



# **WATERPOWER**

TOTAL WATER MANAGEMENT SOLUTIONS FOR THE POWER SECTOR

## THE WATER BEHIND POWER

Ion Exchange (India) Ltd. leverages over five decades of pioneering specialisation in water and environment management to offer the power sector end-to-end solutions that provide the cutting edge of innovation, reliability and efficiency for optimal production and performance. Our advanced, cost-effective solutions are at work at more than a hundred prestigious power projects in India and globally, helping to power their production profitably and sustainably, with environmentally responsible total water management. Ensuring optimum quality and quantity of water throughout the usage cycle in power plants, while minimising environmental impact by conserving water and reducing pollution through recycle and zero discharge.

We have constructed water and waste water treatment facilities and managed water at almost all of India's large power stations besides working with some of the world's biggest and leading power plant EPCs. Our facilities are being operated across all state electricity boards in India, NTPC and a host of other IPPs. Some of the EPCs and consultants we have partnered include BHEL, ABB, Alstom, Daelim, Foster Wheeler, Marubeni and Reliance.





## Innovative Solutions for the Power Sector

Driven by commitment to customer satisfaction, Ion Exchange (India) Ltd. offers the power sector a single window, total solutions capability. With the most comprehensive range of technologies, best quality products, superior application knowledge and outstanding service support, we are truly a powerhouse of total water management solutions for the power sector.

### Pretreatment

Ion Exchange India provides the most extensive line-up of products and systems to treat all kinds of water, be it surface or ground, brackish or sea water, before it transforms into steam for thermal power generation.

At the pretreatment stage, our Lamella Clarifiers, Ultra High Rate Clarifiers and Auto Valveless Gravity Filters are clearly the first choice for reducing high turbidity and suspended solids in the water source.

These space saving, efficient systems reduce high suspended solids load to acceptable levels as feed to make-up water treatment systems.

#### Ultra High Rate Clarifier

- Combines technology of solid contact clarifier and plate type clarifier
- Reaction, flocculation, separation, sludge removal and clarification occur in a single treatment basin

- Effective solid handling and sludge removal
- Minimum amount of water lost through sludge blow down
- Smallest footprint among comparable clarifiers



Ultra high rate clarifier

#### Auto Valveless Gravity Filter

- Automatic backwash, hence reliable as the filter operates automatically
- No moving parts, hence less maintenance
- Uniform high quality treated water
- Low operating cost; no supervision required
- Compact and modular design, hence low expansion and installation cost
- Space saving



Auto valveless gravity filters

## Ultra Filtration for Silica Removal

Effectively employed for removal of non-reactive silica.

- Removal of virtually all particulate matter, suspended solids, colloids and organics
- Removal of colloidal material (non-reactive silica, iron, aluminium etc.)
- Removal of high molecular weight organics
- Pretreatment for reverse osmosis plant for reduction in Silt Density index (SDI)



Ultra filtration plant



Demineralisation plant

## Advantages

- Single vessel
- Excellent treated water quality with respect to silica
- Highest chemical efficiency
- Easy to retrofit in existing systems
- Lowest cost of production of demineralised water

Similarly, the Layered Bed Cation Unit is offered depending on inlet load conditions.

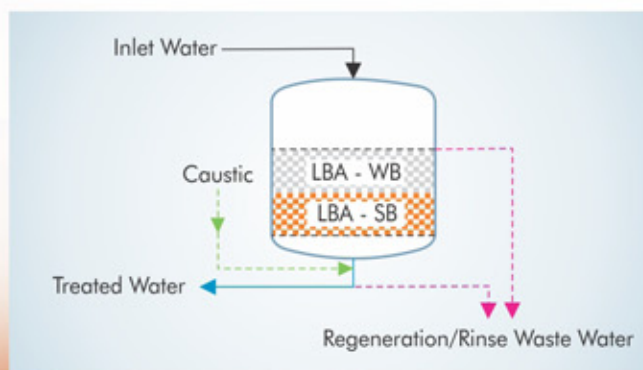
## Boiler Feed Water Treatment

### Demineralisation

Choice of processes using ion exchange columns & membrane processes.

### Advanced technologies in demineralisation plants

The Layered Bed Anion Unit is a single vessel system with layers of two resins, INDION LBA-WB on top of INDION LBA-SB with downflow service. The layered bed system provides the high chemical efficiency of a two-bed weak base anion and strong base anion system in a single vessel, saving considerable initial as well as recurring cost.



### Reverse Osmosis

- Salt rejection ranges from 90 to 98% depending on feed water composition
- Product recovery ranges from 50 to 80% based on feed water composition



Sea water reverse osmosis desalination plant



## Condensate Polishing

Condensate polishing units are typically used in fossil power plants to improve condensate return for boiler feed. The benefit of condensate polishing is quicker start-up and as a result full load conditions are reached early giving economic benefits.

### Benefits

- Improvement in the quality of condensate and "cycle" clean-up.
- Reduced blow down and make-up requirements.
- Improvement in boiler water quality for drum type boilers.
- Orderly shutdown possible in case of condenser tube leak conditions.
- Improvement in quality of steam which results in enhanced turbine life.
- We also offer treatment units for stator water polishing.

