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Rainwater Management Concepts
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Glossar englisch

Absorption
Uptake and dissolution of mainly gaseous substances (air, polluting gases etc.) in other substances (e.g. water, filter).

Absorption refrigerator A refrigerator that, in contrast to compression refrigeration machines, achieves compression through the temperature-responsive solution of the refrigerant. These are also described as thermal compressors. The refrigerant is absorbed into a second substance in a solvent circuit at a low temperature and desorbed at higher temperatures. This process uses the temperature dependency of the physical solubility of two substances. The prerequisite for the process is that both substances be soluble in each other in any proportion within the temperature range used.

Active soil zone Microorganisms in this soil zone use organic and inorganic substances for their own metabolisms, thereby transforming or breaking down these substances.

Adiabatic (state) change A thermodynamic process in which a system changes from one state to another without exchanging thermal energy with its environment.

Adiabatic cooling A process used in air conditioning systems to air-condition buildings using evaporative cooling. The process is applied indirectly: one air flow is humidified as the other air flow is cooled. Evaporative cooling is a renewable energy, because only air and water are used for cooling. The principle of this process is the same as that of sweating, in which water evaporates through transpiration. The heat required for the evaporation is drawn from the environment, which cools human skin.

Adsorption Accumulation of substances consisting of gases or liquids on the surface of a solid body, or more generally on the boundary surface between two phases. Adsorption is distinguished from absorption, in which the substance permeates the interior of a solid body or liquid.

Adsorption refrigerator Accumulation on a solid substance is described as adsorption in process engineering and desorption accordingly as dissolution from a solid substance. In an adsorption refrigerator the refrigerant is selected so that a change in the aggregate state accompanies the adsorption or desorption. Since the adsorption of the refrigerant involves condensation, it is facilitated by low temperature and high pressure, which reduces the volume of the refrigerant and releases energy in the form of heat.

Albedo Unit of measurement measuring the reflectivity of diffusely reflecting, not self-luminous surfaces. Quotient of reflected to incident light quantities.

Best Available Technology (BVT) BAT (best available technique – BAT) is an English legal term used to describe "newest state of the art" technology that is available to users under "economically reasonable conditions". The EU Commission has sought to use this term to replace "state of the art (Stand der Technik)", which is used in the Federal Immission Control Act (Bundesimmissionsschutzgesetz – BimschG).

Biocide The term "biocide" covers all chemicals used to combat harmful organisms in chemical/biological ways, e.g. disinfectants, wood preservation products and all pesticides.

Biotope Area Factor (BAF) Instrument for securing "green qualities" in Berlin's inner city. It can be stipulated in Berlin as a statutory ordinance in a landscape plan. It contributes to the standardisation and concretisation of environmental quality goals, specifies the proportion of the area of a property to serve as a planted area and takes on other ecosystem functions.

Climbing supports Technical constructions that enable climbing plants to grow up vertical facades. The difficulty involved is that there are various kinds of climbing mechanisms. In our case, "leaf tendril climbers", whose young shoots can twine around a rope, are preferred. Profiles that are too wide will not be effective. Other species are scramblers, whose tough tendrils can hook onto existing structures.

Co-generation heating and power station (CHP) A co-generation heating and power station consists of motors or gas turbines that use the heat produced in electricity generation as district heating to heat buildings and provide hot water. Facilities with an output of >5 or 10 MW are no longer referred to as 'co-generation heating and power stations', but as 'micro-combined heat and power facilities'.

Demonstration projects As part of pilot projects, large-scale demonstration projects are supported and funded to demonstrate, for the first time, the way in which forward-looking methods of avoiding or reducing environmental pollution can be implemented.

Drinking water is the most important nutrient and is also used for other domestic purposes. 99% of the German population obtains it from the public water supply, which complies with the high-quality standards of the German Drinking Water Ordinance (Trinkwasserverordnung). In Germany the supply of drinking water makes up approx. 4% of total water consumption. Each German consumes 130 litres daily on average, so water consumption in Germany is at a low level in comparison with consumption levels in other European countries.

