

## Fuelling the **OIL & GAS** Industry with Total Integrated Water Management Solutions



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## SPOTLIGHT

# Fuelling Profits for the Oil & Gas Industry with our Integrated Solutions

Water is recognized as a scarce and precious resource and an essential component of sustainability for industries. Either as a significant component of the manufacturing process or a critical part of the utility application, water needs to be managed effectively across the value chain for its use in industrial processes. It is estimated that by 2030, global water requirements will exceed supplies by 40 percent. Today, water has become more important than what oil was in the 19<sup>th</sup> and 20<sup>th</sup> centuries.

In India, the oil and gas sector is among the eight core industries and plays a major role in energizing all industries and segments of the economy. Despite the emergence of renewable and alternate sources of energy like solar, wind, hydropower and waste, the demand for oil and gas continues to grow globally, largely fuelled by emerging economies.

Water is a crucial component for all oil and gas producing facilities. Sourcing right quality of water, utilizing it for the extraction process for oil and gas and its use in the production of downstream refinery processes and utilities are the key water management processes in the industry. The volume of water consumed at a well site could exceed the volume of oil or gas produced. Cracking, light coking and heavy coking consume 0.34, 0.44, and 0.47 barrels of water per barrel of crude oil, respectively. Also, gasoline production consumes a huge amount of water namely 0.60–0.71 gallons of water per gallon of gasoline. The industry also produces a large amount of complex wastewater which needs to be treated for reuse or disposal.

Realizing the critical need for water and wastewater management in the oil and gas industry, at Ion Exchange, we offer a comprehensive package of total water and environment management solutions to the oil and gas producers, downstream refinery petrochemical manufacturers and also to end customers like plastic component manufacturers, surface coating manufacturers and chemical producers to name a few. Our solutions include advanced water, waste treatment, Zero Liquid Discharge and speciality utility chemicals with value added and comprehensive services. Our solutions also include processes to recover valuable byproducts or to treat/remove complex contaminants in the process stream, thereby defending the industry against declining water supplies, increasing process efficiency, reducing cost and improving profitability while meeting sustainability objectives. We also meet the industry's need for speciality process chemicals to improve performance across its value chain from upstream exploration to downstream refining process.

Complementing our technologically advanced and value added solutions, we offer world class speciality ion exchange resins, membranes, antiscalants and membrane cleaners to meet the extensive water and wastewater treatment demands of refineries all backed by world class service infrastructure providing 24X7 services to our customers.

We fuel innovations to keep pace with the industry's emerging demands through our state-of-the-art DSIR certified R&D facilities and technology centres manned by competent scientists.

We meet the industry's need for quality supply of goods and services through our ISO 9001 and 14001 certified manufacturing facilities and service operations. We also have well-documented EHSS (Environment, Human, Safety and Security) systems which drive us to deliver our business goals while protecting people and the environment and meeting the exacting needs of the Oil & Gas Industry.



# OUR COMPLETE SOLUTIONS

## UPSTREAM

### Offshore Sea Water Injection Package

#### Umm Lulu an offshore oil field developed by Abu Dhabi Marine Operating Company (ADMA - OPCO)

A joint venture of Abu Dhabi National Oil Company (ADNOC), BP Total and Japan Oil Development Company, it is located in the Arabian Gulf 30 km north-west of Abu Dhabi, UAE. The Umm Lulu field is being developed as part of ADNOC'S strategic initiative to reach 1.75 million barrels of offshore crude oil production a day.

A consortium of NPCC and Technip was awarded a package of \$1.69 bn EPC contract for Umm Lulu Phase II. Subsequently, Ion Exchange was awarded the contract by NPCC and Technip for the critical seawater filtration package required to provide injection water for the Umm Lulu production reservoir to augment 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 Umm Lulu Riser Platform (ULRP). The anticipated requirement for the water injection system is to provide 11,90,700 m<sup>3</sup>/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 m<sup>3</sup>/h that could be transported on a barge consisting of continuous coarse filter, specially designed media filters and polishing fine filtration to meet the stringent quality requirements of injection water.

The offshore sea water filtration package was successfully commissioned in December 2019.



