ROI FEATURE

UNILEVER – PRATAU, GERMANY
ROI PAYBACK: 7 MONTHS

Manufacturer Gets Quick Financial Payback from Waste Water Reuse Treatment Technology for Cooling Tower Make-Up



INTRODUCTION & PROCESS DESCRIPTION

Anyone who relies on cooling towers in the manufacturing process knows they usually face one or both of these issues:

- Low water efficiency
- High chemical usage

Unilever, which operates a margarine manufacturing plant with a cooling tower in Pratau, Germany, had an additional challenge — extraordinarily high water costs. As a result, water-related expenses were taking up an increasingly large share of the budget, and the company needed to find a solution quickly.
Fortunately, Unilever discovered the answer to its problems: a groundbreaking technology called CapDI — a solution it didn't even know was possible.

THE CHALLENGE: RELYING ON CHEMICALS

High local water costs, coupled with Unilever's extremely low water efficiency, were causing significant cost overruns. On top of that, the plant relied heavily on chemicals to treat the water. Cooling towers transfer heat, which causes some water to evaporate. The remaining liquid absorbs salts from the evaporated portion, leading to increased salt concentration. To counteract this, Unilever had to dose large amounts of chemicals. The chemical usage was so high that the company also had to pay to discharge the water to the municipality, as it required extensive treatment before it could be reused or released into surface water.
In search of a solution, Unilever evaluated standard water treatment options, including Reverse Osmosis (RO). However, RO presented additional concerns, such as equipment corrosion and potential structural damage to cooling operations. Finally, the company found a system that ushered its plant into a new era of water treatment.

VOLTEA'S CAPDI SOLUTION: ENVIRONMENTALLY RESPONSIBLE TECHNOLOGY

Unilever turned to Voltea's Membrane Capacitive Deionization (CapDI), a salt-free water purification technology that removes salt ions and total dissolved solids (TDS) using an electrical current.
An Industrial Series 2 (IS-2) System was installed on-site, which significantly reduced the volume of water consumed while cutting chemical usage and wastewater production—greatly lowering overall costs. By decreasing the salt content of the water before it enters the cooling tower, the system allows for higher cycles of concentration, further reducing overall water consumption.
With CapDI, Unilever now has the power to select the desired level of salt or TDS removal and maintain consistent water quality, thanks to Voltea's real-time remote monitoring and control capability. The tunability feature eliminates unnecessary steps in the treatment process while reducing the salt concentration in the discharge water.

VOLTEA INDUSTRIAL SERIES 2 (IS-2) SYSTEM

Every problem identified by the manufacturer prior to installation—including significant water waste and excessive chemical usage—was no longer a pain point.



THE RESULTS: FAST ROI & QUANTIFIABLE RESULTS

Unilever quickly saw results from its water treatment upgrade. In just over six months of operation with Voltea's IS-2 system, Unilever achieved an impressive ROI of $14,078 (€12,044) in savings.

Every problem identified by the manufacturer prior to installation—including significant water waste and excessive chemical usage—was eliminated.

A year and a half after installation, the company reported even more quantifiable results, including:

- 78% reduction in chemical consumption
- 60% reduction in salts
- 50% decrease in wastewater
- 26% reduction in fresh water consumption

This performance data has remained consistent since installation, with the CapDI system maintaining an average water recovery of 83%.
This disruptive technology met Unilever's every need, delivering high water efficiency with low operating costs, while also providing an environmentally responsible alternative.

CHEMICAL CONSUMPTION	SALTS	WASTEWATER	FRESH WATER CONSUMPTION
78%	60%	50%	26%

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