

Enabling ZLD in Electroplating Wastewater with ECD

Project Details

Industry: Surface Finishing

Wastewater Source: Electroplating

Treatment Targets:

- TDS reduction from <1,950 mg/L to <600 mg/L
- Increase system recovery to >90% to enable ZLD.

Project Characteristics

- Variable Feed TDS: 898 - 2,300 mg/L
- Regional water scarcity and no drain discharge access
- Greenfield facility, ZLD system required

Treatment Processes

- Facility employed treatment processes typical for discharging electroplating process water.

Challenge

A global manufacturer building a greenfield electroplating facility in Queretaro, Mexico faced challenges due to regional water scarcity and lack of access to discharge via drain. Due to zero liquid discharge requirements, a thermal evaporator was required. A method to reduce the wastewater volumes being sent to the evaporator was required to make the project economically feasible. Due to the high metal content and scaling potential of their wastewater, the user needed a robust treatment solution that would meet reuse water quality targets, while operating with minimal maintenance at a high recovery.

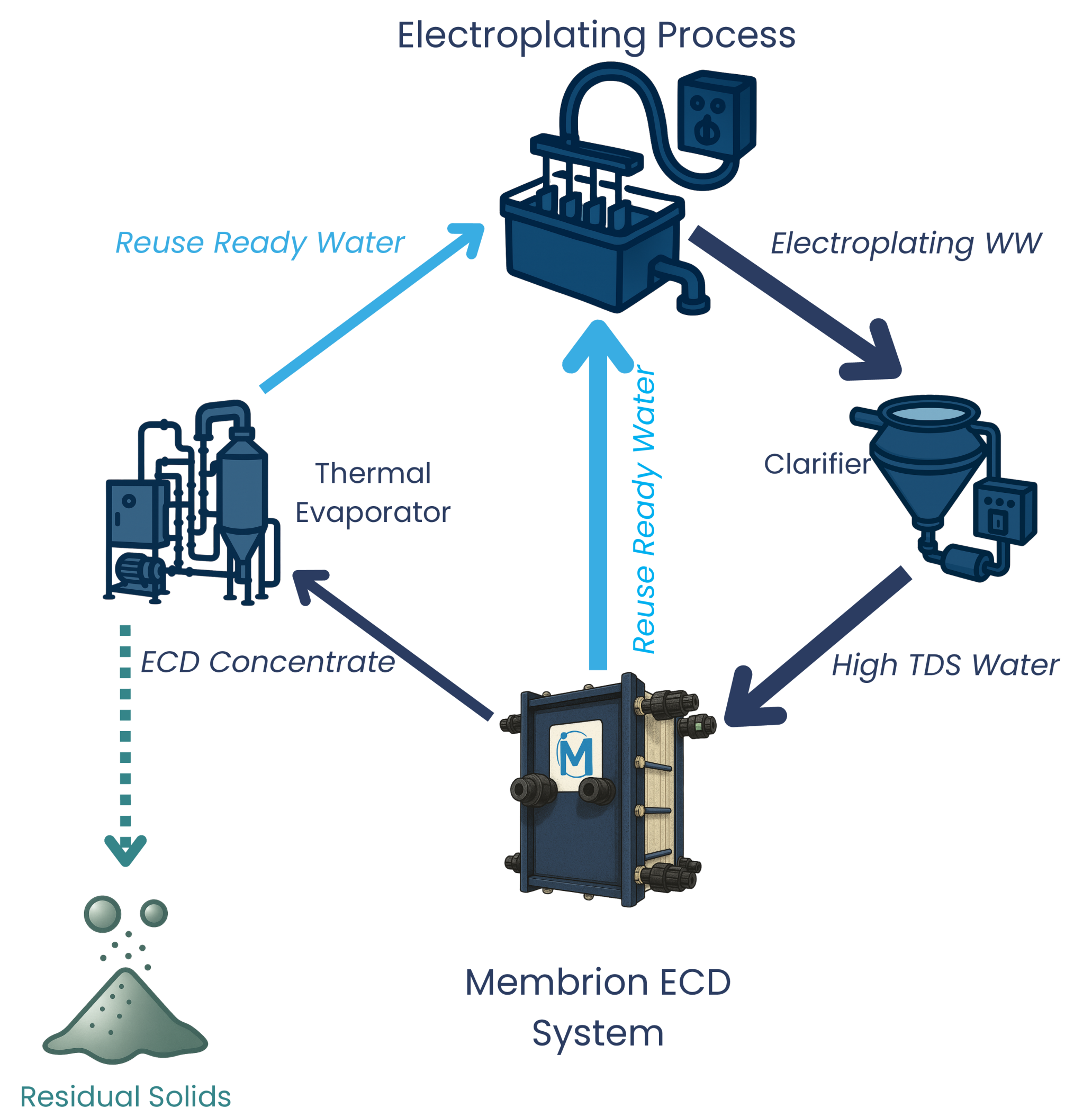
Solution

Membrion's electro-ceramic desalination (ECD) technology was evaluated for its ability to resist scaling and reduce total wastewater volume by >90 %, enabling the utilization of a significantly smaller thermal evaporator.