Mixed Media Filters and Cartridge Filters Skids



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

## Onshore Produced Water Treatment

### Amal Steam, PDO Oman

The PDO-Amal steam development project in South Oman is one of the largest brownfield enhanced oil recovery development project. Ion Exchange & Company LLC was selected as the EPC contractor against stiff international competition for 9900 m<sup>3</sup>/d steam injection package that required exclusive Ion Exchange technology for treating produced water. The produced water had oil, high total dissolved solids and hardness. The treated water after a unique oil removal system passes through two stages of speciality ion exchange resin columns complete with an automatic skid mounted brine dosing system to reduce hardness. This treated water is used to produce steam for reinjection into heavy oil fields to boost the extraction rate of oil without scaling oil crevices. The project was successfully commissioned and continues to be operated and maintained by us along with several water treatment plants installed in the facility.



Speciality Ion Exchange Resin Columns



Brine Dosing Skids

### Cairn India Limited, Barmer

M/s Cairn India Ltd. awarded EPC contract to Ion Exchange (India) Ltd. for constructing produced water treatment plant for reinjecting sulphate free water for its large Mangala and Bhagyam wells.

Ion Exchange's lumpsum turnkey contract includes an elaborate pre-treatment system followed by a novel dual-membrane filtration system comprising of advanced nano-filtration and reverse osmosis process to treat 2315 m<sup>3</sup>/h of produced water. Supplied completely with CIP, the system is particularly designed for reducing sulphur concentration from 500 ppm to < 10 ppm, whilst minimizing reject in the membrane treatment process to <10%. The reject handling system consists of high pressure pipeline and pumps including booster pumps for reject disposal into disposal wells which are located at a designated reject disposal well pad. The pipeline system is complete with associated pigging facilities at both dispatch & receiving ends.

## DOWNSTREAM

### Refinery

#### Total Water Management for Reliance Industries Limited, Jamnagar

Speaking volumes for Ion Exchange's capability for turnkey execution of large and complex water and waste treatment plants, Reliance Industries Limited (RIL) Jamnagar had entrusted to us a contract for water treatment plant (13 x 388 m<sup>3</sup>/h), condensate polishing unit (3 x 388 m<sup>3</sup>/h) and effluent treatment plant.

Wastewater treatment is carried out in a committed, state-of-art, completely automated & PLC operated Effluent Treatment Plant (ETP). The effluent treatment area is designed to contain and treat all internal process/utility wastewater and storm/firewater, with the objective of zero discharge from the refinery complex. The treated water is recycled back to the high total dissolved solids treatment train. Effluents are isolated into four identical wastewater streams designed for a treatment capacity of 500 m<sup>3</sup>/h each and maximization of reuse.

The Low Total Dissolved Solids (LTDS) stream a mixture of process/oily water which include non-phenolic waste water, is tempered to an effluent quality adequate for reuse for cooling water makeup, fire water make up and irrigation water for expansion and preservation of the local green belt.

The High Total Dissolved Solids (HTDS) stream is a mixture of process/oily wastewater that have been in contact with process streams, such as in the crude unit desalters, and have absorbed or dissolved mineral ions such as sodium chloride. This stream also comprises (treated neutralised) process solvents such as spent caustics and phenolic wastewater. This water is treated by a downstream membrane process to an effluent quality adequate for re-use as partial makeup in seawater cooling tower and as process water.

The Oily Water Sewer (OWS) stream is a mixture of process/oily water which includes oily condensates from various refinery units, sanitary sewage (after primary treatment), drainage from tanks, contaminated stormwater, etc. The treated OWS effluent is perfect for horticulture.

The ambit of treatment also includes three by-product streams generated during the treatment of refinery wastewater - skimmed or slop oils, oily sludge and biological sludge. Skimmed oil is chemical and heat-treated with recovered oils transferred back to the refinery for reprocessing. Oily sludge is thickened and then transferred back to the delayed coker unit for reprocessing. Biological sludge is thickened, stabilised, dewatered and disposed-off to landfill.

Each of the above streams employs identical equipment for treating effluents.

The effluent treatment plant is treating 100% effluent yielded by the refinery since its commissioning in December 2008 and systematically producing treated effluent (pH 6-8.5, Sulphide < 0.5 ppm, COD < 50 ppm, Oil & Grease < 5 ppm, Phenol < 0.35 ppm) fulfilling guaranteed parameters for re-use for various applications mentioned earlier. We have also supplied a Demineralization (DM) plant, side stream filters, condensate polishing unit completing our total water management capabilities. We are also operating and managing the cooling tower programs and ETP with our speciality chemicals and expert manpower.



