

How Multi-Cell Pressure Filters Can Provide Big Benefits In The Right Places

The ability to treat drinking water both efficiently and to the highest standards is a necessity for municipal water utilities. In some instances, however, the backwash requirement of traditional pressure filter systems is more onerous than it needs to be.

These systems occupy a significant amount of space — with either a dedicated water line or storage tank for the backwash water supply — as well as a pump and controls, which also contribute to the maintenance burden. By comparison, the multi-cell pressure filter design is highly efficient because it generates its own backwash water source from the other operating cells.

By eliminating the need for storage, pumps, and controls, the multi-cell pressure filter has a smaller footprint and is inherently low maintenance while highly reliable. For municipalities that treat more than 500 gpm, these systems may provide an economic advantage that should be considered.

Behind The Technology

Here's how multi-cell pressure filters work: When backwashing occurs in a cell, the flow coming into the filter continues while the outgoing flow is stopped. This water, which has already been treated through the cells in service, is used to backwash the out-of-service cell. Once backwashing is complete, forward flow restarts. These systems can be an all-encompassing treatment solution or part of a larger treatment train, depending on the circumstances.



Courtesy of Loprest

They are most useful to remove iron and manganese, as well as arsenic in some cases, and to remove turbidity. There are a substantial number of places where these issues are the primary concern in source water coming from wells. In those cases, multi-cell pressure filters can be a stand-alone solution. Where there are additional quality issues, they can be used in conjunction with other treatment solutions.

Municipal drinking water systems that are treating 500 gpm or more will find multi-cell pressure filters the most economical. Generally, with systems treating more than 3,000 gpm, multiple multi-cell pressure filters are split into parallel trains. In certain situations, using them

as a replacement for traditional filters can provide additional capacity within the same footprint. For urban areas and other locations that are landlocked, this is a significant opportunity that should be examined to see if it applies. The only downside is that the technology doesn't scale down well for smaller systems, less than 500 gpm.

Loprest — which has been building water equipment for more than 90 years and is now a division of WRT — offers several versions of the multi-cell pressure filter that are widely used across the country.

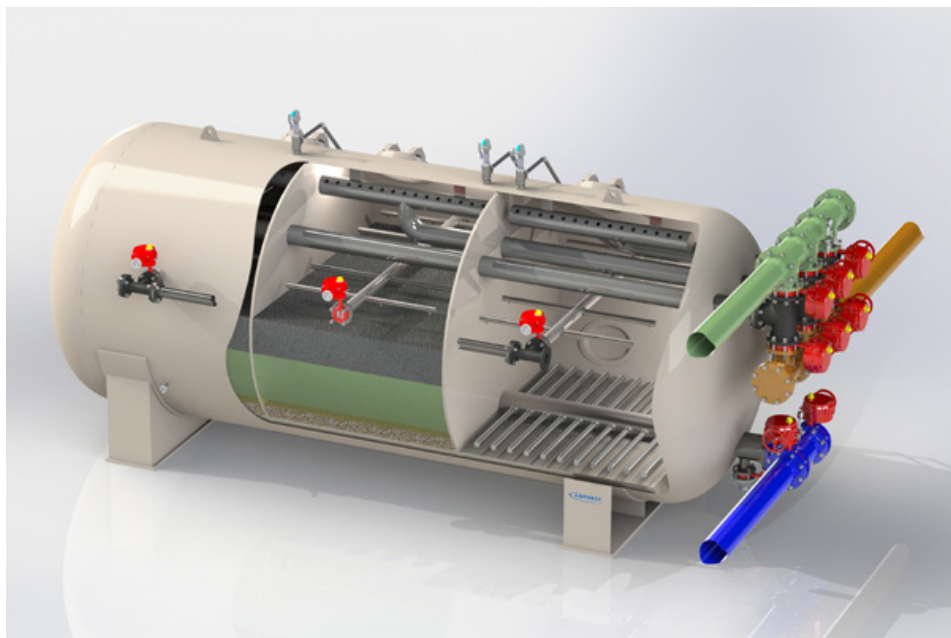
Filter backwash volumes and backwash time can be reduced even further with the optional Loprest Syncro-Cleanse design,

which serves as a combined air/water backwash. This “air scour” performs media cleaning at an even, efficient rate, allowing for less bed expansion while still providing the necessary agitation for solids release.

Critical Evaluation Points

When comparing different multi-cell pressure filters, the design of the internal parts is a critical consideration. A common misconception is that selecting equipment with plastic internals at a lower cost doesn't come with significant risk. In reality, the systems with stainless steel parts may be slightly more expensive to purchase but offer lower total lifecycle costs.

This is because the underdrain system lies within the media bed and is difficult and time consuming to access. Stainless steel is stronger and more robust, making it more resistant to damage and less likely to need repair. If a break in the underdrain does occur, media can escape from the filter into the finished water, so it becomes an urgent issue and must be immediately taken offline.



Courtesy of Loprest

The Loprest multi-cell pressure filter, which features stainless steel internals, has been installed across the country, including places like Los Angeles, CA; San Angelo, TX; and Scottsdale, AZ.

Multi-cell pressure filters have distinct advantages in many water treatment situations. The key is to understand which situations are a good fit for the solution, and then selecting the optimal design. ■