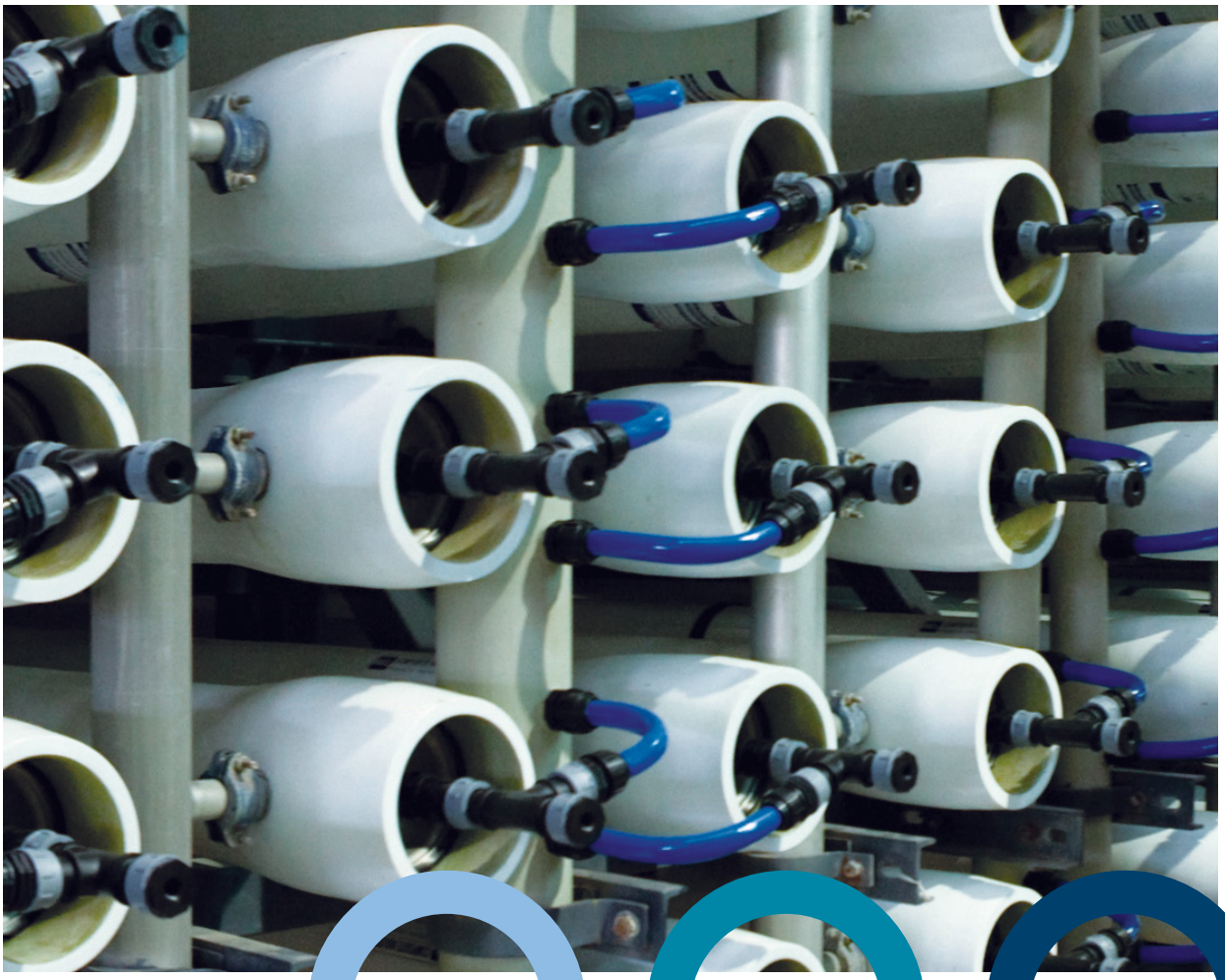
IDE Technologies | Your Water Partners

MAXH$_2$O Desalter for Brine Minimization and Effluent Treatment



$MAXH_2O$ Desalter for Brine Minimization and Effluent Treatment

The $MAXH_2O$ Desalter is a state-of-the-art RO solution featuring an integrated salt precipitation cycle for high-recovery applications. This process pushes RO water treatment to its limits, overcoming the challenges of membrane scaling and fouling, and achieving the industry's highest recovery rates.

The Challenge:

- **Challenging water chemistry** that limits RO recovery and efficient water reuse due to high scaling and biofouling potential.
- **Compliance with discharge regulations** due to selective ion concentration limitations, such as sulfates, silica, and others.

The Solution:

Our $MAXH_2O$ Desalter is a unique technology that treats and minimizes brine and industrial effluents by eliminating the constraints of water chemistry. By removing sparingly soluble salts from the water, the system maximizes recovery and water reuse while complying with discharge regulations.

