DM Plant (Two Bed De-ionizer)

Demineralised water from cation and anion exchange beds

Overview

A DM plant removes dissolved salts from water. In a two bed de-ionizer the water first passes through a cation bed that swaps metal ions for hydrogen, then an anion bed that swaps acids for hydroxide. The result is demineralised water with very low conductivity.

Arukal designs and supplies DM plants from small skids to large installations, with FRP or MS rubber-lined vessels, valves, regeneration tanks and controls. We also supply the resin and support regeneration and operation.

< 20 µS/cm	0.5 – 50 m³/h	< 0.2 mg/L	Cation + anion
Outlet conductivity	Capacity	Silica	Beds

Key features

Low conductivity Typical outlet below 20 µS/cm with a two bed plant.	**Right materials** FRP or MS rubber-lined vessels, acid and alkali tanks, dosing and pipework.
Wide capacity range Small skids up to large industrial plants.	**Resin and spares** Fresh resin charge and spares from one supplier.
Automatic or manual Valve-operated or PLC-controlled regeneration.	**Design and support** We design from your water analysis and support start-up.

Applications

Boiler feed water • Process water • Pharma and laboratory water • Power plants • Battery and chemical plants • Cooling make-up

How it works

1. Cation exchange	2. Anion exchange	3. DM water out	4. Regeneration
Cation resin removes calcium, magnesium and sodium and releases hydrogen ions.	Anion resin removes chloride, sulphate, bicarbonate and silica and releases hydroxide.	Hydrogen and hydroxide combine to form pure water with very low conductivity.	Acid restores the cation bed and alkali restores the anion bed when capacity is used up.

Care and handling

Commission. Rinse the new resin, set regeneration levels and record the outlet conductivity.
Operate. Run each bed until the outlet conductivity or silica rises, then regenerate.
Regenerate. Use the correct acid and alkali strength and contact time. Never under-regenerate.

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Technical specifications

Typical values. Values are typical for the product family and given for guidance. Exact figures depend on the make and model supplied; ask us for the data sheet of the specific model.

Plant (typical)

Process	Strong acid cation + strong base anion (two bed), optional degasser
Capacity	0.5 – 50 m³/h (larger on request)
Outlet conductivity	< 20 µS/cm (typical)
Outlet silica	< 0.2 mg/L (typical)
Outlet pH	6.5 – 8.5 (typical)
Service flow rate	approx. 20 – 30 m/h per bed
Regenerants	HCl or H_2SO_4 for cation; NaOH for anion

Construction

Vessels	FRP, or MS rubber lined
Valves	Diaphragm, butterfly or multiport
Piping	UPVC / CPVC / MS rubber lined
Controls	Manual, semi-automatic or PLC with conductivity monitoring

Typical plant sizes

Model	Capacity	Typical vessel	Typical use
DM 1	1 m³/h	18 – 24 in	Laboratory, small boiler
DM 5	5 m³/h	36 in	Small industry, boiler feed
DM 10	10 m³/h	48 in	Process and boiler feed
DM 25	25 m³/h	72 in	Power and process plants
DM 50	50 m³/h	96 in and above	Large industry

Capacity is for a typical raw water TDS of 300 – 500 mg/L. Higher TDS reduces output per cycle.

To receive a recommendation, send us:

- Raw water analysis (TDS, hardness, alkalinity, chloride, sulphate, silica)
- Required capacity (m³/h or m³/day) and hours of operation
- Required outlet conductivity and silica
- Acid and alkali available, and the drain arrangement