



DYCLAR  
A MIRRICO COMPANY

# ION EXCHANGE: DYCLAR TECHNOLOGY



DYCLAR

ABOUT US

DYCLAR TECHNOLOGY PROVIDES THE HIGHEST QUALITY OF WASTEWATER TREATMENT AND BENEFITS THE AQUATIC LIFE

OUR MISSION

TO MAINTAIN AND IMPROVE WATER AND ECOLOGICAL BALANCE

BASED IN

SWITZERLAND



PATENTED TECHNOLOGY OF WATER & WASTEWATER TREATMENT

60+

projects for mining, water utilities, chemical industry, oil and gas industry, metallurgy, energy sector

SUSTAINABILITY is an integrated part of our business



GOAL 13

Take urgent actions to combat climate change and its effects

GOAL 14

Conserve and sustainably use the oceans, seas and marine resources

GOAL 6

Ensure access to water and sanitation for all

# Dyclar: Counter-Current Ion Exchange for Softening and Demineralization

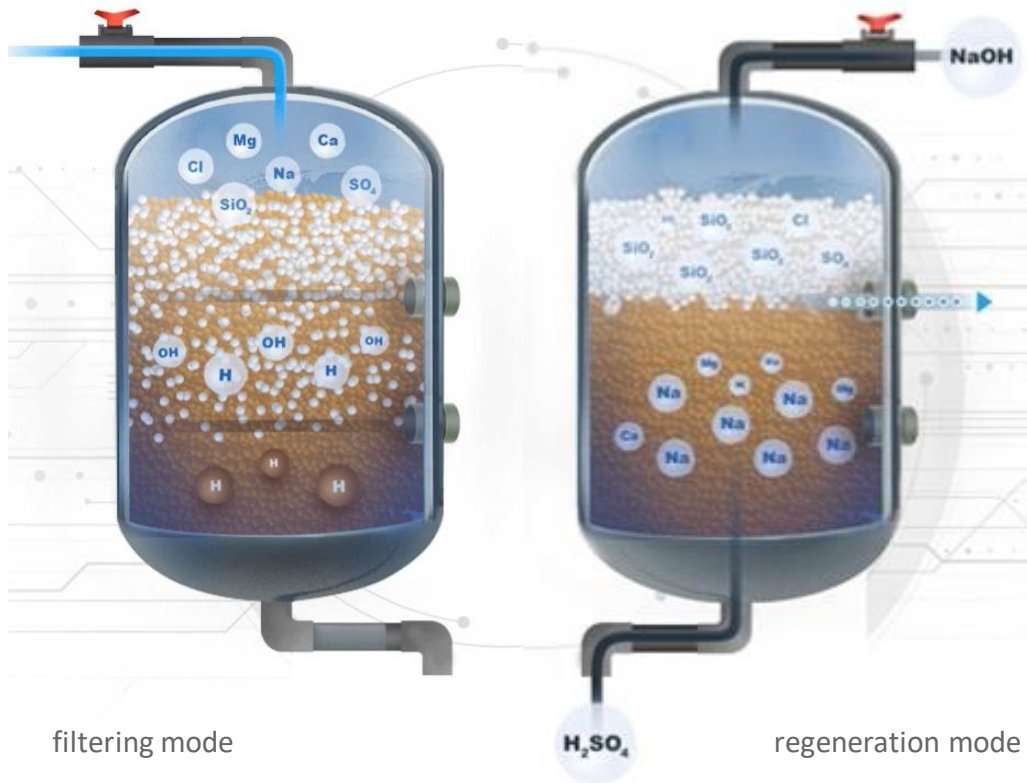


## Advantages over Co-Current Design:

- Decrease of regenerant chemical use (typically by half)
- Compact design with less equipment (**by 2-3 times**)
- Reduced wastewater volumes (**by 3-4 times**)
- Ease of maintenance
- Optimal utilization of filter volume
- Full automation and easy control
- Combination of 2 types of ion exchange resins in one filter for fuller demineralization (e.g. layers of SBA and WBA are used in Dyclar OH anion-exchange filter)
- Tolerable to high turndown ratios in flow
- Self-cleaning eliminating need of additional filter loosening
- Increased filtration speed (**up to 40 m/hr**)
- Reduced footprint for filter placement

**ACTUAL FOR:** power generation, metallurgy, chemical industry

# DYCLAR Deep-Bed Demineralization: Mixed-Bed-H Ion Exchange



## Advantages over EDI Process:

- Service life of equipment is 30 years (EDI: no longer than 7 years)

