

The Cost of Trapped Pipeline Air: continued

Air/Vapor Lock:

One of the most frustrating and sometimes hard-to-identify problems within the liquid pipeline system is air/vapor lock. This phenomenon occurs when a large air pocket is present in the pipeline. The liquid pressure produced by the pump will compress the air pocket, but if the pressure required to compress both the air and move the weight of the liquid in the system is greater than the pump's capacity, no flow will occur.

Water Hammer and Line Surges:

Air pockets can also create liquid flow and velocity changes within pipelines. If the pump pressure is adequate, the compressed air pocket will release, creating a sudden and rapid increase in line surges, pressure spikes and flow reversals. These are the destructive water-hammer/shock effects that over time, damage pumps, fittings, joints, and valves. If not eliminated, air in your system will increase head pressure, extend pumping cycles, increase operating expenses and eventually damage equipment.

How to Eliminate Pipeline System Air:

Sometimes air is removed from pipelines with a manual vent during startup but this method does not provide the continual air release needed during operation. The air pockets will eventually migrate to high points within an operating pipeline system. Air valves should be placed at these points to vent accumulated air and admit air to prevent vacuum conditions and/or air related surges. The three basic types of air valves that can be used include:

- Air Release Valve
- Air/Vacuum Valve
- Combination Air Valve

The Air Release Valve has a float and linkage mechanism that senses and releases air under pressure but it is usually limited to the amount of air it can admit and exhaust. Pipelines equipped with this type of valve usually require additional air release. This can be accomplished by using Air/Vacuum Valves.

The Air/Vacuum Valve exhausts air during pipeline filling/start-up via a float that rises with liquid level. In addition, if a pressure loss or vacuum condition occurs, the float will drop and air will be admitted into the pipeline. This float can also be used to aid pipeline draining but under normal operation, this float is held closed by pipeline pressure and will not relieve trapped air.

The Combination Air Valve combines the function of both the Air Release and the Air/Vacuum valve. We recommend using this air valve because it contains an air release orifice and a vacuum port in one assembly and, unlike the other valves, it can be used at high points and at any point in the pipeline system, providing added air release and protection. On smaller units, the float and release mechanism is designed as one compact assembly. On larger units, a dual-body design, consisting of an air release valve piped into an air vacuum valve is used. This dual-body design provides the convenience of isolating one valve for maintenance while the other valve continues to operate and it gives designers the freedom to specify different size valves to accommodate almost any size application.

In Review:

If you operate a liquid pipeline system with improper or no air release protection, trapped air is robbing system efficiency and increasing operating expenses. Without preventative measures, the affects of accumulated air can damage your system. If you are experiencing or suspect low system efficiency, air/vacuum lock, line surges, low flow or have equipment problems, we can help. Call EPG and ask for a pump system specialist.

EPG People...

"Good morning, EPG Companies," greets Sarah as she faithfully starts another day as EPG's receptionist. Not only does Sarah Iverson promptly direct each call to its appropriate destination, but she also compliments the office staff with her ability to competently provide O&M, filing, invoicing and job status support.

Sarah has been with us for over two years. She has enjoyed serving in the variety of busy tasks assigned to her and she is always happy with the opportunity to learn new office and computer related support services.

So when you call EPG Companies, say "Hi" to Sarah and let her know that she is greatly appreciated for all her diligent service.

In her free time, Sarah enjoys reading, quilting, camping and just spending time with her husband.



Sarah Iverson