Compressed Air Glossary of Terms

Absorb
A method to trap liquids or gases by causing them to penetrate into the absorbent material.

Activated alumina
An adsorption type desiccant.

Adsorb
A method causing a liquid or gas to condense on the surface only of an adsorbing material.

Air dryer
A device for drying compressed air by means of condensation obtained by over-compression or cooling, absorption, adsorption or a combination of the above methods.

Air flow
The motion of air relative to a body in it.

Ancillary equipment
Components subordinate to the compressor.

Atmospheric dew point
Is the temperature at which water vapor begins to condense at atmospheric pressure. Is the same as dew point, but is related to atmospheric air only.

Bag house
a dust-collection chamber containing numerous permeable fabric filters through which the exhaust gases pass. Finer particulates entrained in the exhaust gas stream are collected in the filters for subsequent treatment/disposal.

Bar
A unit of pressure equal to 0.99 atmospheres or 14.233 psi.

Breathing air
Specialty compressed air treatment meeting OSHA Grade D breathing air requirements.

Bubble
In spray painting applications, air trapped in a paint film caused by poor atomization during spraying.

Capacity
Capacity of a compressor is the full rated volume of flow of gas compressed and delivered at certain set conditions.

CFM
ACRONYM - Cubic feet per minute. An airflow measurement of volume.

Compressed air
Air under pressure greater than that of the atmosphere.

Compressor
A machine that compresses air, gases.

Condensate
the liquid that separates from a vapor during condensation.

Contaminant
Foreign matter carried in the air, gas or fluid to be filtered out. Includes air borne dirt, metallic particles produced by wear of moving parts of the air compressor, rust from metal pipelines.

Control valve
A valve that controls the flow in air lines.

Cubic feet per minute (CFM)
CFM. An airflow measurement of volume.

Cut in - cut out pressure
The settings on a pressure switch used to either load or unload the air compressor on a constant speed application, or start or stop the compressor on a start/stop application. The cut out pressure is also known as the maximum pressure, or the point at which there is no air being delivered. The cut in pressure is referred to as the minimum pressure, or the pressure that the system is allowed to fall to before air volume is required.

Cycle
A single complete operation consisting of progressive phases starting and ending at the neutral position.

Cycle time
Amount of time for a compressor to complete one cycle.

Cylinder
The piston chamber in a compressor or actuator.

Delta P
Describes the pressure drop through a component and is the difference in pressure between two points.

Demand
Flow of air under specific conditions required at a particular point

Desiccant
An adsorption type material used in compressed air dryers. Industry standards are activated alumina, silica gel and molecular sieves.

Desorption
Opposite of absorption or adsorption. In filtration, it relates to the downstream release of particles previously retained by the filter.

Dew point
Of a gas is the temperature at which the vapor in a space (at a given pressure) will start to condense (form dew). Dew point of a gas mixture is the temperature at which the highest boiling point constituent will start to condense.

Filter
A device that removes solid contaminants, such as dirt or metal particles, from a liquid or gas (air is a gas), or that separates one liquid from another, or a liquid from a gas. The term filter describes the complete unit ... housing, filter element, internal by pass.

Filter separator
Filtering unit that separates solids and liquid droplets from gas (air). Widely used in removing oil from a gas or air.

Flow
The volume of a substance passing a point per unit time (e.g., meters per second, gallons per hour, etc.).

Flow control valve
A valve that controls the flow of air that passes through the valve. Used often for retardation or timing circuits, but especially for regulating the piston speed in cylinders.

Flow meter
An instrument for measuring the amount of air flow of a compressor. Measured in CFM.

Flow rate
The rate (in liters or gallons per minute, cubic meters or cubic feet per second, or other quantity per time unit) Air related flows are usually expressed in CFM, SCFM, ACFM, ICFM

Full load
Achieved when the air compressor is running at full RPM with a fully opened inlet and discharge, delivering the maximum volume at the rated pressure.

Gauge
An instrument for measuring, testing, or registering.

Gauge pressure
Is pressure as determined by most instruments and gauges.

