

ROI FEATURE

COMMERCIAL LAUNDRY

ATLANTA, GA, U.S.A.

ROI PAYBACK: 6 MONTHS

*Commercial Laundry Site
Increases Water Recovery
Rate with Disruptive Water
Treatment Technology*



INTRODUCTION & PROCESS DESCRIPTION

Commercial laundries rely heavily on high-quality water, as it's the key to keeping linens white and soft after every wash. Total Dissolved Solids (TDS)—including iron, manganese, calcium, alkalinity, and other dissolved salts—can shorten the lifespan of linens, causing them to gray if TDS levels rise above 750–1,000 ppm.

However, removing TDS can be costly due to the massive water volumes used in the laundering process, along with the large amount of wastewater produced.

One U.S. commercial laundry facility, limited by strict state regulations to an 8-hour daily work shift, faced immense pressure to find a solution that would increase productivity, reduce wastewater, cut costs, and keep linens pristine.

Fortunately, the site discovered a non-traditional water purification technology that allowed for longer work shifts while reducing total water consumption—making it easier to both meet water quality standards and stay compliant with regulations.

THE CHALLENGE: COSTLY STANDARD TECHNOLOGIES

Traditional desalination technologies such as Reverse Osmosis (RO) and Electrodialysis (ED/EDR) created more obstacles than solutions for the laundry site.

Without extensive pre-filtration, standard RO membranes quickly became clogged. In addition, these membranes are not tolerant to high temperatures, and upgrading to specialty membranes that can withstand higher heat is very expensive.

ED/EDR systems also require significant pre-filtration and will foul easily when used with laundry water.

Both of these traditional methods had another major drawback: they require water to be cooled before TDS can be removed, and then reheated for laundering. This not only wasted time, but also demanded more energy, driving overall expenses higher.

The site needed a more affordable and reliable solution—one that could maintain pristine linen quality while limiting discharge volumes.

THE SOLUTION: INNOVATIVE WATER PURIFICATION TECHNOLOGY

Voltea's Membrane Capacitive Deionization (CapDI) Technology proved to be the ideal solution for the commercial laundry site. An Industrial Series 4 (IS-4) System was installed to help the facility comply with regulations while effectively removing TDS.

This salt-free, chemical-free water purification technology removes salt ions and TDS via an electrical current and, uniquely, can operate on high-temperature water. This eliminates both the additional reheating costs and the extra time required by traditional desalination technologies.

With CapDI, the facility was able to operate longer and more efficiently, since the daily discharge limit of 1,000 ppm was never reached.

Minimal maintenance was required. The CapDI technology enabled remote and continuous water quality monitoring with fully automated operation. Employees no longer had to spend hours physically monitoring and adjusting the equipment—the CapDI system did it all in real time.



"Employees no longer had to spend hours physically monitoring and adjusting the equipment because the CapDI system did that for them in real time."

THE RESULTS: SIGNIFICANT COST SAVINGS AND LIMITED WASTE

Using Voltea's CapDI technology, the commercial laundry facility achieved a remarkable ROI and significant cost savings thanks to:

- Improved water reuse
- Energy savings through reduced water heating

By recycling water more effectively, the facility doubled its daily throughput without exceeding discharge permit limits.

Electro-deionization also ensured compliance with the high water quality standards required across industries such as healthcare, hospitality, industrial uniforms, and food & beverage.

"THANKS TO CAPDI, THE FACILITY RECYCLED WATER MORE EFFECTIVELY—DOUBLING ITS DAILY THROUGHPUT WHILE STAYING WITHIN STATE-MANDATED DISCHARGE PERMIT LIMITS."