The damper is a movable device, placed in the ductwork, that opens and closes to control airflow. Dampers can be used to balance airflow in a duct system. They are also used in zoning to regulate airflow to certain rooms.

Damper (or valve) (alternate definition)

Element inserted into an air distribution system or element of an air distribution system permitting modification of the air resistance of the system, and consequently changing the air flow rate (dampers), or shutting off the air flow completely (valves), or controlling the air flow rate and in addition providing shut-off of the air flow (control valves). (EN 12792)

Damper(s), fire

Components which are installed in an air distribution system between two fire separating compartments and are designed to prevent propagation of fire and/or smoke. Generally are kept open by mechanical restraint, whose effect is cancelled under specific conditions. The valve is then closed automatically.

Damper, fire and smoke

Device inserted between two fire separation compartments of an air distribution and diffusion system and intended to prevent the propagation of fire and smoke. The device is normally open and closes automatically under predetermined conditions. (EN 12792)

Damper, manual

Device which can be used to manually adjust the air flow rate. (EN 12792) see also Damper (or valve)

Decipol

One decipol is the sensory pollution level in the room the caused by one standard person (one olf) when ventilated by 10 L/s of unpolluted air. It was developed to quantify how the strength of indoor pollution sources influence air quality as it is perceived by humans.

Dehumidification

The reduction of water content in the air.

Dehumidifier

A device that removes moisture from the air.

Design criteria

Values of parameters that define indoor air quality, thermal and acoustical comfort, energy efficiency and the associated system controls that should be achieved by the design.

Deviation

Difference between the set point and the value of the controlled variable at any instant. (EN 12792)

Dew point

The temperature at which the water vapour present in the air condenses.

Diffuse radiation

Solar radiation received indirectly as a result of scattering due to clouds, fog, haze, dust, or other obstructions in the atmosphere or on the ground.

Diffuser

Air distribution device designed to direct airflow into desired patterns.

Diffuser, air

Air terminal device usually installed in the ceiling and generally of circular, square or rectangular form and composed of divergent deflecting means and sometimes combined with vanes, perforated plates, flat plates, etc. (EN 12792) see also Terminal device, air

Diffusing ceiling, air

Modular air terminal device designed to diffuse air to the treated space from a pressurized plenum through holes or slots in the ceiling surface or the supporting framework. (EN 12792) see also Terminal device, air

Disinfection

Method aiming to reduce the number of viable micro-organisms in a liquid or on a surface to such extent that an infection hazard no longer exists.

Dissatisfaction risk, floor temperature

Percentage of people predicted to be dissatisfied due to the temperature of the floor. (EN 12792)

Draught

Human perceived sensation of local cooling of body caused by air movement and its temperature

Draught rating (DR-value)

The percentage of people predicted to be dissatisfied due to draught in certain conditions

Draught risk rating

Percentage of people predicted to be dissatisfied due to draught.

Dual duct system

An air conditioning system that has two ducts for supply air, one is with heated air and the other is with cooled air, so that air of the correct temperature is provided by mixing varying amounts of air from each duct.

Duct

A pipe or closed conduit made of sheet metal, fiberglass board, or other suitable material used for conducting air to and from an air handling unit or fan.

Duct sealing

Means taken either to ensure the airtight sealing of the air distribution system or to minimize leakage there from. NOTE Various techniques can be used according to the type of joint used to achieve this objective such as welds, mastic seals and pre-fabricated joints. (EN 12792)

Duct, air

Generally the envelope of a space in which the air is carried. The assembly of the ducts of an installation and the other elements of distribution inserted into these ducts constitute the distribution network (or ductwork system). (EN 12792)

Duct, flex

Usually installed in a single, continuous piece between the register and plenum box, a flexible duct usually has an inner lining and an insulated coating on the outside.

Duct, flexible

Duct which can be manually longitudinally compressed or decompressed and flexed without permanently damaging the cross section area. (EN 12792)

Ductwork

Pipes or ducts that carry air throughout a building.

Ductwork components

In practice to facilitate manufacturing, storage, transportation and installation, ducts are made of components, which are intended to be joined together at the time of installation. These components are of various types. (EN 12792)

Dust, ASHRAE

Synthetic dust used for loading air filters in laboratory tests. (ASHRAE Standard 52)

Dust, coarse

Particles larger than 2.5 μm by diameter

Dust, loading

Synthetic test dust specifically formulated for determining the test dust capacity and arrestance of the filter.

E

Economizer, air

An economizer is a component of an air handling unit that increases the amount of outdoor air in the supply air when the outdoor air temperature is below the indoor temperature, to reduce the need for mechanical cooling.

Efficiency (filtration)

Removal of dust in a filter, expressed in %. (EN 779)

Emissivity

The emissivity of a material is the relative ability of its surface to emit energy by radiation in relation to black surface

Energy

Broadly defined, is the capability of doing work. More specifically, it is the capacity for doing work as measured by the capability of doing work (potential energy) or the conversion of this capability to motion (kinetic energy). Forms of energy include: thermal, mechanical, electrical and chemical. Energy may be transformed from one form into another form useful for work. Most of the world's convertible energy comes from fossil fuels that are burned to produce heat that is then used as a transfer medium to mechanical or other means in order to accomplish tasks. Electrical energy is usually measured in kilowatt-hours, while heat energy may be measured in joules (J) or kilowatt-hours (kWh).

Energy audit

A systematic procedure to obtain adequate knowledge of the existing energy consumption profile of a building or group of buildings, of an industrial operation and/or installation or of a private or public service, identify and quantify cost-effective energy savings opportunities, and report the findings. (ESD, 2006/32/EC)

Energy consumption

The amount of energy consumed in the form in which it is acquired by the user. The term excludes electrical generation and distribution losses.

Energy demand, cooling

The integrated cooling load over a total year in kWh or MJ. This is often expressed in terms of energy per square meter per annum (year): kWh/m².a.

Energy demand, heating

The integrated heating load over a total year in kWh or MJ. This is often expressed in terms of energy per square meter per annum (year): kWh/m².a.

Energy efficiency ratio (EER)

A ratio calculated by dividing the cooling capacity in watts by the power input in watts.

Energy management system

A control system (often computerized) designed to regulate the energy consumption of a building by controlling the operation of energy consuming systems, such as the heating, ventilation and air conditioning (HVAC), lighting and water heating systems.

Energy performance of a building

Calculated or measured amount of energy delivered and exported actually used or estimated to meet the different needs associated with a standardized use of the building, which may include, inter alia, energy used for heating, cooling, ventilation, domestic hot water, lighting and appliances. (EN 15316-1:2007)

Energy Performance of Buildings Directive (EPBD)

The Energy Performance of Buildings Directive, an EU Directive of late 2002 aiming at improving the energy performance of buildings, strengthened and accelerated in 2010 by the 'Recast EPBD'.

Energy performance requirement

Minimum level of energy performance that is to be achieved to obtain a right or an advantage: e.g. right to build, lower interest rate, quality label. (CEN standard - En 15217 "Energy performance of buildings – "methods for expressing energy performance and for the energy certification of buildings")

Energy service company (ESCO)

A natural or legal person that delivers energy services and/or other energy efficiency improvement measures in a user's facility or premises, and accepts some degree of financial risk in so doing. The payment for the services delivered is based (either wholly or in part) on the achievement of energy efficiency improvements and on the meeting of the other agreed performance criteria. (ESD, 2006/32/EC)

Energy source

Source from which useful energy can be extracted or recovered either directly or by means of a conversion or transformation process.