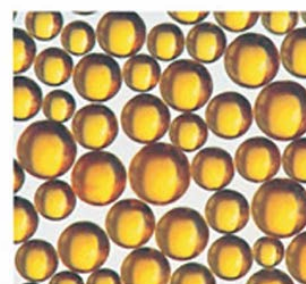


Condensate polishing units

## Ion Exchange Resins

With more than 50 years of expertise in the manufacturing of ion exchange resins to international standards, we are positioned as the market leaders in India.

- Complete range of gel, isoporous & macroporous cation and anion exchange resins for water treatment as well as speciality applications in nuclear power
- ISO 9001 and ISO 14001 certified fully automated manufacturing facility at Ankleshwar, Gujarat



Ion exchange resins

## Boiler Water Treatment Chemicals

Specially developed for power plant boilers, these are boiler water treatment chemicals with multipurpose formulations containing hardness treatment chemicals, instant oxygen scavenger, corrosion control agents, polymeric sludge conditioners and sequestrants, to provide trouble-free operation and clean boilers.

### Benefits

- Economical and easy to handle
- Prevention and removal of deposits
- Protection of system from corrosion



## Cooling Water Treatment Chemicals

The cooling tower, an integral part of the power plant, requires to be run at maximum efficiency with low operating cost. Ion Exchange India is specialist in state-of-the-art technology for cooling water treatment chemicals.



Cooling water treatment

### Benefits

- Prevention of cooling water related problems such as corrosion, scale fouling and microbial growth in cooling water systems.
- Our cooling water programmes ensure consistency in heat transfer at the metal surface.



Zero discharge plant

## Waste Water Treatment & Water Recycle Systems

Ion Exchange India's Total Water Management Solutions incorporate newer, cost-effective waste water treatment & recycle technologies. Our recycling plants enable power plants to reduce their raw water requirements up to 90%, and to obtain the advantages of lower water costs, better process efficiencies and energy savings.

Our recycle systems integrate physico-chemical, biological and membrane separation processes for optimum water recovery. They include advanced effluent treatment processes, micro filtration, ultra filtration, nano filtration and reverse osmosis systems, membrane bio-reactors and advanced photo-chemical oxidation.



## Services

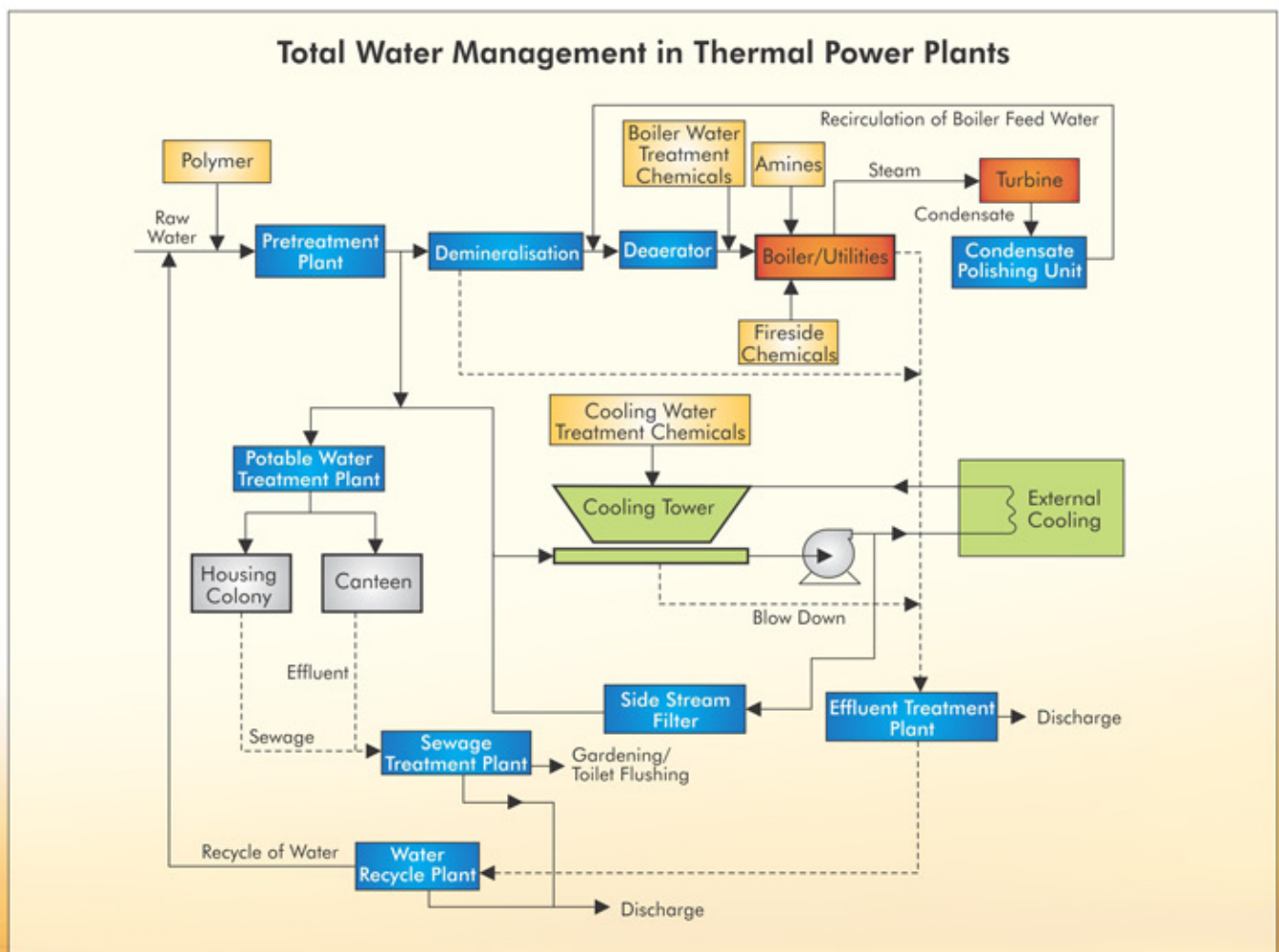
Our complete service support system helps maximise overall production and performance levels, by ensuring continuous, optimum performance of your water and waste water treatment plants.