Demineralization Plant

## Petrochemical

### Zero Liquid Discharge for Indian Synthetic Rubber Limited

The Indian Synthetic Rubber Limited (ISRL) is a synthetic rubber manufacturing plant in Panipat, Haryana (Joint venture of Indian Oil Corporation & Marubeni, Japan & TSRC Corporation). ISRL is one of the few producers of styrene-butadiene rubber in India.

The supreme challenge faced by ISRL was stark water scarcity as well as no consent to discharge the complex effluent produced. Ion Exchange has set up and executed a 125 m<sup>3</sup>/hr Zero Liquid Discharge (ZLD) unit for ISRL. The treatment integrates a radical oil removal system followed by biological treatment and a state-of-the-art membrane system which incorporates UF-RO and multi-effect evaporator to meet ZLD norms. The operation and maintenance are also carried out by Ion Exchange.

With these solutions, ISRL was able to recover 91% of water with TDS < 150 ppm. This water is used in cooling-tower makeup and various process applications thereby empowering ISRL to reuse water while meeting the stringent Zero Liquid Discharge norms.



Complete Zero Liquid Discharge

### 1100 m<sup>3</sup>/h Seawater Desalination Plant for Chennai Petroleum Corporation

Ion Exchange supplied a four stream RO-based 1100 m<sup>3</sup>/h sea water desalination plant to Chennai Petroleum Corporation Ltd. (CPCL) at Kattupalli in Thiruvallur district, Tamil Nadu, on a turnkey basis. Desalinated water was ingested through pipelines from the plant to the refinery at Manali, which is about 20 km from this plant. Our contract was for total civil work including piling, RCC tanks, building and RCC structures. The scope also included high-tension electrical systems and DCS based control system for auto operation of the plant.

The plant assists CPCL to meet the water requirements of its Manali refinery complex and achieve self sufficiency. When commissioned, it was the largest capacity seawater desalination plant in the industrial segment.



Sea Water Intake Plant



Reverse Osmosis Section

## Integrated Water Management and Zero Liquid Discharge for Reliance Industries Limited, Silvassa

Based on the successful installation and start-up of the wastewater treatment facilities in Hoshiarpur and Allahabad for Reliance Industries Limited (RIL), the world's largest manufacturer of polyester fibre and yarn, Ion Exchange was chosen to build an integrated total water management facility for its largest Polyester Filament Yarn (PFY) unit at Silvassa.

For integrated water management with Zero Liquid Discharge (ZLD), Ion Exchange has built a raw water treatment plant with advanced clarification and filtration process as pre-treatment to a state-of-the-art, completely skid-mounted Indion Swift Demineralization system. To meet the integrated water management projects' requirement of low footprint and completion of the project in minimal time, Indion Swift Demineralizer operates on the principal of short cycle-rapid regeneration with simultaneous regeneration of cation and anion unit thereby producing near-neutral effluent and minimizing the volume and cost of effluent treatment. The unit which is completely automated consistently produces mixed bed quality water.

The compact state-of-the-art effluent treatment process comprises of high rate MBBR system (Indion FMR) followed by high recovery Ultrafiltration and Reverse Osmosis system. The ultimate recovery of >95% for ZLD Effluent Treatment Plant (ETP) was achieved through Indion Multi Effect Evaporator system as the terminal unit of the ZLD process. Further, to meet a very challenging project completion schedule, the construction time was reduced significantly by constructing all water holding tanks using glass reinforced steel bolted tanks.

For utility water management in this integrated project, we supplied the Indion Auto Valveless Gravity Filter (AVGF) that requires minimal power, chemicals, footprint and operator attention while producing consistent water quality required for the cooling water circuits.

With completion of the RIL Silvassa integrated water management project, Ion Exchange has helped RIL once again achieve its objective for water quality management and Zero Liquid Discharge.



Indion Swift Demineralizers



Indion Zero Liquid Discharge



## STRIKING INNOVATIONS

### INDION® 3<sup>rd</sup> Generation MBR

HPCL-Mittal Energy Limited (HMEL) located in Bhatinda, Punjab is in the business of providing superior products in the field of petroleum and petrochemicals.

