



**1 COMPRESSOR**

The basic working principle of an air compressor is to compress atmospheric air, which is then used as per the requirements. In the process, atmospheric air is drawn in through an intake valve; more and more air is pulled inside a limited space mechanically by means of piston, impeller, or vane.

Since the amount of pulled atmospheric air is increased in the receiver or storage tank, volume is reduced and pressure is raised automatically. In simpler terms, free or atmospheric air is compressed after reducing its volume and at the same time, increasing its pressure.

There are three major types, namely, reciprocating, rotary, and centrifugal compressor.

**2 CYCLONE CONDENSATE SEPARATOR**

Cyclone condensate separators use centrifugal motion to force liquid water out of compressed air. The spinning causes the condensate to join together on the centrifugal separators walls. When the condensate gains enough mass it falls to the bottom of the separators bowl where it pools in the sump until it is flushed out of the system by the automatic float drain valve.

They are installed following aftercoolers to remove the condensed moisture.

**3 PRESSURE VESSEL**

Pressure vessel plays very important role in compressed air system:

- Damping pulsations caused by reciprocating compressors,
- Providing a location for free water and lubricant to settle from the compressed air stream,
- Supplying peak demands from stored air without needing to run an extra compressor,
- Reducing load/unload or start/stop cycle frequencies to help screw compressors run more efficiently and reduce motor starts,
- Slowing system pressure changes to allow better compressor control and more stable system pressures.

**4 COMPRESSED AIR DRYER**

Compressed air leaving the compressor aftercooler and moisture separator is normally warmer than the ambient air and fully saturated with moisture. As the air cools, the moisture will condense in the compressed air lines. Excessive entrained moisture can result in undesired pipe corrosion and contamination at point of end use.

For this reason some sort of air dryer is normally required. Some end use applications require very dry air, such as compressed air distribution systems where pipes are exposed to winter conditions. Drying the air to dew points below ambient conditions is necessary to prevent ice buildup.

**5 CONDENSATE DRAIN**

Drains are needed at all separators, filters, dryers and receivers in order to remove the liquid condensate from the compressed air system.

Failed drains can allow slugs of moisture to flow downstream, that can overload the air dryer and foul end use equipment.

**6 FILTER**

Compressed air filters are used for high efficient removal of solid particles, water, oil aerosols, hydrocarbons, odour and vapours from compressed air systems.

To meet the required compressed air quality, appropriate filter element must be installed into filter housing.

**8 OIL/WATER SEPARATOR**

Local environmental laws and regulations state that condensate drained from compressed air systems cannot be returned to the sewage system due to the content of compressor lubricating oil.

Water/oil separators are one of the most effective and economical solution. Multistage separation process using oleophilic filters and activated carbon, ensures exceptional performance and trouble free operation.

**9 NITROGEN GENERATORS**

The nitrogen generators extract the available nitrogen in the ambient air from the other gases by applying the Pressure Swing Adsorption (PSA) technology. During the PSA process compressed, cleaned ambient air is led to a molecular sieve bed, which allows the nitrogen to pass through as a product gas, but adsorbs other gases.

The sieve releases the adsorbed gases to the atmosphere, when the outlet valve is closed and the bed pressure returns to ambient pressure. Subsequently the bed will be purged with nitrogen before fresh compressed air will enter for a new production cycle.

In order to guarantee a constant product flow, the nitrogen generators use modules of two molecular sieve beds, which alternatively switch between the adsorption and the regeneration phase.

Under normal operating conditions and with correct maintenance the molecular sieve beds will have an almost indefinite lifetime.

**10 BOOSTER COMPRESSOR**

If you require compressed air or gas at any pressure between 13 or 350 bar, a high pressure booster compressor is used. It is a piston-style compressor using standard feed pressure from a compressed air system, and increases it to the desired pressure for storage in high-pressure receivers.

**11 MANPACK STORAGE**

A manpack is simply a collection of smaller gas cylinders for storage of high pressure gasses or liquids. They are a G size bottle and can be supplied in packs of 12 or 15 bottles.