

## Glossary

### A

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| Abrasive    | Causing damage, wear, or removal of surface material by grinding or rubbing.                        |
| Acitic      | Medium with a low pH value.                                                                         |
| ATEX        | ATmosphères EXplosibles                                                                             |
| ATEX zones  | An Atex zone is characterised by an explosive atmosphere.                                           |
| Axial       | Axial definition is - of, relating to, or having the characteristics of an axis.                    |
| Aseptic     | Free from the living germs of disease, fermentation, or putrefaction.                               |
| Appendages  | Something connected or joined to a larger or more important thing.                                  |
| Additives   | A substance added in small amounts to something else to improve, strengthen, or otherwise alter it. |
| API         | American Petrochemical Institute.                                                                   |
| Agriculture | Agriculture is the art and science of cultivating the soil, growing crops and raising livestock.    |
| Aerate      | To expose to the action or circulation of the air, so as to purify.                                 |
| AODD        | Air Operated Double Diaphragm.                                                                      |

### B

|              |                                                                                                            |
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| Bar          | A unit used to measure atmospheric pressure.                                                               |
| Basic        | Medium with a high pH value.                                                                               |
| Bearing      | A machine part in which another part (such as a journal or pin) turns or slides.                           |
| Bitumen      | A petroleum based material, used for binding stones and sands and producing asphalt for road construction. |
| Booster pump | An pump for increasing force, power, pressure, or effectiveness.                                           |

**C**

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| Capacity               | The maximum amount or number that can be received or contained; cubic contents, volume.                                                                                              |
| Carcinogenic chemicals | A carcinogen is defined as any substance or radiation that promotes cancer formation or carcinogenesis.                                                                              |
| Cast Iron              | A commercial alloy of iron, carbon, and silicon that is cast in a mold and is hard, brittle, non malleable, and incapable of being hammer-welded but more easily fusible than steel. |
| Cavitation             | The rapid formation and collapse of vapor pockets in a flowing liquid in regions of very low pressure, a frequent cause of structural damage to propellers, pumps, etc.              |
| Cavity Centric         | A hollow area within the body.                                                                                                                                                       |
| Centrifugal            | Proceeding or acting in a direction away from a center or axis.                                                                                                                      |
| CIP                    | Clean in Place is an industrial method of cleaning transfer lines.                                                                                                                   |
| Compensator            | Adjust or construct so as to offset or counterbalance variations or produce equilibrium.                                                                                             |
| Condensate             | Condensate is water that is returning from a gas state.                                                                                                                              |
| Control room           | A room serving as a central space where a large physical facility or physically dispersed service can be monitored and controlled                                                    |
| Corrosion              | A process in which a solid, esp a metal, is eaten away and changed by a chemical action, as in the oxidation of iron in the presence of water by an electrolytic process.            |

**D**

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| Delta p ( $\Delta P$ ) | Is a mathematical term symbolizing a change ( $\Delta$ ) in pressure (P).                                                           |
| Density                | The density (more precisely, the volumetric mass density; also known as specific mass), of a substance is its mass per unit volume. |
| Diameter               | A straight line segment that passes through the center of a circle or sphere from one side to the other.                            |
| Discharge              | Outlet of the pump.                                                                                                                 |
| Discharge port         | Outlet port of a pump.                                                                                                              |
| Discharge side         | The side of the pump where the outlet of the pump is located.                                                                       |
| Dosing                 | Dosing generally applies to feeding chemicals or medicines when used in small quantities.                                           |