Heatless dryer
Heatless reactivated dryer. By means of expanding cold dry air to near atmospheric pressure inside the regeneration tower, the dryer air picks up moisture from the saturated desiccant bed and is then purged to atmosphere.

Horsepower (HP)
Is a unit of work equal to 33,000 foot pounds per minute, 550 foot pounds per second, or 746 Watts.

Humidity

The moisture content of air.

Humidity specific

The weight of water vapor in the air vapor mixture per pound of dry air.

Humidity relative

The relative humidity of a gas (or air) vapor mixture is the ratio of the partial pressure of the vapor to the vapor saturation pressure at the dry bulb temperature of the mixture.

Inlet pressure

Is the total pressure (static plus velocity) at the inlet flange of the compressor.

Inlet temperature

Is the temperature at the inlet flange of the compressor.

Leak air

A crack or hole that accidentally admits a gas or lets it escape.

Maximum operating pressure

The highest operating pressure the system or component is designed to withstand.

Mayonnaise

The oily condensate discharged by lubricated air compressors. The name is derived from the appearance of the condensate. Under normal conditions oily condensate should just be cloudy, like a small amount of milk in a bucket of water. When a lubricated compressor goes wrong, then the condensate becomes thick and sticky. In fact almost identical in appearance to the name it has been given.

Membrane dryer

Reduce dew point by passing compressed air through a bundle of hollow membrane fibers; water vapor and a portion of the compressed air then permeate the membrane walls and vent to atmosphere

Micron

Micrometer or one millionth of a meter; micron is sometimes represented in filtration by the Greek letter µ (mu). A micron is 0.000039". Contaminant particles are measured by micron size and count.

Micron rating

A measurement applied to filters or filter media to indicate the particle size at which suspended solids above that size will be removed.

MLT

Micro Logic Timer specifically designed for SFD dryer systems with two minute cycles (120 seconds) for controlling charge and regeneration drying cycles

Molecular sieves

A solid adsorbent used for drying compressed air.

Molecular theory

All matter consists of molecules which are in constant motion, but which are held together by molecular forces. In a solid the molecules are closely packed and arranged in such a pattern that the influence of the molecular forces is very strong. This gives the solid its consistency and form. Molecular motion consists largely of oscillations around points of equilibrium. In a liquid the molecules are about as close as in a solid, but they are not arranged in a lattice and the cohesive forces are weaker. The molecules are more mobile in relation to each other, whereby the characteristic liquid phase develops; the liquid accommodated itself to the walls of the containing vessel, and its free surface aligns itself horizontally in response to the force of gravity. In a gas, however, the molecules are farther apart, and they move freely about each other since the molecular forces are not as strong. A gas therefore expands through space and mixes with other gasses present. The total volume of the molecules in a gas is very small in relation to the volume of the gas. A gas can therefore be compressed into a small part of its original volume.

Normal air

Is the term used for average atmospheric air at sea level in a temperature zone where it contains some moisture. It is defined in the ASME Test Code For Displacement Compressors as being at 14.696 psiA, 68 °F, 36% RH and weighing 0.075 lb/cu ft. The k value is 1.395.

Oil free compressor

A positive displacement air compressor which has no oil injected into the compression chamber for lubrication, cooling or sealing

Operating pressure

The gauge pressure at which a pressure vessel is maintained in normal operation.

Orifice

An opening such as a hole or vent. An opening through which air can pass, or a restricted opening placed in a pipe line to provide a means of controlling or measuring flow

Piston displacement

Net volume actually displaced by the compressor piston at rated machine speed, generally expressed in cubic feet per minute (usually CFM). For multistage compressors, the piston displacement of the first stage only is commonly stated as that of the entire machine.

Pneumatic

Of, relating to, or using air. Moved by air pressure. Filled with compressed air.

Pneumatics

Engineering science pertaining to gaseous pressure and flow.

Pneumatic tools

Tools that operate by air pressure

Point of use

A single outlet or limited number of outlets in a building used to connect tools or equipment to the air system.