Energy source, renewable

Energy from a source that is not depleted by extraction, such as solar energy (thermal and photovoltaic), wind, water power, renewed biomass.

Energy use for space heating or cooling

Energy input to the heating or cooling system to satisfy the energy need for heating or cooling (including dehumidification) respectively.

Energy use for ventilation

Energy input, in the form of electricity and heat, to the ventilation system for air transport, heat recovery and for the humidification system. (for some countries only the input of electricity is considered)

Energy, delivered

Energy, expressed per energy carrier, supplied to the technical building systems through the system boundary, to satisfy the uses taken into account (e.g. heating, cooling, ventilation, domestic hot water, lighting, appliances etc.) or to produce electricity. (EN 15603:2008)

Energy, exported

Energy, expressed per energy carrier, delivered by the technical building systems through the system boundary and used outside the system boundary (EN 15603:2008)

Energy, final

Energy supplied that is available to the consumer to be converted into useful energy (e.g. electricity at the wall outlet). (Intergovernmental Panel on Climate Change, IPCC)

Energy, incident solar (W/m^2)

The amount of solar radiation striking a surface per unit of time and area, expressed as W/m^2 . Also referred to as irradiance.

Energy, net delivered

Delivered minus exported energy, both expressed per energy carrier. (EN 15603:2008)

Energy, primary

Energy from renewable and non-renewable sources which has not undergone any conversion or transformation process. (EPBD recast)

Energy, regulated

Energy used in the home for heating, cooling, hot water and lighting.

Enthalpy

Heat content or total heat, including both sensible and latent heat.

Envelope, building

Integrated elements of a building which separate its interior from the outdoor environment. (IUPAC International Union of Pure and Applied Chemistry - Compendium of Chemical Terminology 2nd Edition 1997)

Environment quality, indoor (IEQ)

IEQ encompasses all aspects of the indoor environment including air quality, thermal environment, lighting, and acoustic environment.

Environment, acoustic

Characteristics of a room that determine the qualities of sound therein, relative to hearing. (EN 12792)

Environment, indoor

Indoor environment is an environment within a building or an enclosed space.

Environment, thermal

Characteristics of the environment which affect the heat exchange between the human body and the environment. (EN 12792)

Environmental agents

Conditions other than indoor air contaminants that cause stress, comfort, and/or health problems (e.g., humidity extremes, drafts, lack of air circulation, noise, and over-crowding).

Environmental tobacco smoke (ETS)

Mixture of smoke from the burning end of a cigarette, pipe, or cigar and smoke exhaled by the smoker; also called second-hand smoke.

Evaporator

A component of a thermodynamic refrigeration cycle where evaporation of the refrigerant takes place. The heat for the evaporation comes from the surrounding fluid. In practice, evaporator in air conditioning systems is found indoors and is known as cooling coil. In heat pumps systems it is found outdoors and absorb heat from the outdoor environment.

Exfiltration

The air flowing through the building envelope from inside to outside due the pressure difference. In cold climates this may cause moisture damages in the constructions due to condensation of moist indoor air in the structure.

Exfiltration (alternate definition)

Uncontrolled passage of air from a space through leakage paths in the shell of that space. (EN 12792)

F

Facilities management (FM)

All services required for the management of buildings and real estate to maintain and increase their value.

Fan

Rotary bladed machine which receives mechanical energy and utilizes it by means of one or more impellers fitted with blades to maintain a continuous flow of air or other gas passing through it and whose work per unit mass does not normally exceed 25 kJ/kg. The term fan is taken to mean the fan as supplied without any addition to the inlet or outlet, except where such an addition is specified. (See ISO 5801) (EN 12792)

Fan coil

A component of HVAC system containing a fan and heating or cooling coil, used to distribute heated or cooled air.

Fan control, damper

Fan performance is controlled by means of a damper, either on the inlet or on the outlet, creating a variable additional system resistance. (EN 12792)

Fan control, vane

Vanes mounted at the fan inlet, which can be adjusted in order to change the fan performance by controlling the swirl at the fan inlet. (EN 12792)

Fan control, variable blade pitch (normally only for axial-flow fans)

The blade angle of the impeller can be varied whilst the impeller is rotating, all blades being simultaneously varied by one operation. If the blade angle of the impeller can be altered only when the impeller is stationary, this method of control is termed 'adjustable pitch'. When the blade angle cannot be changed, it is said that the fan has a 'fixed pitch'. (EN 12792)

Fan control, variable speed

Speed can be varied either continuously or in steps by a variable speed motor, slipping coupling, gearbox or other means. (EN 12792)

Fan dynamic pressure

Average dynamic pressure at the fan outlet, calculated from the mass flow, the average gas density at the outlet and fan outlet area. (EN 12792) see also fan static pressure

Fan inlet

Opening usually circular or rectangular through which the air first enters the fan casing.

Fan installation types

Type (A), free inlet, free outlet; Type (B), free inlet, ducted outlet; Type (C), ducted inlet, free outlet; Type (D), ducted inlet, ducted outlet. (see also ISO 13349) (EN 12792)

Fan power

The electric power absorbed by the fan motor.

Fan power, specific (SFP)

The combined amount of electric power consumed by all the fans in the air distribution system divided by the total airflow rate through the building under design load conditions, in Ws/m^3 .

Fan pressure

Difference between stagnation pressure at the fan outlet and the stagnation pressure at the fan inlet. (EN 12792)

Fan static pressure

Fan pressure minus the fan dynamic pressure. (EN 12792)

Fan unit

Casing incorporating a fan and provided with spigots. (EN 12792)

Fan, duct

Fan mounted in a section of duct to move conditioned air.

Filter

Device for removing particulate material and gases from air.

Filter (alternate definition)

Device for removing particulate material from a fluid or gas. (EN 12792)

Filter element, air

A unit in the filtering system comprising filter material including framing, supporting parts and gaskets, the total to be inserted into a filter housing device.

Filter, average efficiency

Weighted average of the efficiencies of filters to remove $0.4 \mu m$ particles for the different specified dust loading levels up to final the pressure drop (EN 779:2002).

Filter, average efficiency (alternate definition)

Weighted average of the efficiencies for the different specified dust loading levels (expressed in %). (EN 12792)

Filter, charged

Polymer fibre filter which is electrostatically charged or polarised.

Filter, coarse

Filter that retains particles larger than $2.5 \mu m$. It is classified in one of the classes G1 to G4 (based on removal of synthetic loading dust). (according to EN 779:2002)

Filter, fine

Filter classified in one of the classes F5 to F9 (based on average efficiency of $0.4 \mu m$ particle).(EN 779:2002)

Filter, fine (alternate definition)

Filter classified in the classes F5 to F9 according to EN 779. (EN 12792)

Filter, gas phase

Filter to remove gases or vapour contaminants from an air stream.

Filtration

Removal of particulate material from the airstream. (EN 13053)

Filtration (alternate definition)

Removal of particulate material from a fluid or gas.

Flow rate, mass

Mass of matter which crosses a given surface, divided by time. (EN 12792)

Flow rate, ventilation

The outdoor air flow rate supplied to a space to maintain acceptable indoor air quality.

Flow rate, ventilation

Volume flow rate at which ventilation air is supplied or removed. (EN 12792)

Flow rate, volume

Volume of matter, which passes a given surface, divided by time. (EN 12792)

Flow, counter

Supply air and exhaust air flows have counter trajectories. (Term refers to heat exchangers)

Flow, cross

Supply air and exhaust air have cross trajectories. (Term refers to heat exchanger)

Flow, parallel

Supply air and exhaust air flows have parallel trajectories. (Term refers to heat exchangers)

Flow, piston

A theoretical air flow pattern where the air from the supply passes like a piston across the room and pushes the old air out through the exhaust.