## Advantages over Conventional Mixed-Bed Ion Exchange

- Reduced wash cycle duration and wastewater volume due to use of additional SAC-H resin layer (2-3 times decrease)
- Improved effluent water quality (conductivity: less than 0.2 uS/cm, silicic acid: less than 15 µg/L, sodium: less than 15 µg/L)
- Simple and reliable operation
- Simple arrangement (easy to retrofit existing filters such as Parallel Flow or Mixed-Bed into DYCLAR)
- High filtration rate (up to 50 m/hr)
- Comparable with various resins
- Fully automated and easy to control

## CHEMICAL WATER TREATMENT UNIT UPGRADE / 2020

The makeup water treatment project included:

1. Softening (Ion Exchanger SAC-Na form);
2. Demineralization (2-step Ion Exchange, SAC H form, SBA-OH form).

### CAPACITY

- Softened Water for Makeup : 422 m3/h
- Demineralized Water: 1,024 m3/h



## HEAT SUPPLY SYSTEM WATER TREATMENT / 2010

The project included construction of a water treatment unit for makeup water supply to the heat system and waste heat recovery boilers.

### CAPACITY

130 m3/h



## STEAM BOILER STATION WATER TREATMENT / 2007

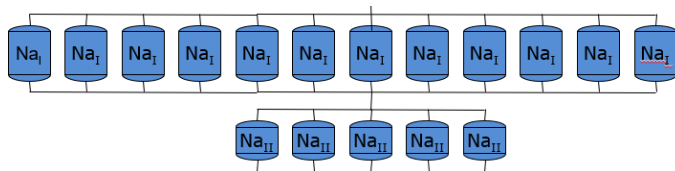
Water softening for makeup of steam boiler

TECHNOLOGY	Dyclar Counter-current Ion Exchange
CAPACITY	1000 m <sup>3</sup> /h
SERVICES	<ul style="list-style-type: none"> <li>• Turnkey Project</li> <li>• Budget Development &amp; Tracking</li> <li>• Design Development</li> <li>• Equipment Supply &amp; Installation</li> <li>• Startup &amp; Commissioning</li> </ul>



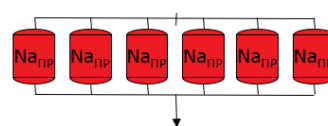
BEFORE RECONSTRUCTION

800 M<sup>3</sup>/H



AFTER RECONSTRUCTION

1000 M<sup>3</sup>/H



You can discuss the details of project with the official representative of Dyclar GMBH

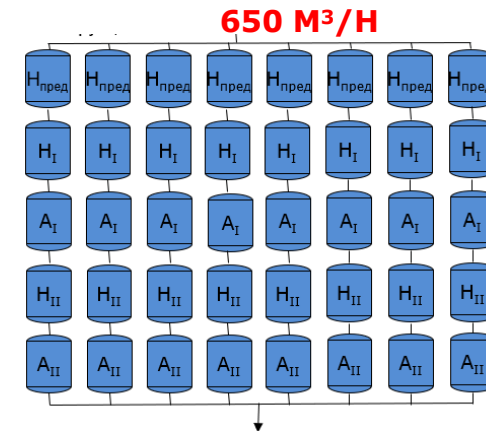
## WATER TREATMENT FOR CHEMICAL INDUSTRY / 2014

Existing 4-stage co-current demineralization plant was retrofitted into 2-stage counter-current plant an ion exchange system.

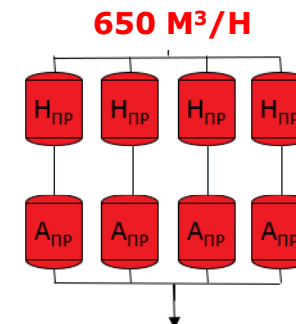
PARAMETER	VALUE
Sulfuric Acid Specific Consumption (g/g equiv.)	100-110
Caustic Soda Specific Consumption (g/g equiv.)	60-65

TECHNOLOGY	Dyclar Counter-current Ion Exchange with an Additional Bed
CAPACITY	650 m3/h
EQUIPMENT	SAC (in the H+ form) and SBA (in the OH- form) Ion Exchange filters 3.4 m diameter
SERVICES	<ul style="list-style-type: none"> <li>• Detailed Design &amp; Documentation Development</li> <li>• Industrial Health &amp; Safety Protocol Review</li> <li>• Equipment Supply</li> </ul>

### BEFORE RECONSTRUCTION



### AFTER RECONSTRUCTION



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# DYCLAR gmbh

Try before you buy – request pilot test:

[welcome@dyclar.com](mailto:welcome@dyclar.com)