**E**

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| Efficiency        | The overall efficiency of a centrifugal pump is the product of three individual efficiencies—mechanical, volumetric and hydraulic.                                                                                                                                                                                                                        |
| EHEDGE            | European Hygienic Engineering & Design Group.                                                                                                                                                                                                                                                                                                             |
| Ejector           | Ejector - Producing Vacuum, Mixing, Conveying, Distillation, Crystallization. No moving parts, no seals, no shafts, no packing, and no maintenance.                                                                                                                                                                                                       |
| Erosion           | The gradual wearing away of land surface materials, especially rocks, sediments, and soils, by the action of water, wind, or a glacier. Usually erosion also involves the transport of eroded material from one place to another, as from the top of a mountain to an adjacent valley, or from the upstream portion of a river to the downstream portion. |
| Erosion corrosion | Is a degradation of material surface due to mechanical action, often by impinging liquid, abrasion by a slurry, particles suspended in fast flowing liquid or gas, bubbles or droplets, cavitation, etc.                                                                                                                                                  |

**F**

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| Fiber         | Fiber or fibre is a natural or man-made substance that is significantly longer than it is wide.                                                                                                                                                                                                                                                                                   |
| Filter        | A filter is for filtration. A material that has very tiny holes and is used to separate out solid particles contained in a liquid or gas that is passed through it.                                                                                                                                                                                                               |
| Fittings      | A fitting or adapter is used in pipe systems to connect straight sections of pipe or tube, adapt to different sizes or shapes, and for other purposes such as regulating (or measuring) fluid flow.[1] These fittings are used in plumbing to manipulate the conveyance of water, gas, or liquid waste in domestic or commercial environments, within a system of pipes or tubes. |
| Flow          | Flow is a part of fluid mechanics and deals with fluid dynamics. It involves the motion of a fluid subjected to unbalanced forces.                                                                                                                                                                                                                                                |
| Flow rate     | Flow rate is the volume of fluid per unit time flowing from one point through another point.                                                                                                                                                                                                                                                                                      |
| Flow velocity | In physics and engineering, in particular fluid dynamics, the volumetric flow rate (also known as volume flow rate, rate of fluid flow, or volume velocity) is the volume of fluid which passes per unit time; usually it is represented by the symbol $Q$ (sometimes $\dot{V}$ ).                                                                                                |

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| Fluids    | Fluid, any liquid or gas or generally any material that cannot sustain a tangential, or shearing, force when at rest and that undergoes a continuous change in shape when subjected to such a stress. |
| Force     | Force is the strength or energy as an attribute of physical action or movement.                                                                                                                       |
| Frequency | Frequency is measured in hertz (Hz) which is equal to one event per second. The period is the duration of time of one cycle in a repeating event, so the period is the reciprocal of the frequency.   |

## G

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| Gravity flow | In fluid dynamics, a gravity current or density current is a primarily horizontal flow in a gravitational field that is driven by a density difference in a fluid or fluids and is constrained to flow horizontally by, for instance, a ceiling. ... Gravity currents are typically much longer than they are tall. |
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## H

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| Hastelloy C            | Hastelloy C is a nickel-molybdenum-chromium super alloy with an addition of tungsten designed to have excellent corrosion resistance in a wide range of severe environments.                                                                                                   |
| Head                   | The pump head or discharge head of a water pump is a measure of the power of a pump. The greater the pump head, the greater the pressure that the pump can generate. ... Simply stated, a pump's head is the maximum height that the pump can achieve pumping against gravity. |
| Hydraulic              | Operated by the pressure of water or other liquids.                                                                                                                                                                                                                            |
| Hydraulic efficiency   | Hydraulic efficiency ( $\eta_h$ ) is also referred to as "vane efficiency" in the specialist centrifugal pump engineering literature and is the quotient of pump power output (PQ) and vane power (Pvane).                                                                     |
| Hydraulically balanced | Hydraulic balancing is a process that regulates the distribution of fluids, like water or any other liquid, throughout a system.                                                                                                                                               |
| Hertz (Hz)             | The hertz (symbol: Hz) is the derived unit of frequency in the International System of Units (SI) and is defined as one cycle per second.                                                                                                                                      |

