



ZwitterCo



Zwitter



# Elevation

With ZwitterShield™

Membranes with Highest  
Resistance to Organic Fouling

Reduce costs. Clean faster.

Maximize uptime.

[zwitterco.com](http://zwitterco.com)

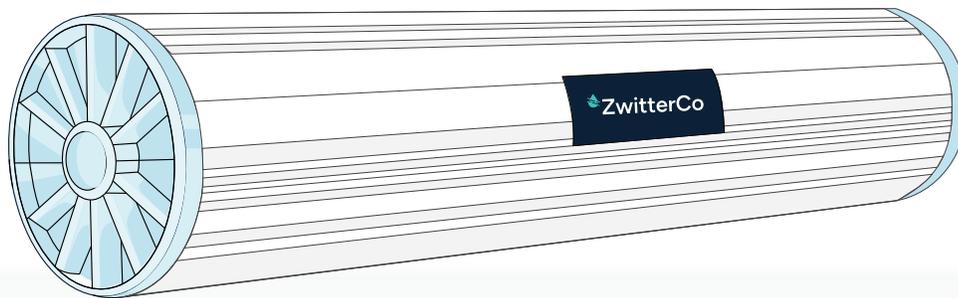
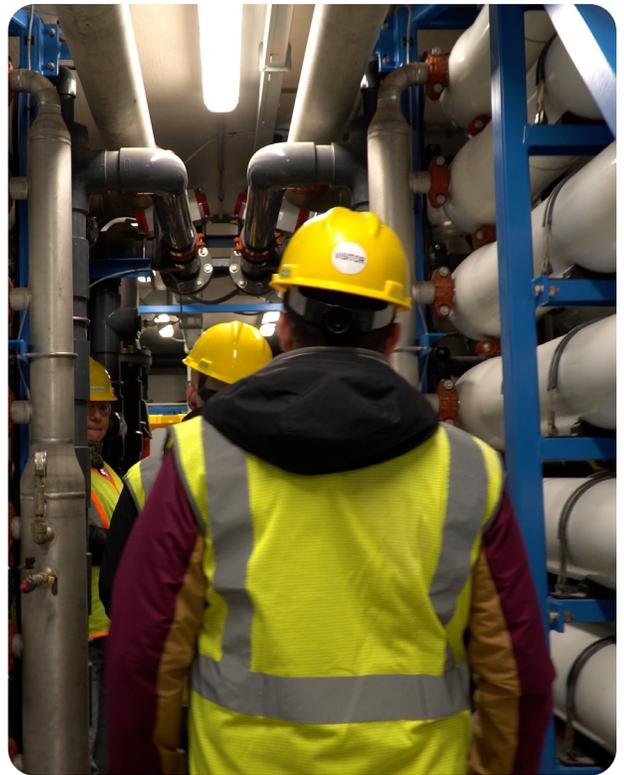
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## Operate With Confidence When Your Feed Water is Affected by Organics

If your membrane system treats feedwaters high in organics, oil & grease, color, or COD, you likely face:

- Frequent cleanings and unplanned downtime
- High chemical and operating costs
- Short membrane life

ZwitterCo Elevation membranes are built for treatment facilities where these challenges are common.

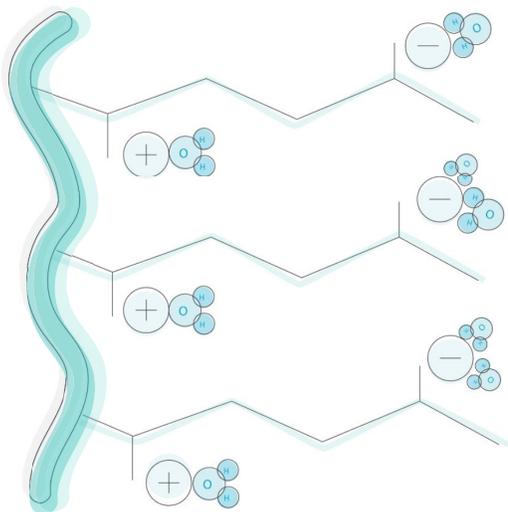


Whether it's high-organic or oily wastewater, **Elevation membranes deliver:**

- ✓ Up to 90% Reduction in Cleaning Costs
- ✓ Up to 80% Fewer Cleanings
- ✓ Faster System Recovery
- ✓ Easier Recovery From Feedwater Upsets
- ✓ Extended Membrane Runtime
- ✓ Safe and Effective Cleaning with Commodity Chemicals