Flow, plug

see Piston flow

Formaldehyde

Formaldehyde is a colourless water-soluble gas emitted from many building materials. It is frequently measured and evaluated separately from other volatile organic compounds (VOCs).

Free cooling, water side

A system which uses either direct evaporative cooling, or a secondary evaporatively cooled water loop and cooling coil to satisfy cooling loads, to reduce energy use for mechanical cooling.

Freon

A general term used to identify, any of a group of partially or completely halogenated simple hydrocarbons containing fluorine, chlorine or bromine, which are used as refrigerants.

Functional check

Observation of the operation of a system or devices, against a specification without resorting to specific measurements. (EN 12792)

Functional measurement

Measurement of the performance of a system or device against specification. (EN 12792)

Fungi

A large group of organisms including moulds, mildews, yeasts, mushrooms, rusts, and smuts. Any of a group of parasitic lower plants that lack chlorophyll. Most fungi produce spores, which are broadcast through the air so that virtually all environmental surfaces will have some fungal material. Most health effects are associated with allergic responses to antigenic material or toxic effects from mycotoxins. Fungi also generate certain volatile organic compounds.

Fungicide

Chemical substance that is used to get rid of fungi.

G

g - value

A number between 0 and 1 which represents the sum of primary transmittance and secondary transmittance to a room. The secondary transmittance is the ratio between solar radiation and the part of the solar energy absorbed in the window/solar shade materials, which reaches the room through convection or as (thermal) radiation. The g-value is also referred to as the total solar energy transmittance or solar factor. In North America it is referred to as the solar heat gain coefficient (SHGC).

Gas, organic

Chemicals based on a structural framework of carbon atoms.

Gas, tracer

A detectable gas used in small concentrations to evaluate performance of ventilation such as air flows, local mean ages, air change efficiency etc.

Greenhouse effect

The presence of trace atmospheric gases make the earth warmer than would direct sunlight alone. These gases (carbon dioxide [CO₂], methane [CH₄], nitrous oxide [N₂O], tropospheric ozone [O₃], water vapour [H₂O], and chlorofluorocarbons) allow visible light and ultraviolet light (shortwave radiation) to pass through the atmosphere and heat the earth's surface. This heat is re-radiated from the earth in form of infrared energy (long wave radiation). The greenhouse gases absorb part of that energy before it escapes into space. Thus the greenhouse effect allows solar radiation to penetrate but absorbs the infrared radiation returning to space. This process of trapping the long wave radiation specifically is known as the greenhouse effect.

Greenhouse effect (Relating to buildings)

The characteristic tendency of some transparent materials (such as glass) to transmit radiation with relatively short wavelengths (such as sunlight) and block radiation of longer wavelengths (such as heat). This tendency leads to a heat build-up within the space enclosed by such a material.

Grille

Device for air openings or ducts where they open to the conditioned space. Equipped with linear blades that control the air flow direction and so the air distribution.

Grille (alternate definition)

Air terminal device with multiple passages for air. (EN 12792)

Grille, adjustable

A grille with linear blades which can be adjusted to vary the direction of the supply air. The linear blades are normally either vertical or horizontal, or both horizontal and vertical.

Grille, adjustable (alternate definition)

Grille intended to vary the direction or directions of the air delivered to the treated space. It consists of one or more series of adjustable parallel ribs. (EN 12792)

Grille, fixed directional

Grille intended to diffuse the air in one or more fixed directions. It consists of one or more series of fixed parallel ribs. (EN 12792)

H

Handing over the installation

Advancement of an installation from the stage of static completion to full working order to specified requirements. (EN 12792)

Heat balance

The equilibrium which is known to exist when all sources of heat gain and loss for a given region or body are accounted for.

Heat carrier

Substance or fluid that can be used to produce or transport heat or to operate physical processes.

Heat exchanger

A device in which heat is transferred between two mediums that don't come in contact.

Heat exchanger (alternate definition)

Device to transfer heat from one medium to another. (EN 12792)

Heat exchanger, air to air plate

Heat exchanger designed to transfer thermal energy from one air stream to another without moving parts. Heat transfer surfaces are in form of plates. This exchanger may have parallel flow, cross flow or counter flow construction or a combination of these.

Heat exchanger, air to air tube

Heat exchanger designed to transfer thermal energy from one air stream to another without moving parts. Heat transfer surfaces are in form of tubes. This exchanger may have parallel flow, cross flow or counter flow construction or a combination of these.

Heat exchanger, rotary

A device incorporating a rotating cylinder or wheel for the purpose of transferring energy from one air stream to the other. It incorporates heat transfer material, a drive mechanism, a casing or frame, and includes any seals which are provided to retard the bypassing and leakage of air from one air stream to the other.

Heat gains

Heat generated within or entering into the conditioned space from heat sources other than technical building thermal systems (e.g. heating, cooling or domestic hot water preparation, etc.).

Heat gains, internal

Heat originating from within a building generated by occupants sensible metabolic heat and by appliances such as lighting, domestic appliances, office equipment, etc., other than energy intentionally provided for heating, cooling or hot water preparation. Given in W or W/m².

Heat gains, solar

Heat provided by solar radiation entering, directly or indirectly (after absorption in building elements), into the building through windows, opaque walls and roofs, or passive solar devices such as sunspaces, transparent insulation and solar walls.

Heat loss

The heat that flows from the building interior, through the building envelope to the outside environment or ground

Heat pump

A machine, a device or installation that transfers heat from natural surroundings such as air, water or ground to buildings or industrial applications by reversing the natural flow of heat such that it flows from a lower to a higher temperature. For reversible heat pumps, it may also move heat from the building to the natural surroundings. (EPBD 2010)

Heat recovery

Heat utilized from a system, which would otherwise be wasted. (E.g. Heat transferred from exhaust air into supply air)

Heat recovery (alternate definition)

Heat utilized from a heating system, which would otherwise be wasted. (EN 12792)

Heat source

A body of fluid from which heat is collected for heating purposes. (E.g. in an air source heat pump, the air outside the house is used as a heat source during the heating cycle)

Heat transfer

Flow of heat energy induced by a temperature difference. Heat flow through a building envelope flows from a heated, or hot area to a cooled, or cold area.

Heat transfer coefficient

The combined convective and radiant heat transfer coefficient between the heated/cooled surface and the space operative temperature (design indoor temperature) - this definition is used with surface heating and cooling

Heat transfer coefficient, overall

Heat flow per area for a given construction and for an overall temperature difference of one degree. (EN 12792)

Heat, derived

Derived heat covers the total heat production in heating plants and in combined heat and power plants. It includes the heat used by the auxiliaries of the installation which use hot fluid (space heating, liquid fuel heating, etc.) and losses in the installation/network heat exchanges. For autoproducing entities (= entities generating electricity and/or heat wholly or partially for their own use as an activity which supports their primary activity) the heat used by the undertaking for its own processes is not included. (Eurostat definition)

Heat, latent

The heat released or absorbed by a substance during a process that occurs without a change in temperature and with the change of the state of matter.

Heat, sensible

The heat released or absorbed by a substance during a process that occurs with a change in temperature.

Heater, demand (tank less) water

A type of water heater that has no storage tank thus eliminating storage tank stand-by losses. Cold water travels through a pipe into the unit, and either a gas burner or an electric element heats the water only when needed.

Heater, electric resistance

A device that produces heat through electric resistance

Heater, vented

A type of combustion heating appliance in which the combustion gases are vented to the outside, either with a fan (forced) or by natural convection.

