

Removing Water From Compressed Air

Air contains water, and the volume of water varies based on temperature & pressure. A compressor draws in air and compresses it to about 12 times normal atmospheric pressure. As pressure increases, water vapor condenses into a liquid. It is essential to remove excess moisture from your compressed air system year-round to avoid problems. In the summer months, hot & humid air results in the production of water and in the winter months, cold temperatures reduce evaporation efficiency, allowing moisture to accumulate over time even in low humidity.



Water can create corrosion, creating rust. Rust particulates can damage equipment and foul production processes. If painting, water can cause negative visual and texture effects within the finish. Water is also a real nuisance in sand blasting, pneumatic tools, CNC machining, robotics, air cylinders and valve operation.

Removing water can be done in stages using different components throughout the compressed air system. Hot, compressed air enters the receiver tank, keeping water in its' vapor state.

While stored in the tank the air cools, allowing water vapor to condense into a liquid.

◆ Auto Drains

Auto drains automatically open to release excess liquid on a regular schedule. Draining the tank will not remove water held as vapor in the air, but it will prevent excess liquid from building up within the tank.

◆ Water Separator Filters

Water separator filters remove large amounts of moisture from the air supply with centrifugal force. Typically, a water separator filter will remove between 40 – 60% of the water from the air. Depending on the application, this may or may not be dry enough.

◆ Refrigerated Dryers

Refrigerated dryers chill the air, much like an air conditioning system. Colder air holds less moisture than warmer air. Air is chilled to roughly 33-40°F. As the air cools, excess water vapor condenses back into a liquid. The liquid collects in a water trap and is removed through an automatic drain valve. Compressed air that is dried by this method has a reduced dew point (the temperature at which condensation forms).

◆ Desiccant Dryers

Desiccant dryers are used for applications that require very dry compressed air. They remove water from air through a chemical process. Desiccant is a solid that reacts chemically with water to form a bond. Desiccant dryers are necessary for processes that require ultra-dry air.

There is no one-size-fits-all solution for moisture removal from compressed air.

The right solution depends on usage and the environmental conditions in which the system is installed. Applications such as painting, printing & some kinds of air-powered instruments are extremely sensitive to moisture. For these applications, you may need a multi-stage solution that removes as much moisture as possible. For other applications, the moisture content may not be as critical.

Simply draining excess water from the receiver tank and lines may be sufficient.

Contact Beacon Equipment For More Information!

