Mixed Bed Plant

Polishing units for ultra-pure, very low conductivity water

Overview

A mixed bed unit holds cation and anion resin mixed together in one vessel. Each water molecule meets many cation and anion exchange sites, so the water leaves with extremely low conductivity, far lower than a two bed plant can reach.

It is normally used as a polisher after a DM plant or RO. Arukal supplies mixed bed plants with vessels, internals, mixed resin, regeneration tanks and controls, and supports resin replacement.

< 0.2 µS/cm	< 0.02 mg/L	0.5 – 50 m³/h	Cation + anion mixed
Outlet conductivity	Silica	Capacity	Resin

Key features

Highest purity Outlet conductivity below 0.2 µS/cm is typical.	**Compact** One vessel instead of two.
Very low silica Silica below 0.02 mg/L for boiler and high-pressure steam.	**Automatic or manual** Valve-operated or PLC-controlled regeneration.
Polishing duty Works after DM or RO for stable high-purity water.	**Resin and support** Mixed bed resin and servicing from Arukal.

Applications

Power plants and high-pressure boilers • Pharma and biotech • Electronics and semiconductor • Laboratories • Battery and chemical plants • RO polishing

How it works

1. Service	2. Exhaustion	3. Separate	4. Regenerate and remix
Water flows through the mixed resin. Cation and anion sites remove the last ions.	When the resin is exhausted, conductivity at the outlet starts to rise.	Backwash separates the lighter anion resin from the heavier cation resin.	Alkali and acid regenerate the two resins; air mixes them again.

Care and handling

Keep the feed clean. Run the mixed bed after DM or RO so it is not overloaded.
Regenerate. Regenerate on conductivity rise. Separation and remixing must be complete.
Monitor. Use an online conductivity meter at the outlet.

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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 mixed bed
Capacity	0.5 – 50 m³/h
Outlet conductivity	< 0.2 µS/cm (typical)
Outlet silica	< 0.02 mg/L (typical)
Service flow rate	up to 40 m/h
Feed quality	Conductivity below 20 µS/cm (after DM or RO)

Construction

Vessel	FRP or MS rubber lined
Resin	Cation : anion typically 1 : 1.5 by volume
Regenerants	HCl or H_2SO_4; NaOH
Controls	Manual, semi-automatic or PLC with conductivity monitoring

Typical plant sizes

Model	Capacity	Vessel	Typical use
MB 1	1 m³/h	13 – 18 in	Laboratory, small boiler
MB 5	5 m³/h	24 – 30 in	Pharma, electronics
MB 10	10 m³/h	36 in	Power and process
MB 25	25 m³/h	48 in	Power plants

Capacity per cycle depends on feed conductivity. Ask us for a design.

To receive a recommendation, send us:

- Feed water type (DM, RO permeate) and its conductivity and silica
- Required outlet conductivity and silica
- Flow rate (m³/h) and hours of operation
- Acid and alkali available at site