Heating

Transfer of heat from one body or medium to another medium. (EN 13053)

Heating (alternate definition)

Transfer of heat from one body or medium to another. (EN 12792)

Heating capacity

The quantity of heat that a heating appliance is capable of supplying into a room in a time unit

Heating load

The instantaneous heating rate required to keep the building “in balance” at a specific minimum comfort temperature level e.g. a design temperature of 21.0°C. (Without taking into account the effectiveness of the heating system). Expressed in W or W/m².

Heating load (alternate)

Heating rate required to replace heat loss from the space being controlled. (EN 12792)

Heating load, internal

Heat generated within the building envelope by sources other than those associated with the installation. (EN 12792)

Heating system, central

A system where heat is supplied to areas of a building from a single appliance through a network of ducts or pipes.

Heating, district

Means the distribution of thermal energy in the form of steam or hot water, from a central source of production through a network to multiple buildings or sites, for the use of space or process heating. (EPBD, 2010/31/EC)

Heating, electric radiant

A heating system in which electric resistance is used to produce heat which is mainly transferred by radiation to surfaces. There is no fan component to a radiant heating system.

Heating, hydronic

A system that heats a space using hot water which may be circulated through a convection or fan coil system or through a radiant baseboard or floor system.

Heating, intermittent

Heating pattern where normal heating periods alternate with periods of reduced or no heating.

Heating, tap water

The heating of water for domestic use.

HEPA-filter

High Efficiency Particulate Air filter, classes H10 to H14, according to EN 779 (EN 12792)

Humidification

Addition of water vapour to room air or supply air.

Humidification (alternate definition)

Controlled addition of water vapour to an air stream or space. (EN 13053)

Humidification efficiency

Ratio between the mass of water evaporated by the humidifier and the theoretical mass needed to achieve saturation at a given temperature. (EN 13053)

Humidifier

A device that is used for humidification

Humidistat

A device designed to regulate humidity input by reacting to changes in the moisture content of the air. Much like a thermostat but turns the system on & off by sensing the humidity level.

Humidity

Water vapour within a given space. (EN 12792)

Humidity, absolute

Mass of water vapour present per unit mass of dry air. (EN 12792)

Humidity, absolute air

Absolute amount of water vapour in ambient air expressed in g/kg or g/m³ dry air.

Humidity, relative air

Pressure of water vapour in the air by volume divided by pressure of water vapour by volume at saturation at the same temperature.

Humidity, relative air (alternate definition)

In humid air, the ratio expressed as a percentage of the water vapour's actual pressure to the saturated vapour pressure at the same dry bulb temperature. (EN 12792)

Hygrometer

Device that enables the value of the humidity of a sample of air or other media to be determined. (EN 12792)

I**Illuminance (lx)**

The total luminous flux, incident on a surface, per unit area. Expressed in $\text{lx} = \text{lm}/\text{m}^2$.

Indoor climate

Temperature, humidity, lighting, air flow and noise levels in a habitable structure or conveyance.

Induction rate

The total volume of air moved by induction, divided by the volume of primary air supplied.

Infiltration

The transport of air through leakage paths in the envelope of a building, resulting from pressure (e.g. wind) and temperature differences.

Infiltration (alternate definition)

Uncontrolled passage of air into a space through leakage paths in the shell of that space. (EN 12792)

Initial efficiency (filter)

Efficiency of the clean filter operating at the air flow rate test.

Installation package (for a single dwelling), ventilation

Combination of compatible components, which are tested, sold and installed as a single product and specified by the manufacturer to complete a residential ventilation installation. (EN 12792) NOTE It may include minor parts, such as tapes, sealants and screws.

Installation, exhaust

Unitary package consisting of all components necessary to complete the exhaust installation of a single dwelling. (EN 12792)

Installation, ventilation

Combination of all components required to provide ventilation. (EN 12792)

Insulation

Any material that is used to reduce the heat flow or heat losses

Insulation, acoustic and/or thermal

Treatment of the internal or external walls of the ducts so as to reduce the transmission of acoustic energy along the length and through the duct and/or the thermal energy across the walls. (EN 12792)

Insulation, clothing

Resistance to sensible heat transfer provided by a clothing ensemble (i.e. more than one garment) NOTE: It is described as the intrinsic insulation from the skin to the clothing surface, not including the resistance provided by the air layer around the clothed body and is expressed in the clo unit or in $\text{m}^2\text{K}/\text{W}$; $1 \text{ clo} = 0.155 \text{ m}^2\text{K}/\text{W}$.

Internal rate of revenue (IRR)

A rate at which the accounting value of a security is equal to the present value of the future cash flow. (European Central Bank)

Isovel

Boundary line of points of equal mean velocity. (EN 12792)

K**kWh**

The kWh is a unit of energy. $1 \text{ kWh} = 3600 \text{ kJ} = 3412 \text{ Btu}$.

L**Load calculation**

A process to determine the heat gain and heat loss in a building so that properly sized air conditioning and heating equipment may be installed.

Long wave infrared radiation

Part of the electromagnetic spectrum with a wavelength between 8000 and 15000 nm, corresponding to the radiation of objects at room temperature. Normal glass or glazing is not transparent to this radiation.

Luminance

Luminance is measured in cd/m^2 and is a property of extended (direct and indirect) light sources. Luminance is defined as the luminous power per unit area per unit solid angle. This is the luminous flux in lumen emitted by a small patch in a certain direction within a certain solid angle.

M

Manometer

An instrument that measures air or water pressure differences between points.

Manometer (alternate definition)

Device for measuring pressure in a fluid. (EN 12792)

Manual valve

Device which can be used to shut off the air flow by manual operation. (EN 12792) see also Damper (or valve)

MERV

The minimum reported efficiency in specified particle size ranges during the test (ASHRAE 52.2-2007).

Metabolic rate

Rate of energy production of the body. NOTE: The metabolic rate varies with the activity. It is expressed in the met unit or in W/m^2 ; 1 met = $58.2 W/m^2$. One met is the energy produced per unit surface area of a sedentary person at rest. The surface area of an average person is about $1.8 m^2$.

Metabolic rate (alternate definition)

Rate of energy production of the body and which varies with the type of activity. (EN 12792)

Microbial volatile organic compound (mVOC)

Microbial volatile organic compound, a chemical generated by a mould which may have a mouldy or musty odour.

Micro-organisms

In the context of ventilating and air conditioning systems, this term is taken to include bacteria (such as legionella), algae and moulds capable of multiplying in water or on humid surfaces (such as in the humidifier water or in condensate).

N**Net present value (NPV)**

The net present value (NPV) is a standard method for the financial assessment of long-term projects. It measures the excess or shortfall of cash flows, calculated at their present value at the start of the project.

Noise rating (NR)

The noise rating curves are developed by the International Organization for Standardization (ISO) to determine the acceptable indoor environment for hearing preservation, speech communication and annoyance.

O**Odour**

Quality of gases, liquids or particles that stimulates the olfactory organ. (EN 12792)

Odour reduction factor

Efficiency of the reduction of odours by a device. (EN 12792)

Olf

One olf is the sensory pollution strength from a standard person defined as an average adult working in an office or similar non-industrial workplace, sedentary and in thermal comfort, with a hygienic standard equivalent of 0.7 bath/day. It was defined to quantify the strength of pollution sources which can be perceived by humans.