# Powered by ZwitterShield™

## Breakthrough Zwitterionic Membrane Technology



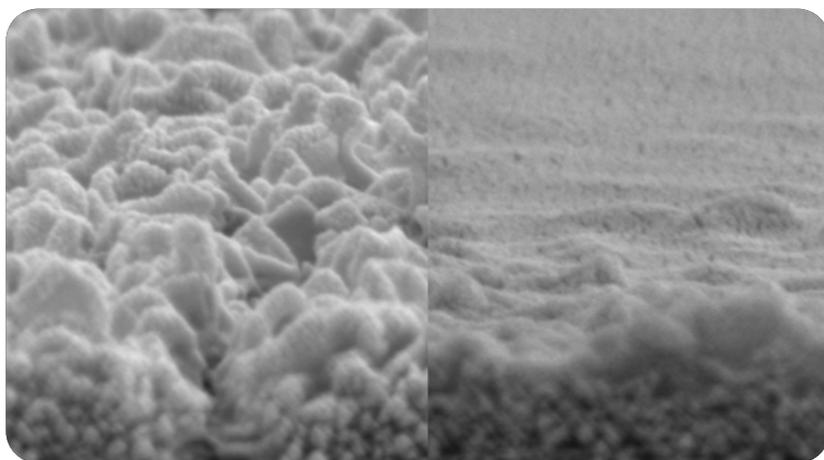
ZwitterShield™ is an additive membrane technology using ZwitterCo's patented zwitterionic chemistry. ZwitterShield™ bonds to proven membrane chemistries to equip them with a permanent barrier to irreversible organic fouling.

Membranes enhanced with ZwitterShield™ are protected from organic fouling through multiple mechanisms:

- ✓ Reduced surface roughness – membranes with ZwitterShield™ are 10x smoother than conventional membranes, so there is less surface area or microscopic anchoring sites where compounds can get lodged and be hard to remove
- ✓ Ultra hydrophilic surface - the attraction between zwitterions and water is so strong that ZwitterShield™ retains a hydration layer of water molecules that prevents organic compounds from sticking to the surface, preventing permanent fouling
- ✓ Size-selective barrier – ZwitterShield™ retains compounds larger than 1 nanometer, so larger organics or colloidal material cannot physically contact the underlying membrane

The benefits of ZwitterShield™ are imparted without compromising the intrinsic separation performance of the underlying membrane, allowing Elevation membranes to be a **one-for-one substitution** with alternative products.

In applications like wastewater treatment and process effluent polishing, where conventional membranes generally work but take a big performance hit or have high operating costs due to organic fouling, this offers a low-risk path to improve efficiency **without modifying existing equipment.**



	Standard RO	RO with ZwitterShield™
Typical RMS	50-100nm	<10 nm

# ZwitterCo Elevation Product Options

ZwitterCo Elevation membranes are available in three categories:

## High Rejection BWRO

Delivers high purity and excellent fouling resistance for demanding applications.

 Built with ZwitterShield™

- ✓ 99.5% Stabilized Salt Rejection
- ✓ 99.2% Minimum Salt Rejection
- ✓ 10,000 gpd permeate flow

## Low Energy BWRO

Optimized for general use with lower energy demands and strong fouling resistance.

 Built with ZwitterShield™

- ✓ 99.3% Stabilized Salt Rejection
- ✓ 99.0% Minimum Salt Rejection
- ✓ 10,800 gpd permeate flow

## High Pressure RO

Built for high-TDS streams with top-tier performance and fouling resistance.