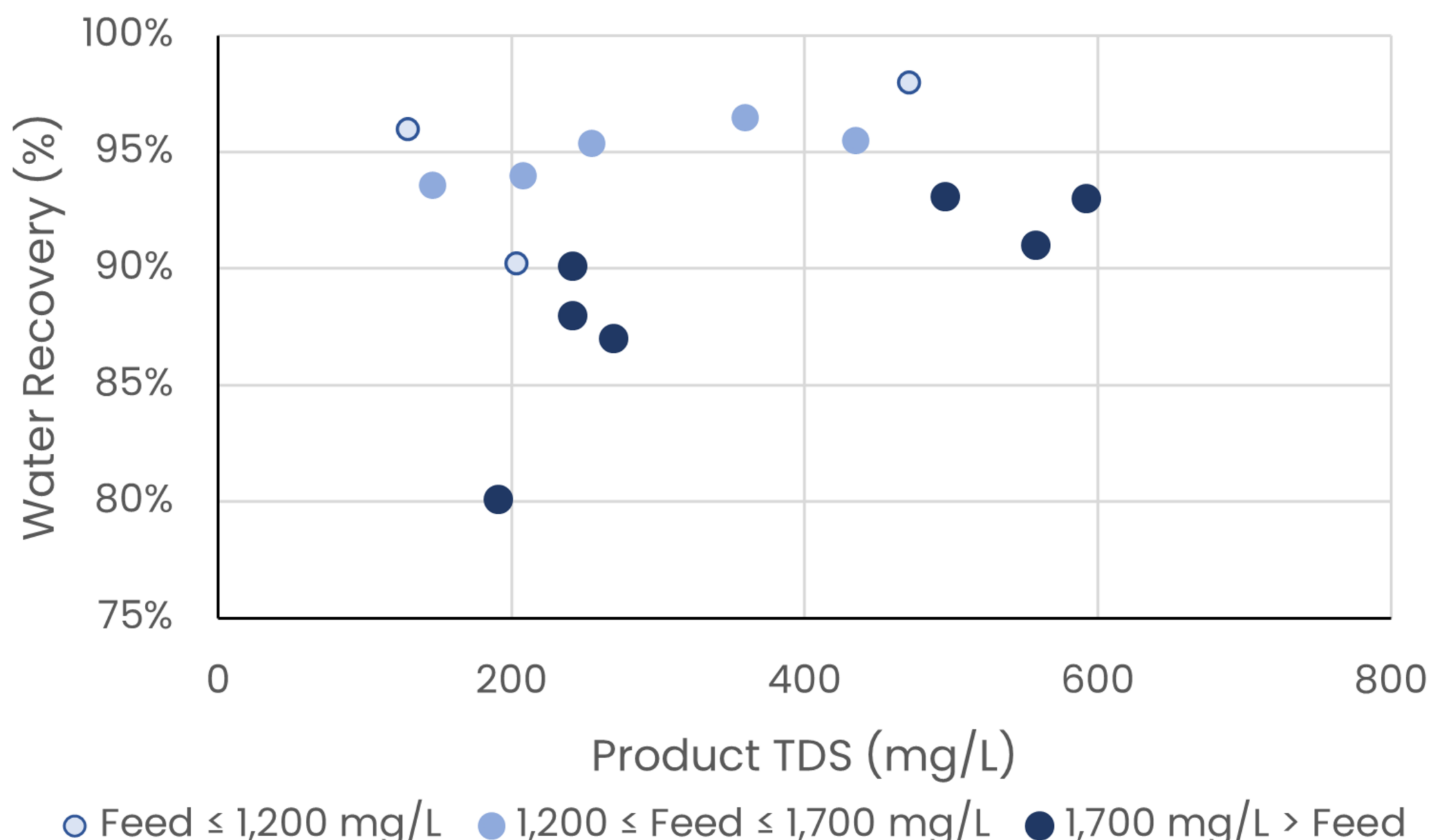
Results

By unlocking ZLD, ECD maximizes facility water circularity while minimizing existing CAPEX and OPEX costs.

ECD Enabled Water Recovery



Water Recovery vs Product TDS



Benefits Delivered

- Enable the operation of the facility through ZLD wastewater system.
- Economically viable CAPEX and OPEX of thermal evaporator due to minimization of wastewater volume.
- Stable performance despite variable feed quality.
- Compact footprint. Minimal maintenance and simple integration.