Openings for outdoor air, supply air, extract air, recirculation air and exhaust air

Aperture through which air is taken in or discharged from the air handling unit, such as openings for outdoor air, supply air, recirculation air and exhaust air. (Term refers to AHUs) (EN 13053)

Openings of an air handling unit

Apertures through which air is taken in or discharged from the air handling unit such as openings to outdoor air, supply air, recirculation air and exhaust air. (EN 12792)

Operation and maintenance

Actions taken after construction to ensure that facilities constructed will be properly operated and maintained to achieve conditions and efficiency levels specified at the design level.

Organic compounds

Chemicals that contain carbon. Volatile organic compounds vaporize at room temperature and pressure. They are found in many indoor sources, including many common household products and building materials.

P**Particle number concentration**

Number of particles per unit of volume of the test air. (EN 12792)

Particles - Nanoparticles

Ultrafine particles. Particles less than 100 nanometres in size.

Particles, fine

Particles less than 2.5 μm .

Particles, ultrafine

see Nanoparticles

Particulates

Small airborne particles found in indoor environments which include fibrous materials, solid-state semi-volatile organic compounds, and biological materials.

Parts per million (ppm)

The number of parts of a substance by volume in a million total parts.

Payback time

The length of time required to recover the cost of an investment.

Penetration

Ratio of the particle concentration downstream to upstream of the filter.

Performance

Performance is the measure of the quantity and/or quality of the product or service of a worker.

Permeable

Porous, allowing the passage of air.

Permissible range

Range of a physical quantity that satisfies the different parameters for each of the categories of the specified environment. (EN 12792)

Plenum

Air compartment connected to a duct or ducts. Air flow passage made of duct board, metal, drywall, or wood. Joins supply and return ducts with HVAC equipment. The portions of the air distribution system that makes use of the building structure, and the sheet metal that connects distribution ductwork to an air handling unit. Many buildings use the space above a dropped ceiling as a plenum.

Plume

The air current rising from a hot body (or descending from a cold body).

PM₁₀

Total mass of suspended particles with diameter less than 10 μm in a m^3 of air.

PM_{2,5}

Total mass of suspended particles with diameter less than 2.5 µm in a m³ of air.

Pollutant

see Contaminant

Pollutant removal effectiveness

Measure of the relationship between the pollutant concentration in the exhaust air and the pollutant concentration in the breathing zone.

Pollution

Presence of undesired elements which are deleterious to the comfort, health and welfare of persons or the environment (pollution includes elements such as noise, vibration, odours and gases). (EN 12792)

Power

The rate at which energy is transferred. Electricity for use as energy is also referred to as power. Electrical power is usually measured in watts (W). Also used for a measurement of capacity.

Predicted mean vote (PMV)

Predicted Mean Vote is an index that predicts the mean value of the votes of a large group of persons on a 7-point thermal sensation scale with zero meaning thermal neutral state.

Predicted Mean Vote (PMV) (alternate definition)

Index that predicts the mean value of thermal sensation votes of a large group of persons expressed on a 7-point scale. (EN 12792)

Predicted percentage of dissatisfied (PPD)

Index that predicts the percentage of a large group of people likely to feel thermally dissatisfied for the body as a whole, i.e. either too warm or too cool.

Predicted Percentage of Dissatisfied (PPD) (alternate definition)

Index that predicts the percentage of a large group of people who are likely to feel thermally dissatisfied for the body as a whole; i.e. feel either too warm or too cold. (EN 12792)

Pressure difference

Difference between pressures measured at two points or levels in fluids or gases. (EN 12792)

Pressure difference over the air handling unit, total

Difference between the total gauge pressure at the outlet of the air handling unit and the total gauge pressure at the inlet. (EN 12792)

Pressure difference, design

Difference between the total gauge pressure at the outlet of the air handling unit and the total gauge pressure at the inlet. (EN 12792) (Term refers to AHUs)

Pressure difference, external total

Difference between the total gauge pressure at the outlet of the air handling unit and the total gauge pressure at the inlet. (EN 12792) (Term refers to AHUs)

Pressure drop

Difference in total pressure between two points in an installation usually caused by frictional resistance to flow in a duct or component. (EN 12792)

Pressure drop - final

Pressure drop up to which the filtration performance is measured for classification purposes. (Term refers to filters)

Pressure drop, final (alternate definition)

Maximum operating pressure of a filter as recommended by the manufacturer at rated air flow. (EN 12792) (Term refers to filters)

Pressure drop - initial

Pressure drop of the clean filter operating at its test air flow rate.

Pressure loss

see Pressure drop

Pressure loss coefficient

Factor for mechanical energy loss as a result of flow. (EN 12792)

Pressure of vapour, saturation

Pressure at which vapour and liquid or vapour and solid can exist in equilibrium at a given temperature. (EN 12792)

Pressure, absolute total (stagnation pressure)

Algebraic sum of the total static pressure and velocity pressure at any particular point in a fluid. (EN 12792)

Pressure, dynamic

Pressure equivalent of fluid velocity at any particular point. (EN 12792)

Pressure, negative

Condition that exists when less air is supplied to a space than is exhausted from the space, so the air pressure within that space is less than that in surrounding areas. Under this condition, if an opening exists, air will flow from surrounding areas into the negatively pressurized space.

Pressure, positive

Condition that exists when more air is supplied to a space than is exhausted, so the air pressure within that space is greater than that in surrounding areas. Under this condition, if an opening exists, air will flow from the positively pressurized space, outward to surrounding areas.

Pressure, total gauge

Absolute pressure with the atmosphere as a zero reference. (EN 12792)

Productivity

Productivity is the amount of output created (in terms of goods produced or services rendered) per unit input used. It can be improved by increasing output (performance etc.) or decreasing input (cost and other resources).

R

R - value

The inverse of the U-value, the thermal resistance coefficient, expressed in Km^2/W . The bigger the number, the better the material's insulating properties.

Radiant ceiling panels, heating and cooling

Usually metal panels suspended under the ceiling, insulated from the building structure. The primary cooling/heating agent temperature is close to the room's temperature.

Radiant floor

A type of radiant heating system where the building floor contains channels or tubes through which hot fluids such as air or water are circulated. The whole floor is evenly heated. Thus, the room is heated from the bottom up. Radiant floor heating eliminates the draft and dust problems associated with forced air heating systems.

Radiation

The transfer of heat directly from one surface to another (without heating the intermediate air acting as a transfer mechanism).

Radiation, thermal

Transmission of energy by means of electromagnetic waves emitted due to temperature. (EN 12792)

Radiator

A room heat delivery (or exchanger) component of a hydronic (hot water or steam) heating system; hot water or steam is delivered to it by natural convection or by a pump from a boiler.

Recovery ventilator, energy (ERV)

A machine that draws outdoor air into a building and exhausts polluted air. It may preheat or pre-cool (depending on the season) to reduce energy costs associated with conditioning the air.

Reflectance

The ratio of reflected to incident radiation. Usually denoted by a letter R or ρ .

Refrigerant

Working fluid in refrigeration cycle or heat pump cycle.

Refrigerant lines

Set of two copper pipes connecting the outdoor unit and the indoor unit in a refrigeration system.

Register

Covering of grill for air openings or the ducts where they open to the conditioned space.

Reversing valve

A device in a heat pump that reverses the flow of refrigerant as the system is switched from cooling to heating.

Room, habitable

A room used for dwelling purposes but which is not solely a kitchen, utility room, bathroom, cellar or sanitary accommodation.

S**Sampling of tracer gas**

A process where a small amount of air is collected in order to measure the concentration of tracer gas, see also Active sampling and Passive sampling

Sampling, active

Sampling of air by means of a pump. (Term is used in performance of ventilation measurement)

Sampling, passive

Sampling that depends on the diffusion of the contaminant into a solid sorbent. (Term is used in performance of ventilation measurement)

Sensation, thermal

Conscious feeling commonly graded into the categories cold, cool, slightly cool, neutral, slightly warm, warm and hot. (EN 12792)

Sensing element

Component of a sensor that undergoes a measurable change in response to a change in the physical variable to be measured.