 Built with ZwitterShield™

- ✓ 99.5% Stabilized Salt Rejection
- ✓ 99.2% Minimum Salt Rejection
- ✓ 1,200 psi max operating pressure

## Industry Leading Organic Tolerance

ZwitterCo Elevation membranes have the industry's highest feedwater guidelines:

Parameter	Optimum Membrane Performance	Differentiated Membrane Performance	Maximum Allowable
Max Turbidity (NTU)	< 3	< 5	Consult ZwitterCo
Max SDI	3	5	
TOC (mg/l)	< 15 mg/l	< 50 mg/L	
BOD (mg/l)	< 25 mg/l	< 50 mg/L	
COD (mg/l)	< 50 mg/l	< 200 mg/L	
O&G (mg/l)	< 2.5 mg/l	< 10 mg/L	



## Common Applications

- ✓ Leachate
- ✓ Industrial Wastewater
- ✓ Digestate
- ✓ Industrial Process Water
- ✓ MBR Effluent
- ✓ High Fouling Surface Water

# Elevation High Rejection BWRO Membranes

Reliable high-salt rejection with best-in-class organic fouling resistance. NSF/ANSI Standard 61 certified. Available in 8", 4", and 2.5" with 34 mil feed spacers, rated to 600 psi (41 bar).

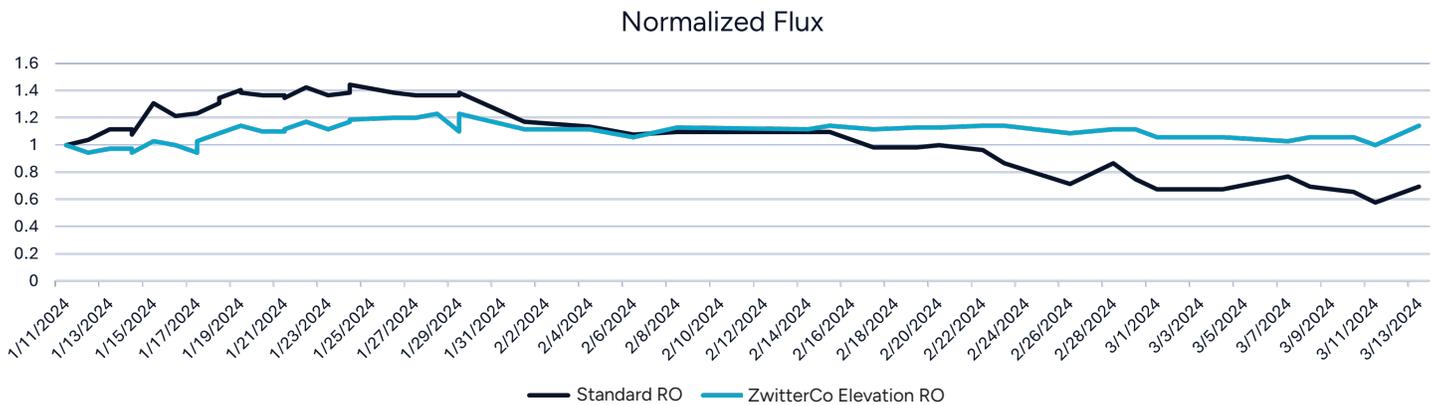
## CASE STUDY

### Landfill Leachate, France (Installed 2024)

**Challenge:** Daily CIPs, 2-month membrane life, rising cleaning costs

**Solution:** Direct replacement with ZwitterCo Elevation High Rejection BWRO, no changes to system design

**Performance Overview:** ZwitterCo Elevation BWRO membranes maintained stable flux, while competitor membranes showed a steady decline.