Performance Comparison

	MAXH$_2$O Desalter	Other solutions
Pretreatment stages	Minimal	Intensive
RO Stages	1	Typically 2-3
Total recovery	Up to 98% (Osmotic Pressure)	Typically 50-80%
Recovery limiting factor	Osmotic pressure	Water chemistry
Bio-fouling tendency	High resistivity to bio-fouling due to changing salinities	Higher risk of bio-fouling
Scaling tendency	Low	High
Chemicals	Low	High
OPEX	Medium	High

Success Stories:

The San Isidro Power Plant, Chile

The MAXH$_2$O Desalter technology was successfully tested at the San Isidro Power Plant in Chile to treat cooling tower blowdown effluent. Aimed at increasing cooling tower operational efficiency and raising cycles of concentration, the system achieved remarkable results. Over six weeks of operation, the MAXH$_2$O Desalter demonstrated a recovery rate exceeding 80%, reaching up to 94% recovery during the second phase of testing.

The technology effectively reduced TDS in the permeate, achieving water quality under 300 mg/L, well below regulatory discharge limits. Notably, the system operated without issues related to scaling or fouling, even under challenging conditions with high supersaturation of sparingly soluble salts such as calcium carbonate and silica.

Success Stories:

A Large Zinc Mining Facility, India

Implemented at one of Hindustan Zinc Limited's largest zinc mining facilities in Udaipur, India, the 1296 m^3/day MaxH_2O Desalter plant achieves an impressive 92% water recovery rate. This high recovery is accomplished despite the effluent's high scaling potential, with a theoretical saturation index for calcium sulfate reaching 1286%.

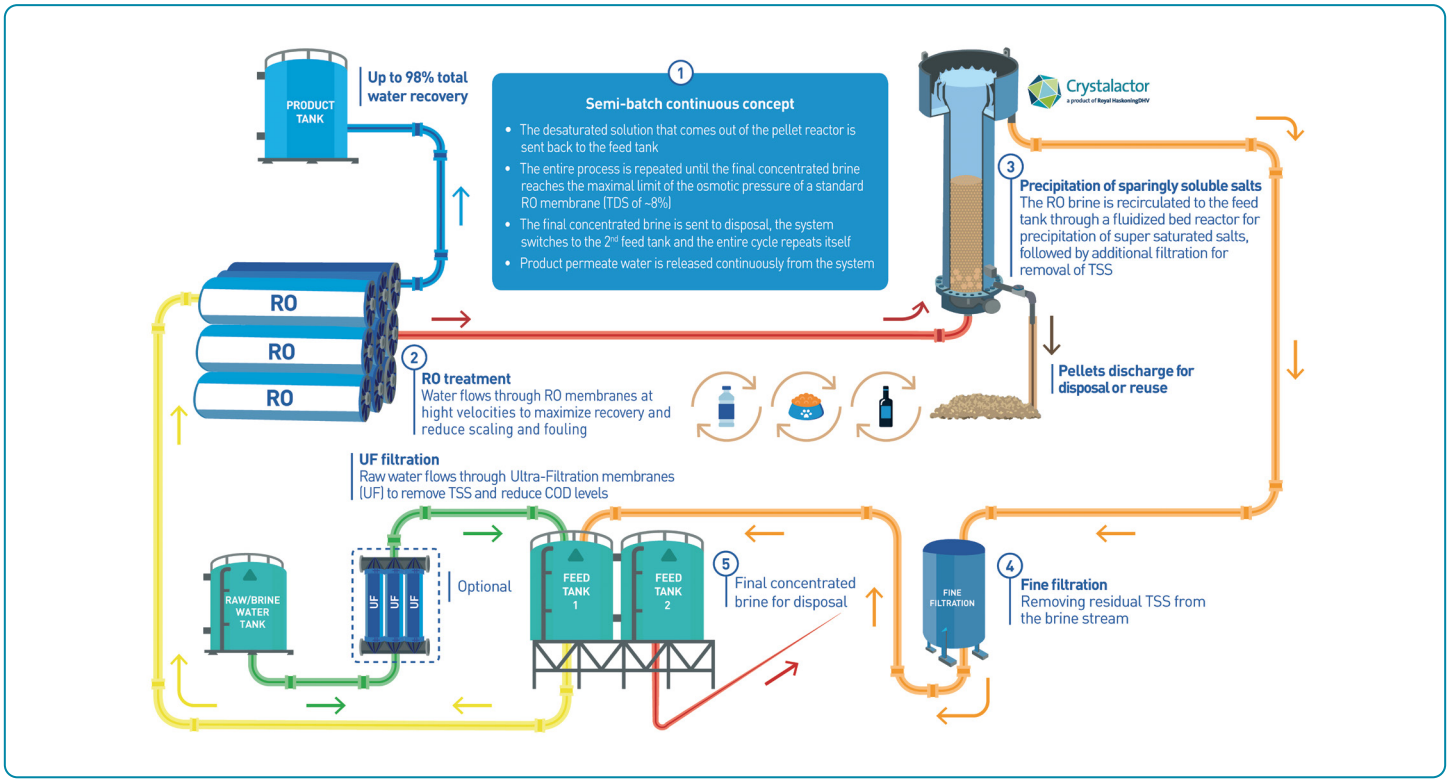
The MaxH_2O Desalter integrates a single-stage reverse osmosis unit with a fluidized bed reactor, maximizing recovery while significantly reducing evaporator size by approximately 55%. This design not only lowers operational costs but also minimizes water consumption, a crucial factor in water-scarce regions.