Sensitivity analysis

This is a process that tests the extent to which a model's results and predictions change when one or more assumptions change.

Sensor

Device which converts a physical, chemical, biological property or quantity into a conveniently measurable effect or signal. In this context the term "sensor" is used to designate a "sensor system", which may consist of several components. Based on the functional properties, these components can be grouped in three different units: a sensing element, a transducer, a transmitter.

Sensor (alternate definition)

Device or instrument designed to detect and measure a variable. (EN 12792)

Setback

A reduction of climate control energy demand in HVAC controls when a building is unoccupied.

Setpoint

The temperature to which a thermostat is set to result in a desired heated space temperature.

Setpoint (alternate definition)

Value of the controlled variable to which a control device is set. (EN 12792)

Shading coefficient (SC)

A measure of the ability of a window, or window with solar shading device, to transmit solar heat, relative to that ability for 3 mm clear, single glass. Is being phased out in favour of the g-value (in the US: solar heat gain coefficient or SHGC), and is approximately equal to the g-value multiplied by 1.15.

Short-cut or short-circuiting

Situation that occurs when the supply air flows to return or exhaust grilles before entering the breathing zone (area of a room where people are). To avoid short-circuiting, the supply air must be delivered at a temperature and velocity that results in mixing throughout the space.

Sick Building Syndrome (SBS) symptoms

Non-specific symptoms experienced by building occupants which may include irritation of eyes, nose, and skin, headache, fatigue, and difficulty in breathing and are related to the characteristics of buildings and indoor environments. The symptoms improve when the occupant is away from the building and are not related to any known disease or exposure.

Solar heat gain coefficient

The fraction of solar radiation transmitted through a window, or window with solar shading device, both directly transmitted, and absorbed and subsequently released inward. The lower the number, the better the window is at blocking heat gain. Has replaced the shading coefficient as the standard indicator of a window's shading ability. In Europe this is the g-value.

Solar transmittance

A number between 0 and 1 representing the ratio of the directly transmitted solar radiation to the incident solar radiation.

Sorbent

A substance which has the property of collecting molecules of another substance by sorption.

Sound attenuators

Components which are inserted into the air distribution system and designed to reduce airborne noise which is propagated along the ducts.

Sound attenuator (alternate definition)

Element inserted into the air distribution system and intended to reduce the airborne noise in the system. (EN 12792)

Sound reduction (attenuation)

Reduction of sound energy. (EN 12792)

Source control

A preventive strategy for reducing airborne contaminant levels in the air through removal of the material or activity generating the pollutants.

Sources of indoor air pollutants

Indoor air pollutants can originate within the building or be drawn in from outdoors. Common sources include people, fixtures and furnishings, photocopiers, plants, food, etc.

Space, conditioned

Enclosed space that is provided with climate control(temperature and air quality)

Space, unconditioned

A space that is neither directly nor indirectly conditioned space, which can be isolated from conditioned space by partitions and/or close able doors.

Speech Transmission Index (STI)

A measure of intelligibility of speech, directly dependent of the background noise level, of the reverberation time, and of the size of the room. STI value varies from 0 = completely unintelligible to 1 = perfect intelligibility.

Split system

A two-component heating and cooling (heat pump) or cooling only (air conditioner) system. The condensing unit is installed outside, the air handling unit is installed inside (preferably in conditioned space). Refrigerant lines and wiring connect them together.

Stack effect

A condition resulting from the rise of heated air, which creates positive pressure near the top of the building and negative pressure toward the bottom.

Stack effect (alternate definition)

Pressure difference caused by the difference in density between indoor and outdoor air due to an indoor/outdoor temperature difference. (EN 12792)

System

A combination of equipment and/or controls, accessories, interconnecting means and terminal elements by which energy is transformed to perform a specific function, such as climate control, service water heating, or lighting.

System boundary

Boundary that includes within it all areas associated with the building (both inside and outside of the building) where energy is used or produced.(EN 15603:2008)

T**Temperature**

Measurement of warmth or coldness with respect to an arbitrary zero or to the absolute zero. (EN 12792)

Temperature asymmetry, radiant

Difference between the plane radiant temperature of the two opposite sides of a small plane element. (EN 12792)

Temperature difference, mean surface

Difference between the average surface temperature and the design indoor temperature. It determines the heat flow density.

Temperature difference, primary air

Algebraic difference of the primary air temperature and the reference air temperature of the occupied zone. (EN 12792)

Temperature difference, vertical air

Air temperature difference between head and ankles of a person. NOTE: 0.1 and 1.1 m for sedentary and 0.1 and 1.7 m above floor for standing.

Temperature difference, vertical air (alternate definition)

Difference in air temperature measured at 1,1 m and 0,1 m above the floor. The distances 1,1 m and 0,1 m are theoretical average values for head and ankle height of a sedentary person. (EN 12792)

Temperature differential within the occupied zone

Largest value of the difference between the measured air temperatures within the occupied zone. (EN 12792)

Temperature differential, supply

Algebraic difference between the supply air temperature and the mean measured air temperature of the occupied zone. (EN 12792)

Temperature drop

Difference between the supply and return temperatures of the heating/cooling medium in a circuit.

Temperature gradient risk

Percentage of people predicted to be dissatisfied due to a difference in air temperature between ankle and head. (EN 12792)

Temperature of the occupied zone, mean measured air

Arithmetical average of the measured values of air temperature within the occupied zone. (EN 12792)

Temperature, average surface

Average value of all surface temperatures in the occupied or peripheral area.

Temperature, balance

The outdoor temperature at which a building's internal heat gain (from people, lights and machines) is equal to the heat loss through windows, roof and walls.

Temperature, design indoor

Operative temperature at the centre of the conditioned space used for calculation of the design load and capacity.

Temperature, dewpoint

Temperature of a mixture of air and water vapour at which further cooling or adding more water vapour results in condensation of water vapour from the air. (EN 12792)

Temperature, excess

Temperature difference between the supply air and the room temperature

Temperature, induced air

Air temperature of the internally induced air flow. (EN 12792)

Temperature, mean radiant

Uniform surface temperature of an enclosure in which an occupant would exchange the same amount of radiant heat as in the actual non-uniform enclosure.

Temperature, mean radiant (alternate definition)

Theoretical uniform surface temperature of an enclosure, in which an occupant would exchange the same amount of radiant heat as in the actual non-uniform enclosure. (EN 12792)

Temperature, operative

The operative temperature is the uniform temperature of a radiant black body enclosure in which an occupant would exchange the same amount of heat as in the actual non-uniform environment (ISO 7730).

Temperature, operative (alternate definition)

Theoretical uniform temperature of an enclosure in which an occupant would exchange the same amount of heat by radiation and convection as in the actual non-uniform space. (EN 12792)

Temperature, optimum operative

Operative temperature that satisfies the greatest possible number of people at a given clothing and activity level. (EN 12792)

Temperature, plane radiant

Uniform temperature of an enclosure where the radiance on one side of a small plane element is the same as in the non-uniform actual environment. (EN 12792)

Temperature, reference air room

Average of at least five measurements of the air temperature at a height of 1,1 m from the floor and outside the area directly influenced by a device. (EN 12792)

Temperature, room air

The average of air temperatures measured at 1.1 m high, positioned out of the main air current from any heating or cooling device

Temperature, set-back

Minimum indoor temperature to be maintained during reduced heating periods, or maximum internal temperature to be maintained during reduced cooling periods.

