

The Amway Grand Plaza is a 29-story, 4-star, 4-diamond luxury hotel located on the Grand River waterfront in Grand Rapids, Mich. Guests are treated to an elegant Beaux Arts atmosphere straight out of the 1920s, when the hotel was named one of the 10 finest in America.

But the experience can be compromised when old water mains discharge years' worth of sediment into the hotel's water supply.

Like most major metropolitan cities, Grand Rapids has an aging water distribution infrastructure. Sediment, rust and other contaminants have built up in the 150-year-old water system. Typically, fire protection activity or any work on the city's potable water system causes high-flow velocities within the underground street piping systems, agitating settled debris. Ultimately, that sediment entered the building's water supply, which affected the operation of all types of mechanical equipment and made guests wary of the hotel's water quality.



The Amway Grand Plaza faced a water challenge.

At times, the condition of the potable water supply was so poor that the hotel was unable to rent out rooms and had to reimburse guests for the inconvenience.

The hotel management decided to seek a solution. Efrain Melendez, the hotel's physical plant manager, contacted The Macomb Group Merit Team Leader, Mike Boyd (mboyd@macombgroup.com), to find a filtration technology that would be effective and efficient without placing new demands on his maintenance staff.

The Solution

After discussion and checking references with colleagues at hotels that faced similar challenges, Melendez selected an automatic, self-cleaning strainer.

The filter was outfitted with a 10-micron, 316L stainless steel permanent screen and installed in the main mechanical room of the building at the point of entry of the city water supply. Compact and virtually maintenance-free, the unit was effective at filtering out suspended particles as they entered the building, even during periods of extremely high turbidity.



The installed filter is "green technology."

Constructed from NSF materials, the filter is "green" technology, with a minimal footprint, low energy demand and minimal water use—less than 0.5% of the total flow is needed for back flushing the system. That reduces the system's water footprint, just as the filter's compact size reduces its physical footprint. Wastewater generated by the cleaning technology is cut in half compared to older scanner-cleaning technology, saving both water and sewer disposal costs.

And unlike cartridge filters, there are no cartridges to replace and discard, minimizing labor demands and eliminating the cost of consumables.

In addition to the screen element, the filter contains a high-efficiency (HE) cleaning mechanism, consisting of a specially designed suction scanner. HE-focused backflush technology takes advantage of simple physics for cleaning.

When a set pressure differential is reached between the two sides of the screen (typically 7 psi), an outlet valve connected to the suction scanner opens. Water and filter cake are pulled through the suction scanning nozzles at a velocity of 50 ft per second by the pressure differential between operating and atmospheric pressure. The scanner operates in a spiral pattern, ensuring that the suction nozzles clean the entire screen in a 20-second backflush cycle. The process takes place without interrupting the operation of the filter.

The cleaning nozzle and screen media are designed to allow impingement between the two surfaces during the cleaning process. The nozzle automatically adjusts itself along the screen surface to compensate for any irregularities, minimizing tangential flow and maximizing the cleaning process at the nozzle orifice.

Results : Within a month of selecting the system, the filter was onsite, installed and commissioned. Melendez is enthusiastic about the system. "Finally," he said, "a product that really works as stated by the manufacturer." The simplicity of design, cleaning efficiency and reliability based on just a few moving parts keep the system virtually maintenance-free. In addition, clean water reduces maintenance and parts replacement in the building's other mechanical systems.

Clear water allows guests at the Amway Grand Plaza Hotel to focus their attention on the breathtaking ambience of this classic hotel instead of on their water glasses.