

## Innovative, Highly Efficient Demineralization Systems

### Applications:

Boiler Feed Water,  
Industrial Process Water,  
Cooling Tower Soft-water make-up,  
Speciality Ion-Removal: Arsenic Nitrates, Fluorides, Iron, Manganese  
Waste-water purification

### Industries:

- ◆ Thermal Power Plants
- ◆ Refineries & Petrochemicals
- ◆ Fertilizers Manufacturing
- ◆ Steel & Metals Finishing
- ◆ Pharmaceutical Industries
- ◆ Beverages & liquor Manufacturing
- ◆ Textile Industries
- ◆ Food Processing Industries
- ◆ Dairies
- ◆ Sugar Industries
- ◆ Electro-plating
- ◆ Special Resin Based—Separations

20  
**Ca**  
40.078

12  
**Mg**  
24.305

38  
**Sr**  
87.62

24  
**Cr**  
51.996

25  
**Mn**  
54.938

26  
**Fe**  
55.845

# iX Masters® Technology: Overview

## Description:

**‘Equipment de-rating factor’** represents ‘hydraulic imbalance’ in the ion-exchange system designs. Our innovative (patents pending) ‘flow modulation techniques’ & ‘improved nozzles/internals’ allow ion-exchange units to perform close to their theoretical values by maintain ideal hydraulics!

This *in-vessel*, resin based separation technology, can be applied in numerous applications!

Shallow bed or deep bed resin based, in-vessel, chemical based separation columns can be designed effectively to any scale!

In the following Illustrations (1,2 & 3) velocity gradient built, w.r.t types of underdrain collection systems are shown.

### Plate Type Underdrain Design



1 Peripheral resin less utilized

### Header-Lateral Type Underdrain Design



2 Peripheral resin less utilized on one side

### iX Masters® Designs



3 Uniform Resin Utilization

## iX-Masters® technology key features

- ◆ Innovative internals designs improve overall *in-vessel-hydraulics* during various operations – service, backwash & regeneration to ideal level.
- ◆ Reduces equipment *de-rating factor* to negligible!
- ◆ Allows system to operate almost equal to its *theoretical values*!
- ◆ Reduces the use of *regeneration chemicals* per unit treated volume of water.
- ◆ Reduces *waste-water volume*.



## iX Masters® DM Series: Variants

<p>iX-Masters® DM-CCR</p>	<p>High efficiency '<b>counter current regeneration</b>' (Down-flow service, counter current regeneration)</p>
<p>iX-Masters® DM-CoCR</p>	<p>High efficiency '<b>co-current regeneration</b>' (Down flow service, down flow regeneration)</p>
<p>iX-Masters® DM (Packed-bed, Upflow)</p>	<p><b>Packed bed, up-flow service</b> &amp; down-flow regeneration method</p>
<p>iX-Masters® DM (Packed-bed, Upflow)</p>	<p><b>Packed bed, down-flow</b> service &amp; up-flow regeneration method</p>

### Units Features:

- ◆ **Appropriate selection of resins** upon water chemistry
- ◆ Cation & Anion typically balanced
- ◆ Strata bed resin columns features on demand
- ◆ Customized internals (Patent Pending) for hydraulics optimization for highest efficiency
- ◆ Customized pr. Vessels designs with rubber lining / vinyl ester coating inside
- ◆ Manual / Auto plant operational features

## Product Range & Features

DESCRIPTION	Small Range	Medium Range	Large Range
Flow (m <sup>3</sup> /hr)	4 to 20	25 to 75	80 to 180
Pressure Vessel	MSRL	MSRL	MSRL
Pr. Vessel Code*	IS / ASME	IS / ASME	IS / ASME
Pr. Vessel internal coat / Lining	Rubber Lining / Vinyl Ester	Rubber Lining / Vinyl Ester	Rubber Lining / Vinyl Ester
Pr. Vessel External Coat	Optional -Polyurethane (PU)	Optional -Polyurethane (PU)	Optional -Polyurethane (PU)
Internals (Proprietary)	iX-Masters™	iX-Masters™	iX-Masters™
Frontal Piping	CPVC/PP/MSRL	PP/MSRL	MSRL
Operational Mode	Manual / Auto	Manual / Auto	Manual / Auto
Valves	Ball Valves / Diaphragm Valves	Diaphragm Valves	Diaphragm Valves
Valves – Automation	Solenoid / Pneumatic	Electrical / Pneumatic	Electrical / Pneumatic
Regeneration System	Yes	Yes	Yes
Instrumentation			
Diff. Pr. Controller	Yes	Yes	Yes
Pr. Gauges Locations	Inlet / Outlet	Inlet / Outlet	Inlet / Outlet
Conductivity Measurement	Yes	Yes	Yes

\*Pressure Vessels: IS Codes / ASME Codes (As per customers' recommendation)

### Ion Exchange / Adsorption: System Design & Integration as 'Turnkey Project'

- ◆ **Customized system design approach:** studying inlet water chemistry, output water quality & daily volume requirements etc.
- ◆ Integrated full system design approach: Engineering to meet specific ion-exchange applications
- ◆ Pilot-Testing approach: To validate challenging separation applications results.
- ◆ Bench-mark features in our offerings: Resin selections, optimized process designs with highly effective 'iX-Masters™' internals & state-of-the-art PLC based designs.
- ◆ Retrofit solutions: Available for DM Plants, Softeners (Conditions apply)

### Contaminants Removal: CATION & ANIONS

#### Special Contaminants Removal:

Arsenic (As), Barium (Ba), Perchlorate, fluorides (F), Nitrates (NO<sub>3</sub>), Hexavalent Chrome (Cr<sub>6+</sub>), Iron, Manganese, Ammonia(NH<sub>3</sub>) & Organics etc.