## I

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| Immersible | The definition of immersible is something able to be completely underwater without damage. An example of something immersible is a fish tank pump. adjective. Capable of being completely immersed in water without suffering damage. |
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| Impeller   | An impeller or impellor is a rotor used to increase the pressure and flow of a fluid. It is the opposite of a turbine, which extracts energy from, and reduces the pressure of, a flowing fluid. |
| Inlet port | The entry of a tank, pipe or a pump.                                                                                                                                                             |
| In-line    | Suction port and discharge port are positioned in the same line.                                                                                                                                 |
| ISO        | International Organization for Standardization, but also used as an abbreviation for Isometric drawing                                                                                           |

## L

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| Lift          | Lift consists of the sum of all the fluid dynamic forces on a body perpendicular to the direction of the external flow around that body.                                                                           |
| Lime slurry   | Lime slurry is a suspension of calcium hydroxide in water.                                                                                                                                                         |
| Liquids       | A liquid is made up of tiny vibrating particles of matter, such as atoms, held together by intermolecular bonds. (fluid)                                                                                           |
| Low viscosity | The viscosity of a fluid is a measure of its resistance to deformation at a given rate. A fluid with low viscosity flows easily because its molecular makeup results in very little friction when it is in motion. |

## M

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| Mechanical seal | A mechanical seal is simply a method of containing fluid within a vessel (typically pumps, mixers, etc.) where a rotating shaft passes through a stationary housing or occasionally, where the housing rotates around the shaft.                                                                                              |
| Medium          | The nature of the surrounding environment, e.g. solid, liquid, gas, vacuum, or a specific substance such as a solvent.                                                                                                                                                                                                        |
| Membrane        | Membrane is also a diaphragm. A diaphragm is a flexible, relatively thick, quasi-self-supporting partition between two areas or volumes (something like the rubber of an inner tube for a tyre). A membrane is also a partition, but it is relatively thin (something like a plastic film) and typically not self-supporting. |
| Membrane pump   | Diaphragm pumps - also known as membrane pumps - are positive displacements pumps.                                                                                                                                                                                                                                            |
| Motor           | Motors are the most common source of power used by pumping systems.                                                                                                                                                                                                                                                           |

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| Muffler | The muffler is engineered as an acoustic device to reduce the loudness of the sound pressure created by the pump by acoustic quieting. |
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## N

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| NPSH | Net Positive Suction Head. |
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## O

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| Ore | Ore is a naturally occurring solid material from which a metal or valuable mineral can be extracted profitably. |
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## P

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|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P&ID<br>PFD                | P&ID = Process/piping & Instrumentation Diagram.<br>PFD = Process Flow Diagram.                                                                                                                                                                 |
| Particles                  | A Particle is portion, piece, fragment, or amount; a tiny or very small bit.                                                                                                                                                                    |
| PD (Positive Displacement) | A Positive Displacement pump (PD pump) is a mechanical device which displaces a known quantity of liquid for every revolution or cycle that the pump completes.                                                                                 |
| PDA                        | PDA stands for Pump Drive Assembly.                                                                                                                                                                                                             |
| Petrochemical              | A petrochemical is any chemical manufactured from crude oil and natural gas as distinct from fuels and other products.                                                                                                                          |
| Piston                     | Piston and cylinder, in mechanical engineering, sliding cylinder with a closed head (the piston) that is moved reciprocally in a slightly larger cylindrical chamber (the cylinder) by or against pressure of a fluid, as in an engine or pump. |
| Plunger                    | The term plunger comes from the English language and means piston rod or plunger.                                                                                                                                                               |
| Polymer system             | Polymer systems consisting of transferring Nanoparticles, Polymerization, Surfactant Hydrogel, Fibre Reinforced Polymer, Monomers, Resin, Polymer Chain, etc.                                                                                   |
| Power                      | The source of energy used to operate a machine or other system.                                                                                                                                                                                 |
| Pressure                   | The force per unit area that one region of a gas, liquid, or solid exerts on another. Pressure is usually measured in Pascal units, atmospheres, or pounds per square inch.                                                                     |
| Pressure gauge             | A pressure gauge is a fluid intensity measurement device.                                                                                                                                                                                       |