## Key Results

- Reduced cleaning costs by ~50% per m3
- Reduced cleaning water use by 43%
- Operational for >1 year with strong performance
- Achieved compliance through >90% rejection of organics, nitrogen, and metals
- Enabled permeate reuse for onsite truck washing and dust control

# Elevation Low Energy BWRO Membranes

High-flux operation at lower pressure = energy savings and more throughput. NSF/ANSI Standard 61 certified. Available in 8", 4", and 2.5" with 34 mil feed spacers, rated to 600 psi (41 bar).

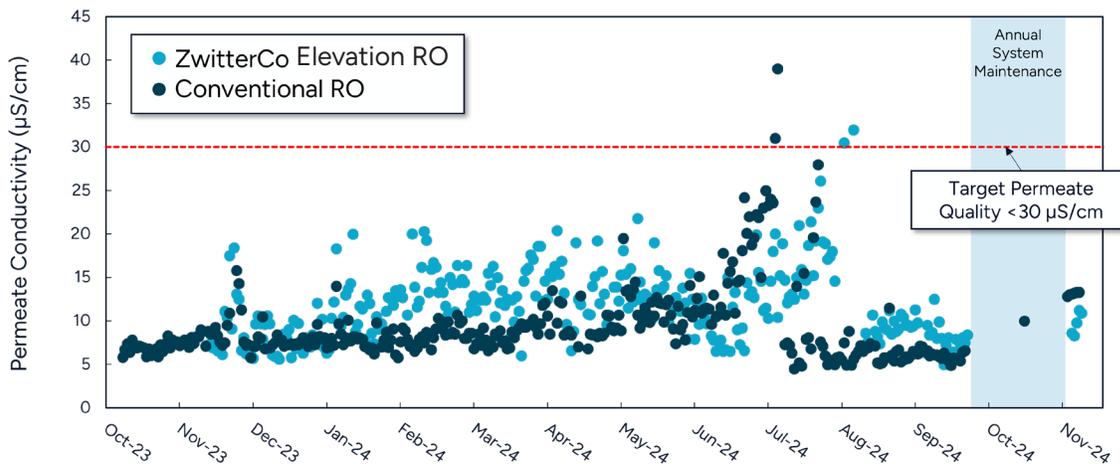
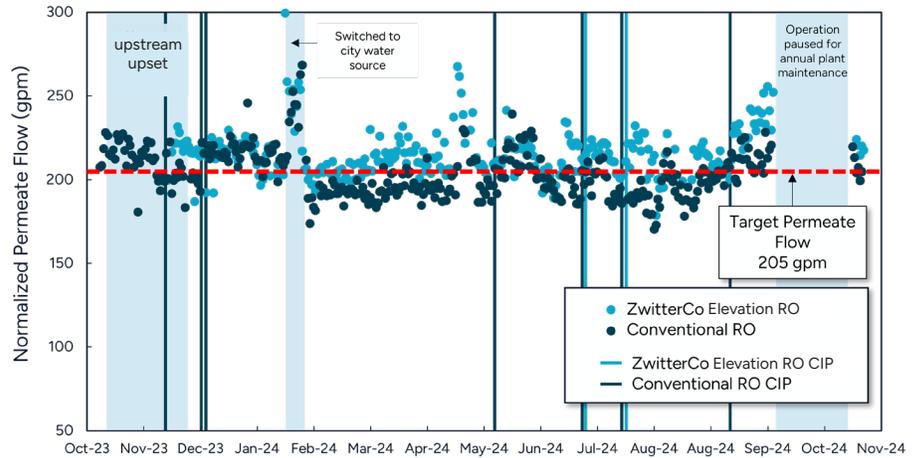
## CASE STUDY

### Power Plant, USA (Installed 2023)

**Challenge:** Monthly CIPs, high OPEX, seasonal fouling

**Solution:** ZwitterCo Elevation Low Energy RO installed alongside conventional RO

**Performance Overview:** ZwitterCo maintained flow above the 205-gpm target even through SDI upsets.



## Key Results

- 70% fewer cleanings (2 vs. 7 during evaluation period)
- Maintained >205 gpm flow target even during the upset, where SDI climbed from 0.93 → 4.97
- Stable permeate quality <math>< 30 \mu\text{S/cm}</math>
- No formulated cleaners required

# Elevation High Pressure RO Membranes

Built for leachate and high salinity industrial wastewaters. Available in 8"/4" with 34 and 50 mil spacers. Rated to 1200 psi (83 bar).