Temperature, under-

$t_{oz} - t_s$: Difference between the room air temperature 1,1 metre above the floor and the temperature of the supply air.

Terminal device

Devices located in an opening provided at the boundaries of the ventilated space to ensure a predetermined motion of air in this space.

Terminal device, air (ATD)

Component of a ventilation installation which is designed with the purpose of achieving the predetermined movement of air into or from a treated space. They can be divided into the following categories: **automatically controlled** - devices having moving parts which interact with a change in local conditions, such as temperature, humidity, CO₂ concentration, pressure difference, air flow rate, etc.; **fixed** - devices without any adjustable parts; **manually adjustable** - devices having adjustable parts which can be manually adjusted. (EN 12792) see also Air diffusion, components of

Terminal device, supply air

Air terminal device through which air enters the treated space. It is designed in order to ensure the predetermined comfort conditions of temperature, velocity, humidity and sound in the occupied zone. (EN 12792)

Test dust capacity

Amount of test dust retained by the filter up to final pressure drop.

Thermal mass

Material which to store heat, thereby slowing the temperature variation within a space. Typical thermal mass materials include concrete, brick, masonry, tile and mortar, water, and rock or other materials with high heat capacity.

Thermally-active building system (TABS)

Surface heating and cooling systems with pipes thermally coupled and embedded in the building structure (slabs, walls).

Thermometer

Device for measuring temperature. (EN 12792)

Thermostat

A device that responds to changes in temperature and outputs a control signal. Usually mounted on a wall in the controlled space.

Thermostat, setback

A device, containing a timer mechanism, which can automatically change the inside temperature maintained by the HVAC system according to a preset schedule. The heating or cooling requirements can be reduced when a building is unoccupied or when occupants are asleep.

Third-party financing

A contractual arrangement involving a third party — in addition to the energy supplier and the beneficiary of the energy efficiency improvement measure — that provides the capital for that measure and charges the beneficiary a fee equivalent to a part of the energy savings achieved as a result of the energy efficiency improvement measure. That third party may or may not be an ESCO. (ESD, 2006/32/EC)

Threshold

The contaminant dose or exposure level below which there is no expected significant effect.

Throttling

Irreversible adiabatic process in which pressure is lowered by expansion without work. (EN 12792)

Tight building syndrome (TBS)

A condition in which a building is very tightly insulated against infiltration, its ventilation is reduced for energy conservation, and airborne contaminants are sufficiently elevated to cause health effects in occupants; often used synonymously with sick building syndrome (SBS).

Time constant

Time required for response of a device to reach 63% of its final value after a step change.

Tolerance

Difference between upper and lower limits of size for a given nominal dimension. (EN 12792)

Total volatile organic compounds (TVOCs)

A measure representing the sum of all VOCs present in the air to provide an approximate indication of pollutant levels. Indoor air typically contains hundreds of different VOCs in very low concentrations, some of which can have additive effects.

Tracer step-down method

A tracer gas technique used where an amount of gas is released into the room and the decay is registered.

Transducer

Active device and component of a sensor that converts the raw, measured signal into a suitable signal, usually an electrical signal, which is a function of the change in the sensing element.

Transfer device, air

Air terminal device designed to allow the transfer of air from one space/room to another space/room. (EN 12792) see also Terminal device, air

Transmittance

The ratio of transmitted to incident energy. Usually denoted by a letter T or τ . A subscript e denotes energetic, i.e. solar transmittance (full solar spectrum). Subscript v denotes visual.

Transmittance, thermal

see U-value

Transmittance, thermal (U) (alternate definition)

Heat flow per unit of area and temperature difference. (EN 13053)

Transmitter

Device that converts the measured value to a standardized electrical signal that can be used as an input to a control module.

Turbulence intensity

The ratio of the standard deviation of the air velocity to the mean air velocity. Used to measure variations in air velocity.

U

U - value

The U-value describes how well a building material transports heat (through all three modes of heat transfer). It measures the rate of heat transfer through a material per unit of area per unit of temperature difference between the two surfaces of the material. The unit is W/m^2K . It is the measure in W of how much heat flows through $1 m^2$ of a medium in an attempt to reach thermal equilibrium when there is a $1 K$ temperature difference between the two sides. Also termed the thermal transmittance.

U - value (alternate definition)

Is the measure of the rate of heat loss through a material. Thus in all aspects of home design one should strive for the lowest U-Values possible because the lower the U-value – the less heat that is needlessly escaping. The calculation of U-values can be rather complex - it is measured as the amount of heat lost through a one square meter of the material for every degree difference in temperature either side of the material. It is indicated in units of Watts per meter Squared per Degree Kelvin or W/m^2 . (Irish Energy Centre - Funded by the Government under the national Development Plan with programmes partly financed by the European Union)

Unit air cooler

A refrigeration system component transferring heat from air to a refrigerant or liquid consisting of one or more fans and a coil with refrigerant distributing and collecting headers.

V**Validation**

Procedure to test how accurately reality is represented.

Vapour

A substance in gaseous state, whose natural state is a liquid or solid form at normal atmospheric conditions

Vapour seal

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. Vapour barriers may be created using plastic film, vapour-retardant paint, vinyl wall coverings and vinyl floor systems, in combination with careful sealing of all openings (doors and windows) into the room.

Variable air volume system (VAV system)

A ventilation system where the airflow rates are continuously varied. The flow of a VAV system may vary according to a predetermined pattern or it may be determined by actual demand, e.g. demand controlled ventilation.

Variable refrigerant flow (VRF)

A VRF air conditioning system is essentially a sophisticated split system (System made up of two basic components: one or more indoor room cooling units, and an outdoor refrigeration unit which dumps heat taken from the building. The indoor and outdoor units are linked by pipes which transport refrigerant between the units.). The difference is the ability of most VRF systems to provide heating or cooling from each of the indoor units on an individual basis.

Velocity, air

Rate of motion of air in a given direction measured as distance per unit time. (EN 12792)

Velocity, face

Discharge air flow rate divided by face area of air duct or terminal device.

Velocity, local air

Velocity at a specific point in an air stream at a specific time. (EN 12792)

Velocity, local mean air

Magnitude of the time-averaged vector of velocity at a point of an air stream. (EN 12792)

Velocity, local measured mean air

Measured value of local mean air velocity. (EN 12792)

Velocity, mean air

The average value of the velocities

Velocity, migration

The velocity of a charged particle in an electric field. The average velocity of a particle migrating towards the collecting plate in the space between the high voltage and the grounded electrode in an ESP. In a standard ESP type this velocity is perpendicular to the gas direction of the gas flow.

Velocity, relative air

Air velocity relative to the occupant, including body movements.

Velocity, room air

Arithmetical average value of velocity conventionally derived from the various locally measured mean air velocities within the occupied zone. (EN 12792)

Vent

A component of a heating or ventilation appliance used to conduct fresh air into, or waste air or combustion gases out of, an appliance or interior space.

Vent (alternate definition)

Any opening in the building intended for ventilation. (EN 12792)

Vent pipe

A tube in which combustion gases from a combustion appliance are vented out of the appliance to the outdoors.

Ventilation

Purpose provided air exchange between the inside and the outside of a building, through the (for this purpose specifically designed and installed) ventilation system by means of a range of natural and/or mechanical devices. Depending on type of ventilation system, the air exchange rate is more or less controllable.