Ecology The study of the relationship of living beings to their biological environment (from the Greek oikos "home" and logos "study"). The term was coined by Ernst Haeckel, who defined it as "The whole science of the relationships of organisms to their surrounding world". Ecology (a sub-discipline of biology) was initially defined as the study of the natural environment. It is now more broadly understood as the science of the interactive relationships between organisms and environmental factors.

Element input into nature Element inputs are solid and gaseous pollutants that are released during the extraction, processing and use of raw materials and energy and that can pollute natural cycles (incl. people).

Energy is the ability of a body to do work. It is measured in the same unit as work, in joules (1 KJ = a thousand joules, 1 MJ = 1 million joules). Another unit of energy in use is the kWh (kilowatt hour). Units of energy are often also specified in units of primary energy (1 kg or tonne of coal equivalent TCE = 29,308 KJ = 8.14 kWh; 1 kg or tonne of oil equivalent TOE = 41,868 KJ =11.63 kWh; 1m^3, natural gas = 31,736 KJ = 8.82 kWh). 1 joule is equivalent to one watt second (Ws).

Environment This term is defined in various ways. In its most comprehensive definition 'environment' means the totality of factors (incl. physical, mental, technical, economic and social relationships and conditions) that predetermine existence. It is defined here as the entirety of natural conditions that define human living space.

Eutrophication (over-fertilization) is the overfertilization of bodies of water, resulting in the accelerated growth of water plants but also of algae. Waters then become contaminated because the oxygen demand increases, causing an oxygen deficit in the water. At an advanced stage, the dieback of water plants leads to their rotting and the formation of poisonous substances such as ammonia and hydrogen sulphides. Eutrophication arises out of a surplus of nutrients (mainly nitrate and phosphate) from agricultural fertilizers and effluents. The result is a decline in fish stocks and the death of large numbers of fish. Rainwater runoff from sealed surfaces causes a continuous inflow of nutrients into surface water in areas with separate sewers for rainwater and effluents, while torrential rains contaminate the water in areas with combined sewers.

Extensive roof greening Cost-effective greening, especially suitable for low-load roofs with no designated usage. Low levels of annual maintenance; watering is usually only required in the early stages. Its mineral nutrient-poor, coarsely porous growing media should be 5 to 12 cm deep.

FBB The Fachvereinigung Bauwerksbegrünung e.V. is a consortium of scientists, planners, builders, producers and municipalities involved in the field of roof greening, who have made it their goal to promote roof greening, ensuring the implementation of practicable quality criteria and a comprehensive and objective information policy in the interests of consumer protection.

FLL – Forschungsgesellschaft Landschaftsentwicklung Landschaftsbau e.V. The FLL publishes various guidelines on greening buildings, which the FBB promotes and supports. Important connections involving a range of trades and disciplines are presented in these guidelines. The FLL series of publications includes diverse rules and standards as well as publications on planning, creating, developing and maintaining installations, which are updated in accordance with current technological developments

Ground water is the water underground. This invisible resource is a major element of the water cycle and fulfils vital ecological functions. It is also the main source of drinking water. Ground water must be protected from contamination, so it is extremely important to consistently apply precautionary principles in handling it.

Growing media Engineered substratum produced for green roof and green facade technology purposes. It includes well defined values for retention rates and low components of fertilizer. These artificial materials can be combined with recycling materials, crushed roof tiles, volcanic components like lava, pumes or expanded slate.

Intensive roof greening A synonym for roof gardens. Garden-type areas of vegetation are planned and maintained, usually by professional gardeners on non-earthbound surfaces. The ecological aspects of intensive roof gardens can be optimised by using rainwater management, where appropriate drainage and storage layers are laid under plantings and terraces.

Lysimeter Open, overgrown ground cylinders for measuring precipitation, infiltration and evaporation, which are set into the ground, flush with their surroundings. Lysimeters are usually placed on a scale so as to promptly and exactly determine the water balance. The filtrated water can thus be qualitatively and quantitatively analysed.

Micro-combined heat and power facilities take the heat produced in electricity generation and use it for heating and hot water. This can increase the efficiency of the primary energy used from 30 to 40% to 60 to 90%. In summer this heat can be converted into cooling using absorption or adsorption refrigeration machines.

