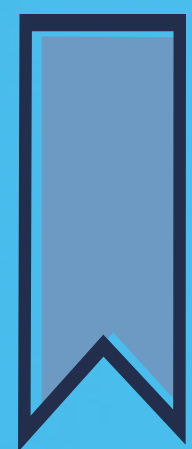


ROI FEATURE

Voltea's CapDI[®]



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



UNILEVER

Pratau, Germany

ROI PAYBACK: 7 MONTHS

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

- **Low water efficiency**
- **High chemical usage**

Unilever, which has a margarine manufacturing plant with a cooling tower in Pratau, Germany, had an additional concern – extraordinarily high water costs. As a result, water-related expenses took an increasingly large part 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 that it didn't even know was an option.

● THE ● CHALLENGE:

RELYING ON CHEMICALS

High local water costs coupled with Unilever's extremely low water efficiency were causing cost over runs.

On top of all that, the plant used a lot of chemicals to treat the water. Cooling towers transfer heat, causing the heat energy to evaporate some of the water. The remaining liquid absorbs the salts from the evaporated water, thus causing an increase in salt concentration.

To counteract that concentration, Unilever relied heavily on chemicals. So many, in fact, that the company had to pay to discharge the water to the municipality, as it required extensive treatment before it could be reused or discharged to surface water.

To find a solution, the manufacturer evaluated standard water treatment options including Reverse Osmosis (RO). With RO, however, Unilever would have additional concerns, including corrosion of equipment and structural damage to cooling operations.

Finally, the company found a system that brought its plant into a new era of water treatment.



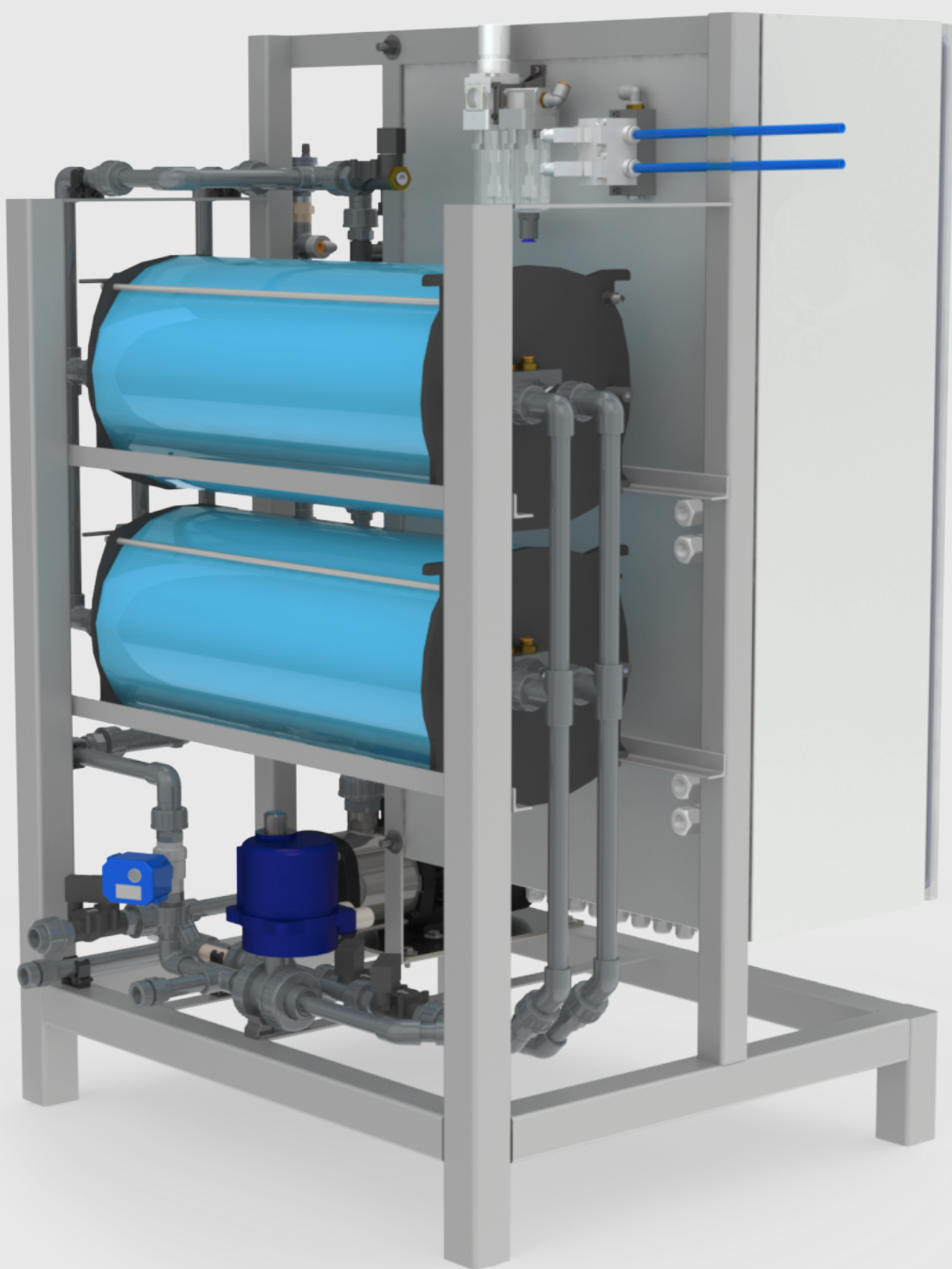
● THE ● SOLUTION:

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) via an electrical current.

An Industrial Series 2 (IS-2) System was installed on location, which significantly reduced the volume of water consumed all while cutting chemical usage and waste water production, thus greatly reducing overall costs. When the salt content of the water before it enters the cooling tower is decreased, it allows for higher cycles of concentration, therefore reducing the overall water consumption.

Unilever now has the power to select the desired level of salt or TDS removal and maintain a consistent quality output thanks to the real-time, remote monitoring and control capability of Voltea's CapDI. The tunability feature removes unnecessary steps in the treatment process while eliminating a high concentration of salt 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 – were no longer pain points.

● 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 IS2 system, Unilever saw an impressive ROI of \$14,078, or €12,044 in savings. Every problem identified by the manufacturer prior to installation – including significant water waste and excessive chemical usage – were no longer pain points.

A year and a half after installation, there were even more quantifiable results, including:

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

This data has remained consistent since installation, and water recovery of the CapDI system has stayed at an average of 83 percent.

This disruptive technology met Unilever's every need and ensured high water efficiency with low operating costs while also being an environmentally responsible alternative.

CHEMICAL
CONSUMPTION



- 78 %

SALTS



- 60 %

WASTEWATER



- 50 %

FRESH WATER
CONSUMPTION



- 26 %