Ventilation (alternate definition)

Designed supply and removal of air to and from a treated space. (EN 12792)

Ventilation effectiveness

Relation between the pollution concentrations in the supply air, the extract air and the indoor air in the breathing zone (within the occupied zone). (EN 13779)

Ventilation opening

An intentional opening in building envelope (e.g. trickle ventilator, louver, vent etc.) which was designed to allow air to flow into and/or out of the ventilated building.

Ventilation rate

Magnitude of outdoor air flow to a room or building either through the ventilation system or infiltration through building envelope.(EN 15251)

Ventilation system

A combination of appliances designed to supply interior spaces with outdoor air and/or to extract polluted indoor air.(EN 15251)

Ventilation, balanced

A ventilation system with mechanical supply and exhaust

Ventilation, balanced (alternate definition)

Ventilation installation where the supply air flow and the exhaust air flow rates comply with the design values. (EN 12792)

Ventilation, cross

Natural ventilation in which the air flow mainly results from wind pressure effects on the building facades and where stack effects in the building are of less importance. (EN 12792)

Ventilation, demand controlled (DCV)

Ventilation system with feed-back and/or feed-forward control of the air flow rate according to a measure demand indicator. Demand is decided by set values affecting thermal comfort and/or air quality.

Ventilation, displacement

Ventilation system with displacement air supply.

Ventilation, exhaust

Mechanical removal of air from a building.

Ventilation, fan assisted balanced

Ventilation which employs powered air movement components in both the supply and exhaust air sides in order to achieve a design flow rate/pressure ratio. (EN 12792)

Ventilation, fan assisted exhaust

Ventilation which employs powered air movement components in the exhaust air side only.

Ventilation, hybrid

Ventilation where natural ventilation may be at least in a certain period supported or replaced by mechanical ventilation. (EN 12792)

Ventilation, mechanical

Ventilation with the aid of powered air movement components. (EN 12792)

Ventilation, natural

Ventilation provided by thermal, wind, or diffusion effects through doors, windows or other intentional openings in the building.

Ventilation, natural (alternate definition)

Ventilation through leakage paths (infiltration) and openings (ventilation) in the building which relies on pressure differences without the aid of powered air movement components: airing, shaft ventilation, cross ventilation. (EN 12792)

Ventilation, purge

Manually controlled ventilation of rooms or spaces at a relatively high rate to rapidly dilute pollutants and/or water vapour. Purge ventilation may be provided by natural means (e.g. an open able window) or by mechanical means (e.g. a fan).

Ventilation, shaft

Natural ventilation by means of a duct mounted vertically (i.e. with an angle of 90°) or mounted with an angle of 45° at least. (EN 12792)

Volatile organic compounds (VOCs)

Chemical organic compounds that vaporize (become a gas) at room temperature. Common sources which may emit VOCs into indoor air include housekeeping and maintenance products, and building and furnishing materials.

Volume, space

The total volume of an occupiable space enclosed by the building envelope, plus that of any spaces permanently open to the occupiable space.

Z

Zone

An area within the interior space of a building, such as an individual room(s), to be cooled, heated, or ventilated. A zone has its own thermostat to control the flow of conditioned air into the space.

Zone (comfort process control)

Space, or group of spaces with similar thermal characteristics, which enable the required internal conditions to be maintained by a single control system or a single element of a comprehensive control system. (EN 12792)

Zone, buffer

A space between the conditioned zones and the outside. Thus it normally is not conditioned (for instance, attics, attached garages, crawlspaces, basements, and enclosed porches).

Zone, non-smoking

That area or volume of a space within which smoking is not permitted.

Zone, occupied

That part of space designed for human occupancy and where the design criteria of indoor environment are required to be met. Normally the zone between floor and 1.8 m and 1,0 m from external walls-windows and HVAC equipment and 0.5 m from internal walls.

Zone, occupied (alternate definition)

Volume of air, which is confined to horizontal and vertical planes. The vertical planes are usually parallel with the walls of the room. Typical definitions for the occupied zone are given below. Except when agreed otherwise the default values shall be applied. NOTE The occupied zone in a room is that space in which persons normally reside and where the requirements of the indoor environment shall be satisfied. Distance from the inner surface of **external windows, doors and radiator**: typical range 0,5 to 1,5 meters and default value 1,00 meters; **External and internal walls**: typical range 0,25 to 0,75 meters and default value 0,50 meter; **Floor (lower boundary)**: typical range 0,00 to 0,20 meters and default value 0,10 meters; **Floor (upper boundary)**: typical range 1,30^a to 2,00^b meters and default value 1,80 meters. In which ^a mainly seated occupants and ^b mainly standing occupants. For external walls with windows or doors the element with the weaker requirement is taken as valid for the whole surface. (EN 12792)

Zones, temperature

Individual rooms or zones in a building where temperature is controlled separately from other rooms or zones.

Zoning

The combining of rooms in a structure according to similar heating and cooling patterns.

Abbreviations

AC	Air conditioning
ACGIH	American Conference of Governmental Industrial Hygienists (U.S.A)
ACH	Air changes per hour
AHU	Air handling unit
BAC	Building automation and control
BMS	Building management system
BTU	British thermal unit
CAV	Constant air volume
CEN	European Committee for Standardization
CFU	Colony forming unit
CHP	Combined heat and power
CHRV	Central heat recovery ventilation
COP	Coefficient of performance
CRE	Contaminant removal effectiveness
DCV	Demand controlled ventilation
DEHS	DiEthylHexylSebacate
DIN	Deutsches Institut für Normung (Germany)
EER	Energy efficiency ratio
EN	European Standard
ENV	European Prestandard
EPBD	Energy Performance of Buildings Directive
ERV	Energy recovery ventilator
ESCO	Energy service company
ESP	Electrostatic precipitator

ETS	Environmental tobacco smoke
EUROVENT Manufacturers	European Committee of Air Handling and Refrigerating Equipment
EVHA	European Ventilation Hygiene Association (Europe)
FiSIAQ	Finnish Society of Indoor Air Quality and Climate (Finland)
FM	Facilities management
HEPAF HR	High Efficiency Particulate Air Filter Heat recovery
HRV	Heat recovery ventilator
HVAC	Heating, ventilation and air conditioning
HVACR	Heating, ventilating, air conditioning, and refrigeration
IAQ	Indoor air quality
IDA	Indoor air; the abbreviation of IAQ classes defined in EN 13779
IEQ	Indoor environment quality
IRR	Internal rate of revenue
LCA	Life Cycle Assessment
LCC	Life Cycle Cost
LHRV	Local heat recovery ventilation
MPPS	Most Penetrating Particle Size
mVOC	Microbial volatile organic compound
NPV	Net present value
NR	Noise rating
nZEB	Nearly zero energy building (EPBD recast, 2010/31/EC)
nZEB	Nearly net zero energy building
ODA	Outdoor Air; the abbreviation of IAQ classes defined in EN 13779
PAH	Polycyclic Aromatic Hydrocarbon

PAQ	Perceived air quality
PMV	Predicted mean vote
PPD	Predicted percentage of dissatisfied
PPM	Parts per million
prEN	Draft European Standard
SBS	Sick Building Syndrome
SC	Shading coefficient
SFP	Specific fan power
STI	Speech Transmission Index
TABS	Thermally-active building system
TBS	Tight building syndrome
TOC	Total amount of all organic compounds
TSP	Total mass of suspended particles
TVOCs	Total volatile organic compounds
UVC	Ultra Violet light referring to light spectrum C(wavelength 280-100nm)
VAV	Variable air volume
VDI	Verein Deutscher Ingenieure (Germany)
VOCs	Volatile organic compounds
VRF	Variable refrigerent flow
ZEB	Net zero energy building