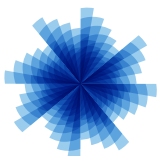


Water Treatment for Cooling Towers

Avoiding Cooling Tower Disruption and Ensuring Optimal Operation



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The Challenges

Main Treatment Challenges

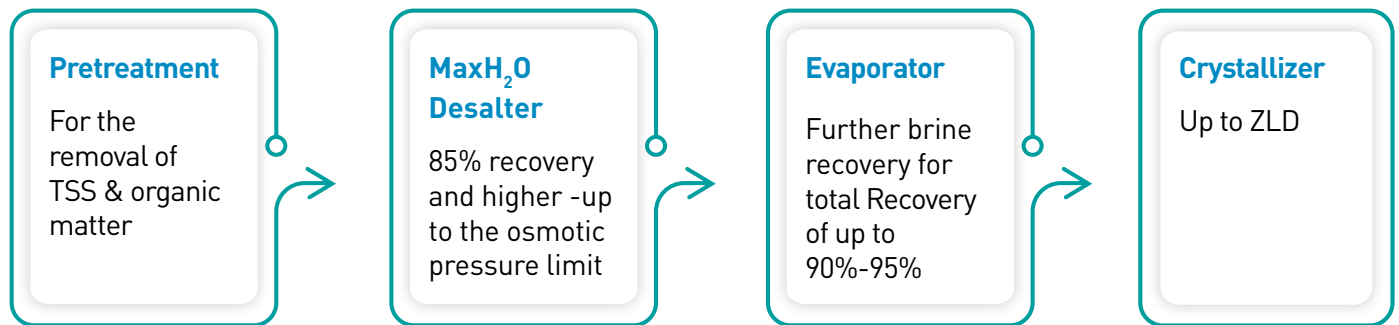
- Cooling tower blowdown requires water reuse in order to improve water usage and optimize brine management
- Treatment process generates highly concentrated reject streams, which requires proper handling
- Increasingly strict regulations require water treatment of the highly concentrated reject stream prior to its discharge, to meet, to reduce the environmental impact
- In some instances, regulation may require water treatment of up to ZLD levels

Water Chemistry Challenges

- High Silica concentration
- High hardness levels
- High TSS & organic residue levels

The Solution

End-to-End Water Treatment up to ZLD



Efficient waste management and disposal is the cornerstone of sustainable development. With increasingly stringent regulations on sea, river, and deep well injection, the implementation of advanced water treatments is critical. Treatment of cooling tower effluents usually requires the use of several technologies to meet the required discharge level - up to ZLD. These can include filtration to membrane treatment, followed by thermal technologies such as evaporators and crystallizers.

The Process

In cases where higher recovery rates are required, MAXH₂O brine is then further treated using IDE's MVC evaporator, where additional water is recovered and brine is concentrated up to 20%-25% TDS

In cases where a full ZLD solution is required, brine from the MVC is fed into a crystallizer to produce zero waste and up to 100% recovery

The Benefits

- ✓ **Reduced OPEX** - Minimizes brine disposal flow rate, leading to a reduction in brine management cost
- ✓ **Staged solution** - Fully adaptable to the client's required recovery rates
- ✓ **Efficient** - Extracts the maximum possible economic value from the effluent - recovers valuable components from effluent wastewater for reuse onsite
- ✓ **Flexible** - End-to-end solutions that are fully customizable to a variety of water sources and customer requirements
- ✓ **Reliable** - Solid and robust solutions that allow focus on the main production business

Tutuka, South Africa

Successful operation for over 30 years

The Tutuka power station is a cost-effective, environmentally friendly solution for reducing cooling water blowdown while achieving 90% water recovery, and significantly reducing produced water disposal and environmental impact.

“The successful operation of the plant for over 30 years has proven IDE’s reliability and technological leadership, as well as its eco-friendly approach”

Capacity: 1,200 m³/day

Technology: Mechanical Vapor Compression (MVC) Wastewater Concentrator

Project Type: Engineering-Procurement-Construction (EPC)

Location: Tutuka Power Station, South Africa

Commissioned: 1987

- RO Reject Salinity (MVC Feed) : 2%
- MVC Recovery: 69%
- Brine Salinity: 6.1% TDS
- Silica: 180-300 ppm
- pH: 7.6

Highlights

- Technological leadership - unique and robust horizontal evaporators for continuous and reliable operation
- Cost efficiency - high quality materials designed for low maintenance and reduced OPEX
- Environmentally friendly - reduced energy consumption. Reliable, sustainable and economical solutions built to last



IDE - Over 50 Years of Experience

A world leader in desalination and water treatment solutions, IDE is at the forefront of the development, engineering, construction and operation of enhanced desalination, industrial water treatment and water reuse facilities. IDE's headquarters are in Israel, with offices in the USA, China, India, Chile and Australia, facilitating client partnerships across the globe.

- Innovative water treatment technologies that provide our clients with end-to-end solutions
- Developed some of the most advanced membrane-based and thermal solutions
- Designed, built and operates some of the world's largest desalination plants
- Successful implementations in more than 400 plants in over 40 countries



**MIT Technology
Review 2015 -16**

50 Smartest Companies



**2016 Fortune
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2nd place

