

LEADING THE WAY IN SEA WATER DESALINATION

By Ion Exchange (India) Ltd.

Ion Exchange is a pioneer of water treatment in India with a legacy spanning over five decades. Our sales, production and service footprints across the world include seven manufacturing and assembly facilities across India and one assembly facility each in UAE, Indonesia, Bangladesh and Saudi Arabia. We are one of the very few companies worldwide with a complete range of solutions for water, wastewater management, solid waste management and now waste to energy. Comprehensive technologies, products and services, enable our multidisciplinary teams of experts to cater not just to industries and municipalities but also to communities, institutions and homes. Our 360° total water and environment management adds value from influent water through potable and industrial process water, seawater desalination to effluent/sewage treatment, water recycling for zero liquid discharge and waste to energy projects for solid waste management all backed by one of the largest service infrastructures. Our ISO 9001, ISO 14001 and ISO 45001 certified facilities manufacture world-class ion exchange resins for water and non-water speciality applications, membranes, water treatment chemicals and speciality process chemicals.

Back in 1996, when many regions in India were struggling through a water crisis, water had become a limiting factor, particularly for industrial use.



Sea Water Intake Plant

Water scarcity coupled with high cost of raw freshwater, created the need to develop technologies to harness freshwater and find alternate sources of water which would also be viable and sustainable. Source substitution emerged as the most suitable alternative to supplement the growing water demand, especially for industrial use.

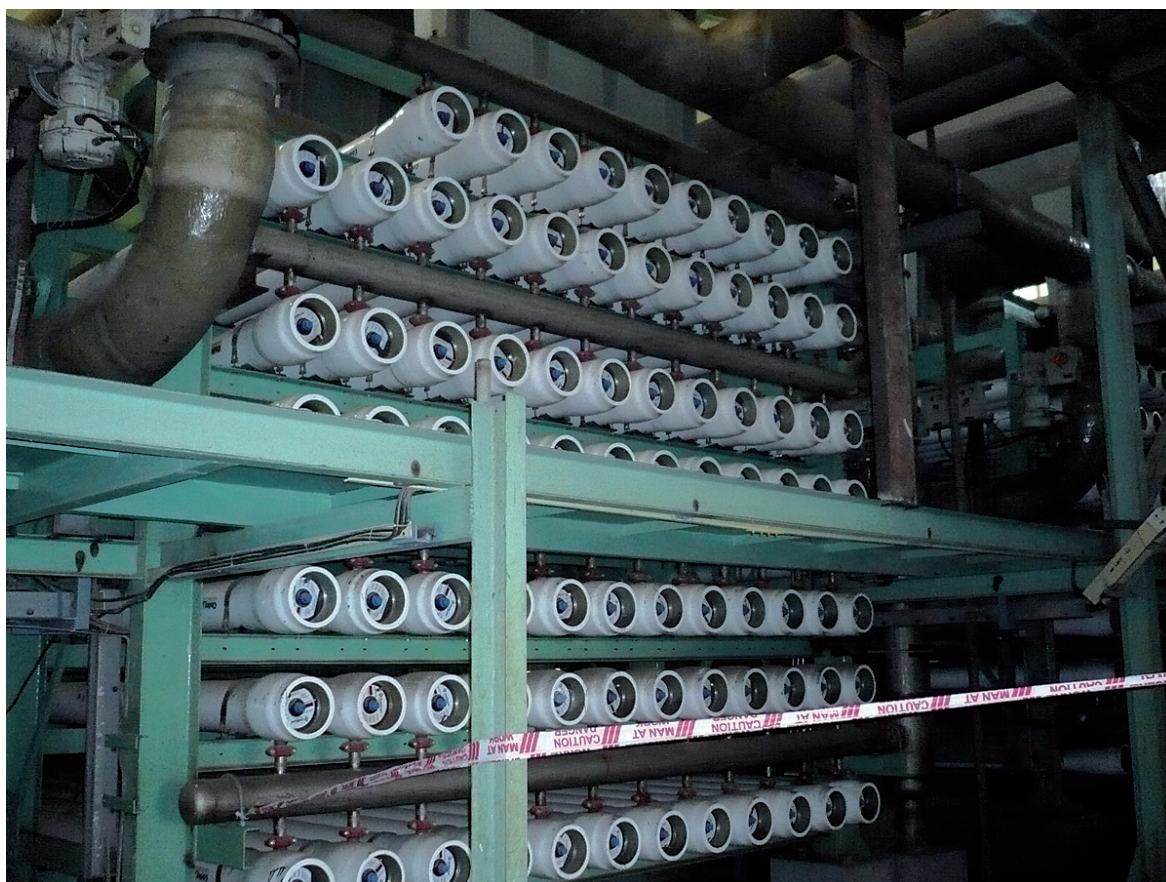
Ion Exchange pioneered the concept of 'Alternate Water Sources' in India to meet the growing needs of water using Seawater Desalination, Sewage and Effluent Recycle. With seawater covering over 70% of the earth's surface and representing almost 97% of the

