JCS Industries Inc.

A Model For Vacuum Feed Monitoring

Chemicals are among the greatest allies that drinking water and wastewater treatment operations have in the fight against contaminants. But these operations are dependent on the proper technology to administer just the right amount of chemicals at just the right time, ensuring that effluent is neither under- nor overdosed.

Operations rely on chemical feeding systems to achieve the correct balance. To discuss the importance of such devices, as well as avoiding common chemical feed pitfalls, Water Online turned to JCS Industries, Inc. We covered liquid and gas injection, saving time and money through proper observation, the importance of vacuum conditions, and the technology provider's Model 4220 vacuum monitor.

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Why is chemical feeding such a vital aspect of water and wastewater operations?

Chemical treatment is important because it destroys harmful substances and pathogenic organisms making water safe for human consumption. Residuals in the water are also closely monitored by the federal government to make sure it is safe for human consumption, and if the chemical feed system were to fail, hefty fines would be soon to follow.

What types of operations or processes call for vacuum feed conditions?

Vacuum has been used to feed chemicals ever since the very first remote vacuum gas chlorinators were put into service. Today, both liquids and gases are injected into water and wastewater systems utilizing vacuum feed. JCS Industries provides solutions for both applications.

Why is it optimal to feed chemicals under vacuum conditions for these operations?

It is safer to feed aqueous and gaseous chemicals under a vacuum as opposed to using positive displacement or pressure devices. If, for any reason, there is a leak or blockage, the vacuum chemical feed system will cease to pull chemicals, minimizing exposure to the sometimes-deadly releases.

What can cause unwanted or unexpected changes to vacuum conditions?

Changes in vacuum conditions can come from many different sources, for example, a loss in system water pressure, an obstruction in the motive water, valve failure, or interruption of the chemical supply.

Why is it critical to monitor vacuum conditions? What can go wrong if these conditions are not supervised?

Under normal vacuum conditions, a vacuum feed system should work without issue, but when the conditions begin to

fluctuate, problems can occur. If the total vacuum of the system increases or decreases too far from normal, then the system may not be able to feed chemicals, thus undertreating the water.

How does the Model 4220 alert operators to issues with vacuum conditions?

The Model 4220 produces an audible alarm if the vacuum strays outside of the desired range. The Model 4220 also sends out a vacuum fault message to the autodialer or programmable logic controller (PLC) if present. The Model 4220 also has built-in circuitry that inhibits the alarm while the unit is in standby mode and allows for alarm delay when the unit is placed into service. These two functions eliminate most nuisance alarms that are common in many similar vacuum monitors.

How can awareness through a monitor like the Model 4220 ultimately save an operation time and/or money?

The Model 4220 can help diagnose issues with the chemical feed system by alerting the operations personnel of an impending issue, so it can be addressed before the process is affected. It can also be used as a diagnosing aid that will save time and resources when trying to determine where the failure occurs in a system.

How can the Model 4220 help in event of total system failures? Why is this so important?

The Model 4220 helps to establish whether the issue lies in the chemical system or a larger plant-wide issue, drastically minimizing the time and materials needed to diagnose an issue in a chemical feed system with many points of failure. ■