## CASE STUDY

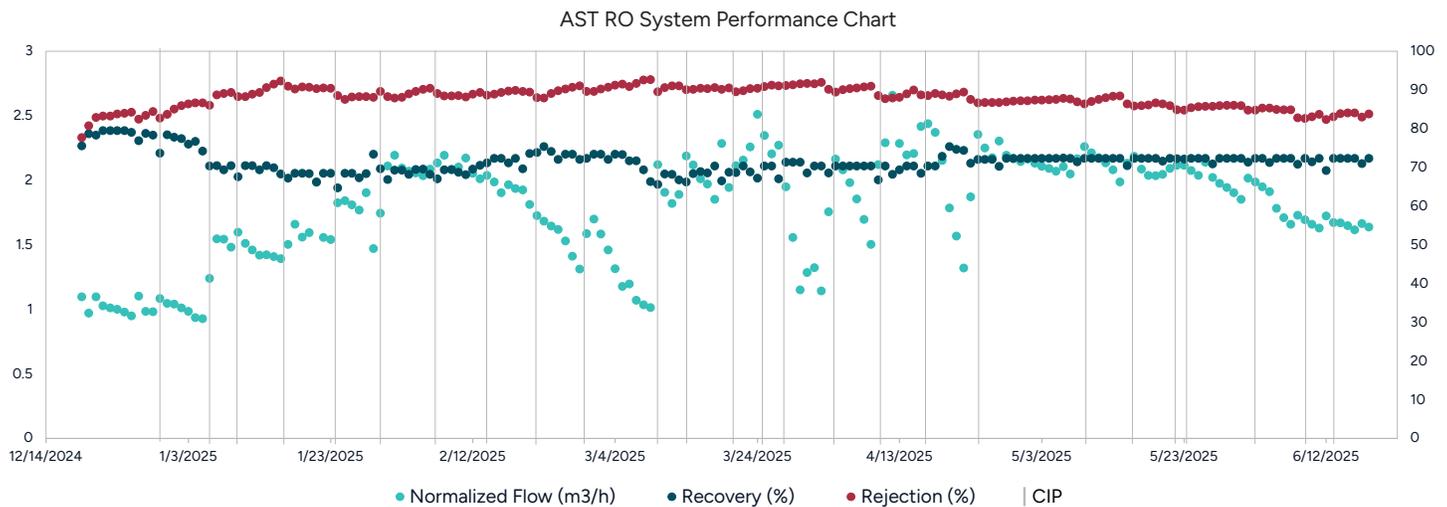
### Landfill Leachate, Portugal (Installed 2024)

**Challenge:** Aggressive leachate, frequent cleaning, use of costly chemicals

**Solution:** ZwitterCo Elevation High Pressure RO replacing conventional RO membranes



#### Performance Overview:



## Key Results

- 96% cleaning cost reduction (from €28 to €1/clean)
- Fully recovered flow after each CIP
- No irreversible fouling observed
- Met treatment targets: <100  $\mu\text{S}/\text{cm}$  conductivity, <10 mg/L ammonia
- Pilot success led to full-scale system order (300 m<sup>3</sup>/day)



## ZwitterCo

ZwitterCo is the global leader in membrane solutions for challenging separations, helping industries treat complex wastewater, purify water for reuse, and maximize efficiency in food processing applications.

The company leverages its breakthrough zwitterionic chemistry to build membranes with unprecedented fouling resistance, overcoming the longest-standing limitation with conventional filtration. Manufacturers in more than 20 countries across food and beverage, agricultural, and industrial sectors rely on ZwitterCo's membrane solutions to achieve their most ambitious sustainability and growth targets.

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### Talk to an Expert

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