Positive displacement compressors

Compressors in which successive volumes of air or gas are confined within a closed space, and compressed. They may be either reciprocating or rotating. (Trap air and then squeeze it to the desired pressure).

Pounds per square inch

PSI - Pounds per square inch.

Pressure

Force per unit area, usually expressed in pounds per square inch (PSI) or BAR.

Pressure dew point

Is the temperature at which moisture begins to condense in a compressed air system.

PSI

Pounds per square inch.

PSIG

Pounds per square inch, gauge. Pressure indicated by a pressure gauge.

Purge air

The portion of dry, full line pressure, compressed air taken from the drying side tower of a dual tower desiccant dryer system. Expanded to a very low pressure and passed across the wet desiccant to strip the moisture in the desiccant of the regenerating tower. In the case of an external blower type dryer, the purge air is atmospheric air compressed by a blower and heated by an external heater to strip moisture off a wet desiccant bed.

Quick coupler

A coupling device which consists of a spring loaded shutoff valve and a positive locking mechanism. It is used to connect tools, hoses and other accessories. Also known as Quick Disconnect.

Safety relief valve

An automatic pressure relieving device actuated by the static pressure upstream of the device, which opens in proportion to the increase in pressure over the opening pressure.

Saturated air vapor mixture

Is one in which the space occupied by the mixture is saturated with water vapor at the mixture temperature.

Saturated vapor pressure

Is the pressure existing at a given temperature in a closed vessel containing a liquid and the vapor from that liquid after equilibrium conditions have been reached. It is dependent only on temperature and must be determined experimentally.

Saturation

Occurs when the vapor is at the dew point or saturation temperature corresponding to its partial pressure. A gas in never saturated with a vapor. However, the space occupied jointly by the gas and vapor may be saturated.

SCFM

Standard cubic feet per minute., SCFM or scfm. Flow of free air measured at some reference point and converted to a standard set of reference conditions (e.g., 14.4 psia, 80° F, and 60% relative humidity.) Scfm means cfm at standard conditions. However, *standards* vary and some care is necessary. In the United states, the *usual* standard is 14.696 psiA and 60°F. Some chemical engineers will use one ATA and 0°C, but usually will be specific about the reference point. Europeans normally use one ATA and 0°C. It is not the same to all people, therefore it is best that the reference pressure and temperature be definitely specified.

Screw compressor

Is a positive displacement rotary compressor.

SCUBA

Self Contained Underwater Breathing Apparatus

Single stage compressors

Machines in which air or gas is compressed in each cylinder or casing from initial intake pressure to final discharge pressure

Silica gel

A desiccant most commonly used in heat regenerative type dryers.

Standard air

Air at a temperature of 68 °F, a pressure of 14.70 psia and a relative humidity of 36 per cent (0.0750 density) (as per A.S.M.E. however in the gas industry the temperature of standard air is usually given as 60 °F. (*Unless specifically stated otherwise*)

Temperature discharge

Is the temperature existing at the discharge port of the compressor.

Temperature inlet

Is the temperature at the inlet flange of the compressor

Temperature intake

The total temperature at the intake flange of the compressor.

Two stage compressor

Machines in which air or gas is compressed from initial pressure to an intermediate pressure in one or more cylinders or casings.

Unload

The air compressor continues to run, usually at full RPM, but no air is delivered because the inlet is either closed off or modified, not allowing inlet air to be trapped.

Unloaded horsepower

The power that is consumed to overcome the frictional losses when operating in an unloaded condition.

Venturi

A tube with a narrow throat (a constriction) that increases the velocity and lowers the pressure of the liquid passing through it, creating a partial vacuum immediately after the constriction in the tube. The vacuum created has a sucking effect, and a venturi is commonly used to introduce a liquid (such as a regenerant) or gas (such as air) into a flowing water stream.

Volumetric efficiency

The ratio and percent of the actual delivered capacity (measured at inlet temperature, pressure and gas composition) to the piston displacement.

Web Link:

http://www.pneumatic-source.com/resources/glossary/a.shtml