TOTAL FILTRATION SERVICES

Delivering Reverse Osmosis Reliability for a Nuclear Power Plant

Customer Case Study

PROFILE

One of the largest nuclear power facilities in the United States is located in the Southwest, where it supplies over one-third of Arizona's electricity. Because the plant is not situated near a major body of water, it relies on reclaimed wastewater for cooling, making its filtration systems especially critical. For more than five years, the facility has trusted Total Filtration Services (TFS) to provide specialized reverse osmosis membranes and pre-filtration products designed to support this unique application. Over time, the partnership has expanded beyond product supply, with TFS delivering technical expertise and supply chain support to help maintain safe and reliable operations.

CHALLENGE

For this power plant, reliability is non-negotiable. Its cooling towers rely on wastewater treated through specialized cellulose acetate reverse osmosis (RO) membranes—a design choice that allows the system to tolerate chlorine, but also limits sourcing to a small pool of manufacturers.

That dependence introduced two persistent issues. First, product performance was not always consistent. Some shipments of membranes fell at or below the required 7,000 gallons per day (GPD) flow rate, raising concerns about whether cooling capacity could keep pace with reactor demand. Second, global supply chain pressures created long and uncertain lead times. Because the plant operates four parallel lines with 60 membranes each, even a small disruption could create risk for a facility supplying more than one-third of Arizona's power.

The customer needed more than a supplier—they needed a partner who could safeguard quality and keep critical deliveries on track.

THE TFS SOLUTION

TFS stepped in as both technical advocate and supply chain manager, working to protect the customer's operations on multiple fronts.

On the technical side, TFS analyzed manufacturer test reports to confirm that every membrane met performance specifications. When units fell short, the team escalated concerns, secured replacements, and worked directly with plant engineers to troubleshoot flow variations. By tracking serial numbers and reviewing test data, TFS gave the customer confidence that each order would perform as required.

At the same time, TFS addressed supply chain challenges by staying in constant communication with the manufacturer, securing partial shipments when full orders were delayed, and coordinating deliveries to match the plant's maintenance windows. Beyond the membranes themselves, TFS also supplied pre-filters and adapters, ensuring the facility had the complete range of filtration components needed for smooth operation.

In short, TFS provided more than product—it delivered assurance, keeping a complex system running without disruption.

RESULTS

This partnership allowed the plant to maintain safe and reliable cooling operations, avoiding risks that could have disrupted electricity for millions of Arizona residents and businesses. Through proactive engagement, TFS delivered:

- **Operational Continuity:** Critical cooling systems remained online, supporting uninterrupted power generation.
- **Cost Avoidance:** Replacement membranes were secured at no cost when performance fell below spec.
- **Improved Reliability:** Close oversight reduced quality concerns and reinforced confidence in future orders.
- **Stronger Partnership:** Engineers gained a trusted ally who understood their application and spoke the language of both manufacturer and plant operations.

Ultimately, TFS proved the value of a partner who goes beyond distribution. By combining technical expertise with responsive service, TFS helped one of the nation's largest nuclear power plants operate at full strength—providing consistent electricity to more than a third of Arizona.