Ion Exchange has been awarded a contract for an advanced waste water treatment system that will enable HMEL to reuse a significant part of the waste water generated in the refinery.

The waste water treatment system will use a best-in-class Indion MBR (Membrane Bio reactor) that will process 500 m<sup>3</sup>/hr of waste water with several tangible benefits to HMEL.

- Highest mechanical strength – Lowest Fibre breakage thereby guaranteeing best life, low maintenance cost and consistent treated water quality
- Highest pH tolerances thereby ensuring removal of all possible foulants including heavy metal oxides, inorganic salts, water soluble metal complexes, fat, proteins, oil and grease and even humic substances. The Indion membranes have a pH tolerance of 1 to 12 during operation and 1 to 14 during cleaning which is far superior than existing membranes
- Highest life time chlorine tolerance i.e. 5000 ppm of chlorine as against 1000 ppm for existing membranes
- Low air requirement resulting in significant saving of power
- The use of Indion MBR membranes will result in lesser consumption of maintenance cleaning chemicals and recovery cleaning chemicals

Use of Indion MBR system will hence assure HMEL consistent treated water that will enable them to meet their sustainability goals and at the same time ensure that the system delivers maximum benefits at lowest lifecycle costs.

### Oil Coalescer Resin

#### Indion Oil Coalescer System

The Indion Oil Coalescer System is specifically designed to treat condensate streams in order to remove oil contamination (free and emulsified) and to make them suitable for recovery and reuse. The de-oiling process consists of separating the oil component using our special Indion OCR (Oil Coalescer Resin).

Oil micro droplets are coalesced on the resin surface forming a film. The oily film is sheared by water in counter current direction and collected in the decantation zone of the system where the oily film separates above the water layer and oil is continuously discharged.

If the feed condensate has high level of oil (> 10 to 50 ppm) the Indion coalescer system is preceded by Indion Activated Carbon Filter which reduces the oil content to less than 10 ppm thereby ensuring treated water has less than 2 ppm oil.

Since the introduction of this clean innovative concept to recover expensive condensate water, Ion Exchange has successfully installed many systems resulting in substantial savings in recovered water cost and in minimizing discharge.

#### Feed Water Quality:

No.	Parameters	Values	Unit
1	Free Chlorine	Nil	mg/L
2	Organic Matter	< 2	mg/L
3	Turbidity	< 7	NTU

#### Performance:

No.	Parameters	Inlet Water Quality	Treated Water Quality
1	pH	9 to 10	9 to 10
2	Oil (mg/L)	10	< 2

## OUR PRODUCT SPECIALITIES

### **INDION® Resins**

Indion ion exchange resins manufactured in an advanced and automated facility are characterized by exceptional physical stability and exchange capacities. These are available as Gaussian and Uniform Particle Size beads in dry and moist forms with varying surface areas, porosity and matrix as suitable for different applications.

Indion resins are widely used by leading oil refiners and downstream petrochemical processing units to treat water for process, utility and waste treatment applications like water softening, dealkalization, demineralization, silica removal, recovery of phenol from waste streams and cobalt and manganese from the effluent stream of Purified Terephthalic Acid (PTA) manufacturing process.

One of the speciality applications of Indion resins include Mono Ethylene Glycol (MEG) purification. Indion resins are also widely used as polymeric catalysts in the manufacturing process for Methyl Tertiary-Butyl Ether (MTBE), Tertiary-Amyl Methyl Ether (TAME), Methyl Iso Butyl Ketone (MIBK) and several esterification, etherification and alkylation processes.



### **Membranes**

Hydramem high performance Reverse Osmosis (RO), Nanofiltration (NF) and Ultrafiltration (UF) membranes are manufactured in a state-of-the-art, completely integrated and automated membrane manufacturing plant and belong to the latest generation of membrane technology.

Hydramem RO and NF membranes complement Indion ion exchange resins for removal of ionic contaminants from source waters. These are also now the preferred choice for sulphate removal from injection water in oil fields.

Hydramem UF membranes available in different configurations and molecular weight cut-offs, produce treated water free from particulate colloidal and microbiological contaminants making them suitable for requirements that need lower footprint and high flow rates as compared to conventional processes.