Success Stories:

A Large Automotive Manufacturer

An installation of a MaxH_2O Desalter commercial unit in an industrial facility in the automotive sector, which is designed to treat 775 m^3/day (150 GPM) of CTBD and achieve more than 95% recovery. The system, set to be operational in Q1 2025, provides a significant leap in water treatment efficiency compared to conventional technologies, which typically achieve only 55-60% recovery. At the targeted 95% recovery rate, the system’s theoretical saturation indices (SI) for key compounds such as silica (SiO2) reach alarmingly high levels, including an SI of ~3.2 and SiO2 SI of ~1400%. These extreme levels of supersaturation would typically result in scaling, but the integrated technology mitigates this issue, enabling high recovery rates.

MAXH2O Desalter at a Glance



Why Choose the MAXH$_2$O Desalter?

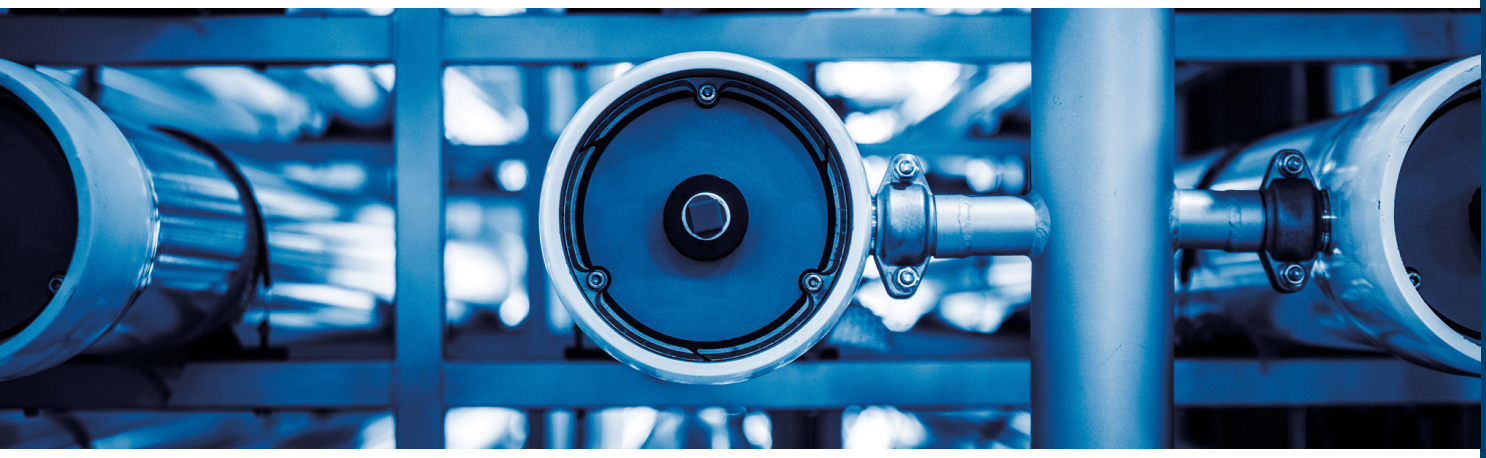
- **High Recovery Rates** – Industry-leading recovery, up to the osmotic pressure limit (8%-10% TDS).
- **Economical** – Optimizes OPEX by reducing chemical consumption and minimizing ongoing maintenance.
- **Selective Salt Removal** – Removes sparingly soluble salts to comply with discharge regulations.
- **Reliable & Robust** – Ensures continuous operation while avoiding biofouling and scaling.
- **Flexible** – Tolerates variable feedwater qualities, concentrations, and flows, achieving different recovery levels. Brine recirculation can stop at any recovery point or RO brine level.
- **Semi-batch RO System** – Integrated salt precipitation cycle for continuous desaturation of RO brine.
- **Low Investment and Operational Costs** – Cost-effective in both installation and ongoing operation.
- **High-Quality Product** – Meets environmental regulations for discharge or reuse.
- **Final Brine** – Minimal or no risk of scaling while delivering high-quality water.

About IDE

IDE Technologies is a world leader in water treatment solutions, specializing in the development, design, construction, delivery, and operation of some of the most advanced desalination, water reuse, industrial and municipal water treatment, water reuse, and desalination facilities.

With over 60 years of experience and a global footprint, IDE leverages cutting-edge technologies to deliver sustainable, efficient, and environmentally friendly water treatment solutions to public, municipal, and industrial customers. Our landmark projects, including the world's largest and most energy-efficient seawater desalination plants, provide clean water to millions worldwide, helping major industries, municipalities, and governments address critical water challenges.

IDE has received multiple prestigious awards from organizations such as MIT and GWI, recognizing our innovation and leadership in the water treatment industry.



We Are Your Water Partner

IDE Water Technologies

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Let's talk about your next water project