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| Priming        | Pump Priming is the process of removing air from the pump and suction line.                                                                                                                                                                                                                    |
| Procurement    | Procurement is the process of sourcing and purchasing goods and services from an external source, like a third-party vendor or supplier.                                                                                                                                                       |
| Pully          | A pulley redirects and increases the force applied to a load which makes it easier to move.                                                                                                                                                                                                    |
| Pulp           | Pulp is a lignocellulosic fibrous material prepared by chemically or mechanically separating cellulose fibers from wood, fiber crops, waste paper, or rags.                                                                                                                                    |
| Pump           | A pump is a device that moves fluids (liquids or gases), or sometimes slurries, by mechanical action, typically converted from electrical energy into hydraulic energy.                                                                                                                        |
| Pump house     | The casing of the pump is called the pumphouse.                                                                                                                                                                                                                                                |
| Pump principle | The operating principle of the pump is to convert mechanical energy to pressure. In operation, a rotating impeller accelerates a liquid and as the area of the pump casing expands the velocity of the fluid is converted to pressure. As a result pressurized fluid exits the pump discharge. |

## K

|                |                                                                   |
|----------------|-------------------------------------------------------------------|
| Kinetic energy | Kinetic energy is the energy an object has because of its motion. |
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## R

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| Radial flow      | Having the working fluid flowing mainly along the radial of rotation.                                                                                                                                                                                                     |
| Ramp down        | To decrease the speed of a motor.                                                                                                                                                                                                                                         |
| Ramp up          | To increase the speed of a motor.                                                                                                                                                                                                                                         |
| Recycle          | To treat or process (used or waste materials) so as to make them suitable for reuse.                                                                                                                                                                                      |
| Rotational speed | Rotational speed (also known as speed of revolution or rate of rotation), of an object rotating around an axis is the number of turns of the object divided by time, specified as revolutions per minute (rpm), cycles per second (cps), radians per second (rad/s), etc. |
| Rotor            | A rotating part in a machine/motor.                                                                                                                                                                                                                                       |
| Rubber lined     | A product or pump covered with a layer of rubber.                                                                                                                                                                                                                         |

## S

|                  |                                                                                                                                                                                                                                                                                                                                                                            |
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| Sampling pumps   | A pump taking small volumes of the product for the purpose of analysis.                                                                                                                                                                                                                                                                                                    |
| Seal             | A seal is for containment of fluid without leakage.                                                                                                                                                                                                                                                                                                                        |
| Sealfaces        | Parts of a mechanical seal that are working as the seal.                                                                                                                                                                                                                                                                                                                   |
| Syringe          | A medical instrument used to inject fluids into the body or draw them from it. Syringes have several different forms. Bulb syringes are usually made of rubber and work by squeezing the bulb to expel a fluid from it, as in ear irrigation. Needle syringes have hypodermic needles attached to plastic or glass tubes that contain plungers to create force or suction. |
| S.G.             | Specific Gravity, the ratio of the density of any substance to the density of some other substance taken as standard, water being the standard for liquids and solids, and hydrogen or air being the standard for gases.                                                                                                                                                   |
| Shear sensitive  | Shear sensitive liquids change viscosity when under stress or pressure, such as when they are hit by the impeller inside a pump.                                                                                                                                                                                                                                           |
| Shear thickening | Some liquids become more viscous with increased force (called shear thickening or dilatant).                                                                                                                                                                                                                                                                               |
| Shear thinning   | Some liquids become less viscous with increased force (called shear thinning or pseudoplastic),                                                                                                                                                                                                                                                                            |
| Shims            | A shim is a thin and often tapered or wedged piece of material, used to fill small gaps or spaces between objects.                                                                                                                                                                                                                                                         |
| Shroud           | Flow Sleeve / Shroud is used to house the entire pump and must cover the entire length of pump and motor.                                                                                                                                                                                                                                                                  |
| SIP              | Steam in Place - a cleaning method in the hygienic industry.                                                                                                                                                                                                                                                                                                               |
| Sliding vanes    | Vanes that are sliding.                                                                                                                                                                                                                                                                                                                                                    |
| Slurry           | A slurry is a mixture of solids denser than water suspended in liquid, usually water.                                                                                                                                                                                                                                                                                      |
| Specific Gravity | Specific Gravity, the ratio of the density of any substance to the density of some other substance taken as standard, water being the standard for liquids and solids, and hydrogen or air being the standard for gases.                                                                                                                                                   |
| Stationary       | Stationary means “fixed,” “immobile,” or “unchanging.” Stationery refers to paper, matching envelopes, and writing implements.                                                                                                                                                                                                                                             |
| Sterile          | Free from disease-causing microorganisms.                                                                                                                                                                                                                                                                                                                                  |