Complementing its range of manufactured products, Ion Exchange also offers Ion Exchange membranes sourced from world leaders like Astom Corporation, ceramic membranes from Liqtech, high-performance process application membranes from Microdyn Nadir, Plate Frame DT/PF RO system from Rochem Germany and fully back washable IPC flat sheet membranes from Bluefoot Membranes.

### **Coagulants, Flocculants and Membrane Antiscalants and Cleaners**

Complementing our product range in utility applications, we manufacture a wide range of Indfloc synthetic cationic, anionic and non-ionic organic coagulants and flocculants. These are available in liquid, solid and dispersion forms in a range of molecular weights and ionic charges suitable for clarification, filtration, heavy metal and colour removal from most water, waste water and process fluids.

Indion antiscalants are available in a wide range of product formulations for enhancing the performance of reverse osmosis and multi effect evaporator systems against soluble and insoluble impurities that cause excessive scaling, fouling resulting in rapidly and in many cases irreversibly deteriorating the performance of the system.

Indion range of multi-formulation cleaners enhance the performance of membrane and evaporator systems with efficient and cost-effective cleaning of fouled surfaces thereby maintaining the system performance.

## IONREF Speciality Process Treatment Chemicals for Oil & Gas

REFINERY (DOWNSTREAM)		
No.	Program	Product Code
1	Desalter Program	IONREF 3824 (Water Soluble)
		IONREF 3823 (Oil Soluble)
2	Dewpoint Neutralizer	IONREF 3811
3	Corrosion Inhibitor/Filmer	IONREF 3804
4	Antifoulant Program	IONREF 3820
5	Antifoam Program	IONREF 3831 (Silicon Antifoam)
		IONREF 3833 (Non-Silicon Antifoam)
6	Fuel Oil	IONREF 3849 (for wax type FO)
	Pourpoint Depressant Program	IONREF 3850 (for asphaltene base FO)
7	Lubricity additive for Diesel	IONREF 3872
Also available - Diesel stabilizer program and in-situ tank cleaning (hydrocarbon recovery) chemicals		

### OILFIELD (UPSTREAM)

For the upstream oil field programs, we offer customized products for applications like desalter programs, corrosion inhibition/filmer range of antifoulants.

## INDION® Speciality Water Treatment Chemicals

Indion Boiler  
Water Treatment Programme



Indion Cooling  
Water Treatment Programme



Powered by  
Indion Autochem Ultima



for Remote

Monitoring

Analysis

Control

### INDION® Cooling and Boiler Water Treatment Chemicals

The cooling water treatment system in upstream oil refining and downstream petrochemical poses various challenges for the utility management team. Historically conditions like variances in heat load, water velocities, oil and hydrocarbon ingress are compounded by degrading quality of water (treated effluent) make-up. Adding to these challenges in recent times is the need to reduce water consumption and meet stringent discharge regulations.

We meet these challenges with a wide range of chemistries and products which address the problems associated with scaling, corrosion, microbiological fouling whilst ensuring consistency of the treatment program for different metallurgies.

We also have demonstrated capabilities in high pressure boiler water treatment programs that require consistent and reliable management of steam purity. Our chemical program includes range of phosphate treatments - congruent, equilibrium and coordinated phosphate, iron specific dispersants and a wide range of oxygen scavengers customized for various treatment programs. Our All Volatile Treatment (AVT) ensures operation at low TDS whilst the new generation film forming amine treatment complements the overall boiler water treatment programs.

Our cooling and boiler water treatment chemical solutions are managed by skilled and experienced manpower at site. They are supported by Indion Autochem Ultima system for real time monitoring, analysis and control of the treatment program leading to greater performance efficiency, cost optimization and environment, health & safety compliances.

Our technology leadership in the business is sustained by our investment in R&D and Technology centres. These facilities located in Maharashtra and Telangana are DSIR certified and manned by competent scientists and technologists.



## OPERATION AND MAINTENANCE

Ion Exchange is one of the largest providers of comprehensive operations and maintenance to the oil and gas industry with an impressive track record in overseas installations. It provides 24 X 7 value added services that include water audits, upgradation and automation (rehabilitation) of existing plants and supply of critical spares and consumables.

