

Prioritizing Risk and Quality When Evaluating Membrane Replacement Options

Situation analysis

As municipal water treatment facilities look to reduce costs, the temptation to replace membranes with lower-cost modules has grown, particularly as plants receive a free trial offer. While alternative membrane solutions vary in price, they also vary widely in quality—a lesson numerous municipalities have learned the hard way upon beginning a trial.

Customer perspectives

Two Aria Filtra™ customers detail their experiences with alternative membrane modules and expand on the significance of high-quality, reliable membranes.

Murfreesboro water resources department, Tennessee



“We swapped out one train of [Aria Filtra’s] membranes to test if similar solutions offered comparable performance for a lower cost. Upon startup, 15 of 46 replacement modules could not pass an integrity test and needed to be replaced 30 days into the trial. Seven months into testing, the membranes experienced significant drops in permeability while flux rates fell within hours of cleaning. Following the continued decline of these membranes, there was an obvious difference regarding quality and performance. As a result, we quickly reinstalled [Aria Filtra’s] proven membranes.”

Alan Cranford, manager, Stones River Water Treatment Plant (20 million gallons per day [mgd])



Marco island utilities, Florida



“Intrigued by a lower-cost alternative membrane, we replaced one of our four [Aria Filtra] racks with membranes from a different supplier. After initial installation challenges, the new membranes experienced significant leakage, some even required immediate pinning. In a head-to-head comparison, the quality of [Aria Filtra’s] membranes is apparent.”

Scott Henriksson, chief operator, North Water Treatment Plant (6.5 mgd)

Claims of direct retrofit can be misleading and the need to customize the original rack design is most often required. Although alternative modules may be shipped with an adaptor kit, the fit-up can be very difficult and time consuming. In one case, the alternative membranes took up to 6 weeks to install and commission for a single 56-module rack. Site glasses provided by some alternative membrane suppliers, intended to aid in the detection of fiber breakage, can be opaque and too narrow to identify bubbling during the integrity testing.

Mitigating risk when evaluating membrane replacement

While membrane suppliers may claim to provide an intriguing, cost-effective alternative to Aria Filtra hollow-fiber modules, it is important to note that not all hollow fibers are created equal. Even if the membranes are made from the same material, have a similar manufacturing process, and are an identical shape, the physical characteristics, durability, and chemical resistance can be drastically different. Replica membranes, despite their low capital costs, pose significant risks as performance, service, and accountability are sacrificed in pursuit of a low initial price. Alternative membranes may even be more expensive in the long run if maintenance (installation and repairs), power, and chemical costs—as well as plant downtime—are factored into the equation.

The major differences between replica membranes and those of Aria Filtra are quality and performance. Each Aria Filtra module must pass extensive quality control checks and is 100% certified at the factory. The polyvinylidene fluoride (PVDF) hollow fibers are manufactured using a thermally induced phase separation (TIPS) process that imparts a higher level of strength, durability, and chemical resistance as compared to many alternative hollow-fiber membranes that are made by a different process and rely on a thin PVDF membrane layer.

Aria Filtra’s modules have also demonstrated advantages over replica products that utilize different TIPS-manufactured fibers. The strength of Aria Filtra’s membrane is evident, as the company can provide up to a 7-year absolute warranty, with typical specification-driven warranties of 10-years prorated and backed by an brand with a 30-year history in water treatment. Given the extended 10- to 15-year lifetime of Aria Filtra’s modules, and the fact that the product has one of the lowest rates of fiber breakage in the industry, the membranes deliver high return on investment. With Aria Filtra membranes at the heart of the filtration system, there is no need for the municipality to dedicate resources to fiber-break maintenance or wait multiple days or weeks for service or replacement materials. Aria Filtra is there 24/7 to answer calls, whether it is a critical issue or reassurance that the plant is operating to specification.

Beyond membrane quality, service and support from a membrane supplier is paramount should water treatment plants run into any issues with their process or membranes. Aria Filtra has 24/7 customer support and more than 50 field service and process engineers, with many located in the region of its installed base to ensure rapid response. Combined with the team's deep technical expertise, Aria Filtra maintains an extensive inventory of membranes and spare parts to guarantee that modules and components ship within three days to limit downtime.

The riskiest gamble of all comes at the cost of liability. Aria Filtra's track record of membrane reliability is exceptional, resulting in high confidence that the product will provide safe drinking water. Should the replica modules fail—causing a boil water notice, or worse—do municipalities have the assurance that their membrane supplier can stand behind their product? With deep industry expertise, the Aria Filtra team can quickly mobilize to solve customers' water challenges.

John Wunner, water plant superintendent at the Hendersonville Utility District in Tennessee (10 mgd), expands on the performance and quality of Aria Filtra membranes: "Our number-one priority is to protect public health, and because of [Aria Filtra's] membranes, we are able to provide our community with the best and safest water. From pilot to performance, [Aria Filtra] has provided superior technology, support, and customer service—standing head and shoulders above other membrane systems we researched. From the very beginning on August 26, 2014, [Aria Filtra's] membranes have exceeded our high expectations. We can't imagine ever using another membrane provider."

As municipalities evaluate a variety of membrane replacement options, risk—not just cost—must be a determining factor. With the assurances of a trusted brand and proven membrane, Aria Filtra is the only choice when it comes to drinking water safety and risk mitigation.



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