world's water, Ion Exchange recognized the need and benefits of converting seawater to freshwater and led the way in Sea Water Desalination by setting up the country's first Sea Water Desalination Project for a leading power utility in the year 1996. Similarly, we pioneered the concept of effluent recycling and in recent times with complete Zero Liquid Discharge. Today, we boast of the highest number of references to desalinate water, recycle industrial effluent and municipal sewage. Basis this rich experience, we offer pre-engineered and custom-built solutions on a turnkey EPC, BOOT/BOT basis.

Some of our references are detailed below:

Sea Water Reverse Osmosis (SWRO) Plant for One of the Largest Public-Sector Refineries, India

Ion Exchange supplied a 5.8 MGD (Million Gallons per Day) RO-based desalination plant to one of the largest public-sector refineries at Kattupalli in Thiruvallur district, Tamil Nadu, on a lump sum turnkey basis. The scope of the project included high-tension electrical systems of 11 kV to 415 VAC and DCS-based control system for auto operation of the plant, civil work including piling, RCC



Reverse Osmosis Section

tanks of 14,000 cu. m. capacity, building and RCC structures. It was one of the largest Sea Water Desalination plants in the Industrial segment with 26.4 MLD capacity. A fully operational SWRO plant helped the customer to achieve their water requirements.

SWRO Plant for One of the Largest Energy Conglomerates, India

Ion Exchange was awarded a prestigious order for a large energy conglomerates' maiden venture into Sea Water Reverse Osmosis (SWRO). The objective of the SWRO plant was to cater to the water requirements of the thermal power plant of the customer. The project was successfully executed by Ion Exchange. The 19.8 MLD (3x275 m³/h) SWRO plant for 3x500 MW thermal power plants at Vallur, near Chennai, treated processed seawater to produce demineralized water for use in the boiler drum for steam generation. Its key features

included salt rejection ranging from 90-98% and product recovery of 50-80% based on

feed water composition. A small part of the desalinated water was also used for potable pur-

poses. Our value-added design and engineering resulted in the optimization of power and chemical consumption. Winning the globally competitive bidding process in which 32 companies participated speaks volumes about customer confidence in our capabilities.

Offshore Seawater Filtration Package for Oil & Gas sector, UAE

The venture developed as part of a strategic initiative to reach 1.75 million barrels of offshore crude oil production a day, awarded Ion Exchange a contract for a critical seawater filtration package to provide injection water for augmenting crude oil production. The produced water from the injection well is conveyed using a lift pump, filtered, de-aerated and transferred by booster and injection pumps to the remote injection well at the Well Head Tower (WHT) via Riser Platform. The anticipated requirement for the water injection system is to



Sea Water Reverse Osmosis System

provide 11,90,700 m³/h of water per day with stringent water quality specifications (98% particles less than 2 microns). To achieve the desired water quality, Ion Exchange designed, engineered and constructed two trains of skid-mounted units each with a capacity of 5,95,350 m³/h that could be transported on a barge consisting of a continuous coarse filter, specially designed media filters and polishing fine filtration to meet the stringent quality requirements of injection water. The offshore seawater filtration package was successfully commissioned in December 2019.

Sea Water Cooling Treatment Plant for an Autonomous Body Established by the Government of Goa, India

Meeting the customer's need for excellent services, a strong presence and ability to complement their Desalination technology, Ion Exchange



Sea Water Reverse Osmosis System

was awarded a contract for a seawater cooling treatment

programme by the customer for their 30 MW waste heat

recovery power plant. The unique feature of this project was that condenser cooling was done using seawater with 1.5 times concentration in the cooling tower. Seasonal fluctuations in the makeup water quality dramatically alter the water characteristics which were a critical factor to consider when designing the treatment program which uses world-class speciality chemicals to control scaling and fouling of the condenser in the seawater cooling system. We also engaged dedicated service engineers to monitor the treatment.

In addition to the above installations, we also have projects references in various capacities across diverse sectors.

About the Contributor

***Ion Exchange**, a pioneer of water treatment in India with a legacy spanning over five decades, is today a premier company in water and environment management with a global presence.*



Complete assembled skid being moved on Self Propelled Modular Transporter (SPMT) from Fabrication Yard to Barge