Condensate Drains - Air or Water?

Many companies experience water in their compressed air lines, especially this time of year. To some it is to be expected and considered a nuisance of compressed air. Most however, do not realize how much water can be generated when air is compressed. For an example, let's assume you operate a 100 HP compressor and discharge the air at 100 PSIG. On any given day in the south the site conditions may be 90 degrees and 70% relative humidity. If a compressor is producing 500 cfm with the above conditions it will produce over 30 gallons of water in 8 hours. Without properly sized clean-up equipment, this may be very detrimental to process applications. Clean-up equipment consists of filters, air dryers, and condensate drains. The focus of this article will be on the drain and how they operate.

Drains should be located on most filters, receiver tanks, dryers, moisture separators and other low points in the system. By using automatic condensate drains you can be assured of consistent condensate removal. There are many styles and types of drains from nearly all compressed air equipment manufactures. Which is right for your application?

The float drain or as some refer to it as the "football drain" have been around for many years. With proper maintenance this style of drain is affective. The float drain will not require electrical power or a pneumatic actuation source. This drain has a low up front cost, but may be susceptible to pipeline debris which may lessen the effectiveness of this style of condensate drain.

A solenoid valve with a timer is another popular style of drain. This drain uses a timer that controls the on time as well as the time between cycles. The timer drain is fairly good at what it does with the occasional debris problem that may cause the drain not to seat. From the cost side, these drains are low cost but may have a higher operating expense. The solenoid valve actuates based on a timer regardless of condensate load. During periods of high temperature and humidity, condensate may not be fully discharged from the compressed air piping. The opposite is also true during dryer conditions; the drain will discharge valuable compressed air from the drain port. Because of the varying conditions, this style of drain has a high life cycle operating cost.

The last drain discussed is the "No Loss/Waste" or "Demand Drain". These drains actuate on demand from the level of water in the drain. Because this style of drain only operates when needed and does not waste any compressed air, their operating cost is very low. The demand drain comes in many shapes and sizes, but functionally they do the same thing. Some use magnets, floats, electro- resistance, and/or any combination of the above. The net result is a drain that is reliable and cost affective. While these drains have a higher purchase price, their net operating cost will be less. While "air" is free, "compressed air" is very expensive and justifiably should be conserved when possible.

Remember, if you have proper clean-up equipment and still have water problems, check your condensate drains for proper operation.

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