Operation & Maintenance of 605 m<sup>3</sup>/h Reverse Osmosis system (for treated effluent) and 90 m<sup>3</sup>/h Condensate Polishing Unit for a leading Naphtha cracking unit.



Operation & Maintenance of 600 m<sup>3</sup>/h Reverse Osmosis system (for treated effluent) and 100 m<sup>3</sup>/h Condensate Polishing Unit for a leading refinery JV.



Operation & Maintenance of 200 m<sup>3</sup>/h Effluent Treatment Plant in a Naphtha Cracker Complex.





## Breathing life into Chemistry

Aarti Industries is a leading manufacturer of speciality chemicals and pharmaceuticals with a global footprint. For their production facility in Dahej, Gujarat, Ion Exchange will install a 70 m<sup>3</sup>/h Water Treatment Plant (WTP). This plant will ensure improved water quality, cost saving & reduced environmental impact.



## Pitcher Perfect

United Breweries Ltd. is one of the leading manufacturers of beer with several strong brands. We bagged an order for installing a 208 m<sup>3</sup>/d Zero Liquid Discharge (ZLD) and 750 m<sup>3</sup>/d upgraded to 1000 m<sup>3</sup>/d of Effluent Treatment Plant (ETP) for their manufacturing unit in Shahjahanpur, Rajasthan. This facility will help them recover maximum water and reuse it for manufacturing process.



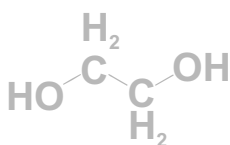
## Steeling Accolades

Steel Authority of India Ltd. (SAIL) is the largest steel producer in India with the widest range of steel products. Ion Exchange will provide an integrated water supply system consisting of 30 m<sup>3</sup>/h ETP with Demineralization (DM) plant, 250 m<sup>3</sup>/h side stream filter system, 5400 m<sup>3</sup>/d of circulating indirect cooling water system, non-circulating system consisting of 350 m<sup>3</sup>/h industrial water filtration system, 100 m<sup>3</sup>/h (1 Working + 1 Standby) and water-based firefighting & spray system.



## Sowing and Reaping Success

United Phosphorous Ltd. (UPL) is a premier global provider of total crop solutions. Ion Exchange will install a 25 m<sup>3</sup>/h ETP for UPL's manufacturing unit located at Dahej, Gujarat.



## Partners in Progress

Akry Organics Pvt. Ltd. has over three decades of core competence in manufacturing & marketing of Ethylene Glycols. Ion Exchange will supply a 15 m<sup>3</sup>/h process application system for glycol purification at their unit in Tarapur, Maharashtra.



## Weaving Dreams for Grasim

Grasim Industries Limited is India's pioneer in Viscose Staple Fibre and the largest chemicals (Chlor-Alkali) player in India. Ion Exchange is engaged in installing 2400 m<sup>3</sup>/d DM plant at Rehla, Jharkhand & 125 m<sup>3</sup>/d Multi Effect Evaporator (MEE) + 3000 m<sup>3</sup>/d WTP + 1500 m<sup>3</sup>/d ETP along with 300 m<sup>3</sup>/d softener at Chlor-Alkali plant, Balabhadrapuram, Andhra Pradesh.



## Towards a Healthier Nation

Raptakos, Brett & Co. Ltd. has been serving the medical field globally with its wide range of high-quality healthcare products for nearly nine decades. Ion Exchange is engaged in design, supply, installation & commissioning of the entire WTP and Waste Water Treatment Plant (WWTP) which includes a 125 m<sup>3</sup>/d Membrane Bio-Reactor (MBR) with 10 m<sup>3</sup>/d ETP and 1 m<sup>3</sup>/h AKD-WP to provide high purity water for Artificial Kidney Dialysis.



## Delivering Robust Defenses

Military Engineer Services (MES) is one of the oldest and largest government defense infrastructure development agencies in India. Ion Exchange has been entrusted with a project of installing a 300 m<sup>3</sup>/d Sea Water Reverse Osmosis (SWRO) plant at its Kochi facility in Kerala.



## Creating Bonds

Fajar Paper is one of the leading packaging paper manufacturers in Indonesia. Fajar Paper's has now been taken over by SCG, an emerging packaging solution provider in Indonesia. Ion Exchange has bagged an order for a 12000 m<sup>3</sup>/d WWTP.



