

## Maximizing Water Recovery with Low Pressure ECD

### Project Details

**Industry:** Personal Care Product Manufacturing

**Wastewater Source:** RO Brine

**Treatment Targets:**

- 300 mg/L TDS suitable for blending
- Increase system recovery from 60% to 96%

### Project Characteristics

- Variable feed TDS: 1,900 – 3,400 mg/L
- Intermittent RO operation
- Minimal maintenance requirement
- Retrofit requiring compact system footprint

### Existing Process

- RO reject discharge to POTW
- Increasing facility discharge costs
- Internal initiatives to achieve net-zero water waste

### Challenge

A global personal care products company identified inefficiencies across multiple facilities' existing reverse osmosis processes. RO systems frequently rejected over 30% of feed water. They sought a solution to efficiently recover water, reduce costs, and integrate seamlessly with existing infrastructure while not placing additional strain on operations teams.

### Solution

Membrion's electro-ceramic desalination (ECD) technology was evaluated for its ability to achieve high water recovery rates, robust automated operation, within a compact system footprint, for feed streams of **150,000+ ppm TDS**. Results informed modeling for additional sites.

### Results

**Overall system recovery increased to 96% average** (RO + ECD), achieved through >85% ECD water recovery while reducing total dissolved solids (TDS) to match city water quality. Following this success the company committed to implementing ECD in six facilities, and reviewing globally for all of their manufacturing sites.

### Outcomes Delivered

- Reduced water discharge to sewer by >90%
- Enable net-zero water waste
- Cost of reuse comparable to municipal discharge and supply costs
- Stable operation despite variable feed water quality with minimal user intervention or maintenance

### ECD Retrofit Process

