

EcoRegen™

Ultra Low-Waste MIEX® Regeneration System



The EcoRegen™ System is an ultra low-waste ion exchange regeneration system that further reduces the ecological footprint of the MIEX® Process.

A scarcity of new, high quality water sources to meet demand from a growing population has led to an increasing need for advanced water treatment technologies. In addition, water utilities are looking for more sustainable treatment processes to reduce the strain on the environment.

The EcoRegen™ Solution

The MIEX® Process is known to have the smallest carbon footprint of the advanced TOC removal technologies. In an effort to further improve the efficiency of the technology, Orica Watercare has developed the EcoRegen System which allows for the recycling of up to 70% of the brine regenerant that is typically sent to waste.

The low salt consumption and ultra-low waste volumes produced with the EcoRegen™ System further reinforce the MIEX® Process as having the smallest ecological footprint of any ion exchange process.

EcoRegen™ System Features

- Waste volume reduced to as low as 75 - 100 gal/MG (<0.01% of plant throughput)
- Salt consumption reduced to as low as 150 lb/MG
- Significantly reduced waste disposal costs
- Lower overall MIEX® System operating costs
- Small footprint, skid mounted systems
- Simple operation

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How the System Works

In the MIEX® Process, resin is regenerated in a regeneration vessel by passing a NaCl brine solution through a bed of loaded resin. After each regeneration, a fraction of the brine solution is sent to waste to remove accumulated TOC and sulfate from the regeneration circuit.

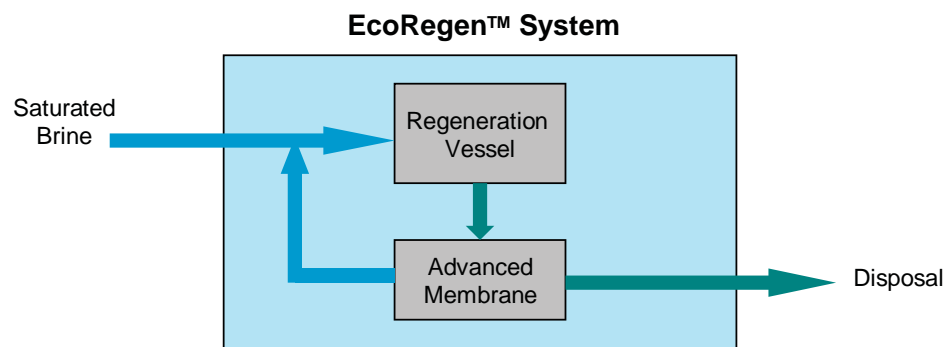
The EcoRegen™ System incorporates advanced membrane filtration to remove TOC and sulfate from the waste brine (Figure 1).

Figure 1: Samples from EcoRegen™ System: waste brine feed (L), concentrate sent to waste (C), and filtered brine (R)



The filtered brine can then be reused in the regeneration process while the concentrate is sent to waste (Figure 2), resulting in a significantly smaller waste volume. The volume of brine that can be recycled ranges from 140 to 280 gal/MG of plant

Figure 2: EcoRegen™ System Flow Diagram



throughput, depending on the MIEX® Process treatment rate.

Recycling of waste brine also reduces the salt make-up rate in the salt saturator. An example of reduced waste volumes and salt consumption that can be achieved using the EcoRegen™ System is shown in Table 1.

Table 1: Mass Balance for MIEX® System using EcoRegen™

Parameter	Value
Treatment Rate	1000 BV
Salt Usage	110-150 lb/MG
Waste Discharged	75-100 gal/MG

Operator Requirements

The EcoRegen™ System is fully automated. The advanced membrane system requires periodic chemical cleaning which can be manual or fully automated.

The EcoRegen™ System results in not only lower waste volumes, but also significantly lower operating costs due to reduced salt consumption and waste disposal charges

Contact Us

Visit our website at www.miexresin.com or contact your nearest Orica Watercare office for more information or to inquire about a specific application.