Monitoring systematic recording, observation or surveillance of a procedure or process using technical devices or other observation systems. The function of monitoring is to enable intervention in a monitored operation or process if it is not taking the desired course or specific threshold values fall short or are exceeded. Monitoring is thus a special type of recording.

Natural Resources Natural resources are all elements of nature useful to humanity. These include non-renewable resources (raw materials, forms of primary energy, soil and land, genetic resources), renewable resources (plants, animals, water, air and wind) and quasi-inexhaustible resources (for a human timescale) such as the sun‘s radiation energy. To this are added their countless functions that are essential to human life (sink functions, i.e. the absorption of emissions and wastes), habitat functions and the maintenance of natural systems (materials and life cycles).

PLC – Programmable Logic Controller; flexible control modules that carry out all kinds of control tasks depending on digital and analogue input. They can be used to control waste water systems, rainwater management systems and for watering.

Precipitation water Water derived from precipitation (rain, snow, hail etc.), flowing off and collected from built or sealed surfaces, mainly rainwater.

Primary energy Forms of primary energy are substances or energy fields, the energy content of primary energy media and of energy streams that have not yet undergone technical conversion and from which secondary energy can be obtained directly or through one or more conversion processes (e.g. black coal, brown coal, crude oil, biomass, wind power, solar radiation and geothermal energy).

Rainwater Defined in DIN 1989 as water from natural precipitation that has not been contaminated by usage.

Retention The prevention and delay of runoff.

Roof runoff water Precipitation water that flows off roofs and changes in quality due to reactions with the roofing material and with accumulations on the roof.

Soil is the uppermost (usually only 20 to 40 cm thick) built-on and not built-on layer of the Earth‘s solid crust, including water flowing or standing under the ground, where this can be influenced by human activity. Soil takes on a wide range of irreplaceable natural functions for people, serving to produce food, providing surface for settlement and traffic, absorbing wastes and emissions, as well as countless regulatory and habitat functions.

‘State of the art’ Term used in legal norms to describe the development status of progressive processes and systems for limiting environmental pollution.

Sustainable development (SD), also referred to as long-term environmentally friendly development, is the new development guideline established in 1992 in Rio as part of Agenda 21. It is defined here as development that aspires to achieve high ecological, economic and socio-cultural standards within the boundaries of the environment for all people alive today and for future generations, development that reconciles economic productivity and social security with the long-term conservation of natural livelihoods.

Types of environmental pollution Environmental pollution can be divided into the following categories: (1) Solid, liquid and gaseous contaminants. Environmental chemicals and substances damaging to health and the environment in products and foods may be regarded as a sub-category. (2) Noise, shaking and environmentally-polluting heat and radiation. (3) Destruction of natural life cycles due to changes to landscapes, building and erosion. (4) Over-use of natural resources beyond their ability to regenerate (e.g. overfishing, deforestation). In a broader definition, this term also describes the wasting of nonrenewable resources and primary energy.

UV equipment Ultraviolet radiation (UV) is used to disinfect waste water in systems using rainwater. “Ultraviolet radiation is used to treat water, air and surfaces. UV radiation reliably reduces pathogens and the bacteria count in water being treated to become drinking water. The addition of chemicals is not required.

Water Framework Directive (WFD) The European Community‘s Water Framework Directive became law on 22.12.2000, giving the starting signal for a water protection policy in Europe that will coordinate the management of waters in river catchment areas beyond national and state borders.

Water protection The goal of water protection in Germany is to maintain and restore the good ecological quality of all bodies of water. Bodies of water and their banks and immediate environments are to be maintained or restored so that the symbiotic communities typical of the respective natural areas can develop there.

Waste heat Incidental heat energy generated in chemical, physical or technical processes as a (often unwanted) by-product (co-product).

Waste water As defined in DIN 4046: water serving commercial, industrial, agricultural or similar purposes with various qualities, which can also include drinking water quality. As defined in DIN 1989: water for domestic and commercial applications that do not require drinking water quality. Here: treated rainwater for purposes in which drinking water quality is not required. It can be used for toilet flushing, cooling, washing and cleaning systems or for watering green spaces.