## Sustainability Delivered

United Pulp and Paper Co. Inc. (UPPC) is a leading manufacturer of high-quality industrial grade paper used for corrugated packaging products in Philippines. UPPC is a subsidiary of SCG packaging solutions provider under the conglomerate Siam Cement Group (SCG). Ion Exchange has bagged an order for a 11000 m<sup>3</sup>/d WWTP.

## COMMISSIONED

### Top Gear

Kia Motors is one of the largest manufacturers of automobiles globally. Ion Exchange has installed a Water Treatment Plant (WTP) (2000 m<sup>3</sup>/d), Zero Liquid Discharge (ZLD) for Waste Water Treatment Plant (WWTP) (2050 m<sup>3</sup>/d) and Sewage Treatment Plant (STP) (900 m<sup>3</sup>/d) at their green field manufacturing facility in Anantapur, Andhra Pradesh. We have successfully supported Kia in reducing consumption of water, minimizing waste water & recycling water across the entire water lifecycle of the automotive manufacturing process.



### Driving Winning Solutions

Hyundai Motor India Ltd. (HMIL) is one of the largest automobile manufacturers in India with a fully integrated state-of-the-art manufacturing plant near Chennai. Ion Exchange has supplied a 13 m<sup>3</sup>/d agitated thin film dryer system to achieve Zero Liquid Discharge. This process will reduce their dependency on fresh water & the cost associated with it. This will also help them to adhere to pollution control regulations and contribute to a cleaner environment through zero effluent discharge.



### Cheers to Success

United Breweries Ltd. is one of the leading manufacturers of beer with several strong brands. Ion Exchange installed a 950 m<sup>3</sup>/d complete Zero Liquid Discharge (ZLD) system at their manufacturing facility in Shahjahanpur, Rajasthan.





## Revitalizing Nature

Deepak Fertilisers and Petrochemicals Corporation Ltd. (DFPCL) is one of India's leading producers of industrial chemicals and fertilisers. We have installed 650 m<sup>3</sup>/d ETP with 68 m<sup>3</sup>/h ZLD and 20 m<sup>3</sup>/d STP at DFPCL's unit at Dahej, Gujarat.



## Strong & Durable Solutions

Hindalco Industries Ltd. is the world's largest aluminum rolling company and amongst the biggest producers of primary aluminium in Asia. Ion Exchange has installed a 200 m<sup>3</sup>/h ETP recycle for fluoride removal, helping them to reduce fluoride content from 35 ppm to <1 ppm at their plant in Renukoot, Uttar Pradesh. The ETP helped them to recover maximum water for reusing in the manufacturing process. The use of high grade resins technology has reduced the operating cost in the manufacturing process.



## Boosting Productivity Naturally

Patanjali Ayurved Ltd. is an Indian FMCG company. Ion Exchange was engaged in the designing, manufacturing, supply and installation of a 500 m<sup>3</sup>/d ETP. It helps them to adhere to the environment pollution control guidelines & also reduces the operating cost by reusing the treated water in the manufacturing process at their plant in Guwahati, Assam.



## GLOBAL ORDERS

Ion Exchange is one of the largest providers of water and waste water treatment in Asia and has expanded its solutions into a worldwide network spanning continents. In addition to the seven manufacturing and assembly facilities across India, Ion Exchange's international manufacturing facilities are located in Sharjah - UAE and Bahrain Investment Wharf - Bahrain. The facilities are committed to built-in quality achieved by quality assurance systems, advanced manufacturing processes and continuous training in manufacturing practices, safety and quality. The company continues to grow its exports to Africa, the Middle East, Japan, Russia, South East Asia, Europe, UK, USA and Canada to name a few. Ion Exchange endeavors to amplify its business across the globe by transforming every prospect into a growth opportunity.