Though O&M contracts we undertake total responsibility for operation and maintenance, and supply of required water quality and quantity on a continuous basis. We carry out technical audits, study plant operations & design parameters and provide solutions for improving operational aspects, optimising and reducing operating costs and improving treated water quality.

We also undertake upgrading/retrofitting of plants for efficiency improvement on Build-Own-Operate/ Transfer (BOO/T) basis.



O & M services at power station



Treatment	Applications	Products
Raw Water Pretreatment	<ul style="list-style-type: none"> <li>Removes suspended solids, colloids, organics, iron and manganese from water</li> </ul>	<ul style="list-style-type: none"> <li>Ultra High Rate Clarifier, Lamello Clarifier, High Rate Solids Contact Clarifier</li> <li>Pressure &amp; Gravity Type Filters</li> <li>Ultra Filtration</li> </ul>
Boiler Feed Make-Up Water Treatment	<ul style="list-style-type: none"> <li>Produces high quality demineralised water to the boiler</li> <li>Prevention and removal of deposits, protection of system from corrosion, trouble-free operation and clean boiler</li> </ul>	<ul style="list-style-type: none"> <li>Conventional and Layered Bed Ion Exchange</li> <li>Ultra Filtration</li> <li>Reverse Osmosis, Sea Water Desalination</li> <li>Electro Deionisation (EDI)</li> <li>Speciality Chemicals for boiler feed water conditioning</li> </ul>
Condensate Treatment	<ul style="list-style-type: none"> <li>Reduces the losses or damages caused by corrosion or deposits from condensate streams</li> <li>Reduces start-up times</li> <li>Minimises routine cleaning</li> </ul>	<ul style="list-style-type: none"> <li>Deep Bed Mixed Bed Condensate Polishers</li> <li>Stator Water Polishers</li> </ul>
Cooling Water Treatment	<ul style="list-style-type: none"> <li>Prevention of corrosion, scale fouling and microbial growth in cooling water systems</li> <li>Side stream filtration to increase the cycles of concentration by reducing suspended solids</li> </ul>	<ul style="list-style-type: none"> <li>Speciality Chemicals for cooling water treatment</li> <li>Auto Valveless Gravity Filters</li> <li>Pressure Filters</li> </ul>
Waste Water Treatment & Recycle	<ul style="list-style-type: none"> <li>Recovers cooling tower blow down and DM regeneration to minimise waste</li> <li>Treatment/recycle of canteen/colony sewage</li> <li>Ash water recovery</li> </ul>	<ul style="list-style-type: none"> <li>Clarifiers</li> <li>Filters</li> <li>Ultra Filtration</li> <li>Reverse Osmosis</li> <li>Biological Treatment (e.g. membrane bio-reactor, fluidised media reactor)</li> <li>Evaporators/Crystallisers</li> </ul>

To the best of our knowledge the information contained in this publication is accurate. Ion Exchange (India) Ltd. maintains a policy of continuous development and reserves the right to amend the information given herein without notice. Please contact our regional / branch offices for current product specifications.

**IONEX** is our registered trademark of Ion Exchange (India) Ltd.



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Visakhapatnam

### Overseas Offices - [CLICK HERE](#)

Bahrain | Bangladesh | Canada | Indonesia | Kenya  
Malaysia | Oman | Saudi Arabia | Singapore | South Africa  
Sri Lanka | Tanzania | Thailand | UAE | USA

### Manufacturing Units

India - Ankleshwar | Hosur | Patancheru | Rabale | Verna | Wada

Overseas - Hamriyah | Kingdom of Bahrain | Indonesia | Bangladesh

All India Service and Dealer Network

[www.ionindia.com](http://www.ionindia.com)