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| Strainer     | A strainer is a device having holes punched in it or made of crossed wires for separating solid matter from a liquid.                                                                                                                                                                                                                                                              |
| Submersible  | A device that is designed to operate while submerged.                                                                                                                                                                                                                                                                                                                              |
| Suction      | A force acting on a fluid caused by difference in pressure between two regions, tending to make the fluid flow from the region of higher pressure to the region of lower pressure.                                                                                                                                                                                                 |
| Suction port | Inlet port of a pump or compressor.                                                                                                                                                                                                                                                                                                                                                |
| Suction side | Inlet side of a pump or compressor                                                                                                                                                                                                                                                                                                                                                 |
| Surfactants  | A substance that, when dissolved in water, lowers the surface tension of the water and increases the solubility of organic compounds. Surfactants are used in inks to increase the effects of capillary action; detergents are surfactants that help remove organic compounds from a substance by making them dissolve more readily in the water in which the substance is washed. |

## T

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|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tar         | Tar is a dark brown or black viscous liquid of hydrocarbons and free carbon, obtained from a wide variety of organic materials through destructive distillation. |
| Temperature | Temperature is a physical quantity that expresses hot and cold.                                                                                                  |
| Total head  | Total head is the measure of a pump's ability to push fluids through a system.                                                                                   |
| Transfer    | Transfer is moving a fluid or substance from one point to the other.                                                                                             |

## V

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|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vacuüm         | Vacuum, space in which there is no matter or in which the pressure is so low that any particles in the space do not affect any processes being carried on there.                      |
| Valve          | A device for controlling the passage of fluid or air through a pipe line.                                                                                                             |
| Vanes          | Any of a number of blades or plates attached radially to a rotating drum or cylinder, as in a turbine or pump, that move or are moved by a fluid, as steam, water, hot gases, or air. |
| Vapor liquid   | In thermodynamics and chemical engineering, the vapor-liquid equilibrium (VLE) describes the distribution of a chemical species between the vapor phase and a liquid phase.           |
| Vapor pressure | Vapor pressure (or vapour pressure in British English; see spelling differences) or equilibrium vapor pressure is defined as the pressure                                             |

|                     |                                                                                                                                                                                                                        |
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|                     | exerted by a vapor in thermodynamic equilibrium with its condensed phases (solid or liquid) at a given temperature in a closed system.                                                                                 |
| Vapor               | Vapor is a substance in the gas phase at a temperature lower than its critical temperature, which means that the vapor can be condensed to a liquid by increasing the pressure on it without reducing the temperature. |
| Viscosity / Viscous | The viscosity of a fluid is a measure of its resistance to deformation at a given rate. For liquids, it corresponds to the informal concept of "thickness": for example, syrup has a higher viscosity than water.      |
| Volatile Fluid      | A liquid with the tendency to become vapor at specified conditions of temperature and pressure.                                                                                                                        |
| Volume              | The amount of space that a substance or object occupies.                                                                                                                                                               |
| Vortex              | A whirling mass of water or air that sucks everything near it toward its center.                                                                                                                                       |

## W

|                |                                                         |
|----------------|---------------------------------------------------------|
| Waterlike      | Resembling water.                                       |
| Wear           | Damage due to use.                                      |
| Wearing plates | Plates that protect other parts from damage due to use. |