### Driving Business Beyond Boundaries:

- 32.5 m<sup>3</sup>/h water treatment plant from Macton Rock Industries, Philippines.
- Water treatment plant from API (PT. Barata Indonesia).
- Supply, installation and operation & maintenance of reverse osmosis plant from Haliba Development Project, UAE.
- 20 m<sup>3</sup>/h and 30 m<sup>3</sup>/h filtration units and 20 m<sup>3</sup>/h reverse osmosis plant from Unilever.
- 3 units of sewage treatment plants and supply, operation & maintenance of reverse osmosis plant from L&T, UAE.
- 900 m<sup>3</sup>/h design and supply of water treatment plant from Evergreen Plus, Thailand.
- Multiple orders of small sewage treatment plants (total 53 units) based on Membrane Bio-Reactor technologies received from Contracting Company, UAE.
- 2 x 60 m<sup>3</sup>/d seawater reverse osmosis & 260 m<sup>3</sup>/d highly brackish water reverse osmosis from Voltas, Oman.
- 172 m<sup>3</sup>/h water treatment plant + pretreatment of reverse osmosis plant and demineralization plant from Petrofac International LLC, Iraq.



## RURAL REACH

### Making A Difference Where It Matters!

Access to safe drinking water has been a serious problem for large populations in India. While this issue has been managed to a certain limit at urban locales, a vast majority of people in rural areas continue to deal with lack of usable water resulting in sanitation and health problems. The health burden of poor water quality is enormous.

Ion Exchange works closely with various rural water and sanitation departments to provide technologies that treat contaminated water and make clean drinking water available to rural communities. In addition to providing ground and surface water treatment solutions, the company continues to provide sewage treatment solutions and disaster management units with technologies that are cost-effective, low-maintenance and easily operated.

#### Solutions for Ground Water Contamination

The nature of contamination of drinking water in India varies from region to region. Ground water is vulnerable to contamination by pollutants such as arsenic, iron, fluoride, nitrate etc. Ion Exchange provides hand pump and tube well attachments to take care of these contaminants. In Madhya Pradesh, 12 m<sup>3</sup>/d and 30 m<sup>3</sup>/d fluoride removal tube well attachments (FRTWA) have been provided to the Mandla Public Health Engineering Department (PHED) and 8 m<sup>3</sup>/d, 12 m<sup>3</sup>/d and 30 m<sup>3</sup>/d FRTWA's were provided to PHED, Seoni.



**INDION**® Fluoride Removal Tube Well attachment,  
Madhya Pradesh

#### Solutions for Surface Water Contamination

Surface water is extremely susceptible to pollution because it occupies large portions of the earth's surface. Surface water pollution is almost entirely the result of human activities. Agriculture, mining, factory effluent, landfills, human/animal waste and localized pollution are just some of the most common sources of surface water pollution. Ion Exchange provides various solutions to combat growing surface water contamination. In Chhattisgarh, Ion Exchange provided 160 m<sup>3</sup>/h & 75 m<sup>3</sup>/h Lamella Clarifiers to PHED Jashpur and 150 m<sup>3</sup>/h & 80 m<sup>3</sup>/h to the Balrampur & Raigarh PHEDs respectively. 32 m<sup>3</sup>/h & 30 m<sup>3</sup>/h Lamella Clarifiers were also provided to the Pey Jal Nigam, Uttarakhand & Panna PHED Madhya Pradesh. Besides this, 25 m<sup>3</sup>/h Lampak was supplied to the Rural Water Supply & Sanitation Department, Odisha.



**INDION**® Lamella Clarifier, Madhya Pradesh



**INDION**® Lampak

# PRODUCT LAUNCH



Power RO is India's first RO that efficiently purifies water with TDS as high as 3000 ppm & hardness upto 1000 ppm with its double membrane power.

This intelligent machine removes bacteria, virus and most chemical and toxic contaminants like pesticides, VOCs, trihalomethanes, fluoride, arsenic and heavy metals.

Power RO has a purification capacity up to 15 LPH with RO purification for high TDS and a carbon cartridge that removes not just contaminants but also traces of odour and colour. This superior technology makes extreme hard water, pure and safe for drinking.



The Wave+ RO Purifier has a 6 stage purification process with pre-filtration, Hi-Q filtration, pre-BAC (Bacteriostatic Activated Carbon) filtration, sediment cartridge filtration (5-10 micron), reverse osmosis membrane and post-BAC (Bacteriostatic Activated Carbon) filtration. It also includes a fully automated operation which removes excess salts, bacteria, viruses, pesticides, harmful chemicals and heavy metals from water. It works on low pressure resulting in lower fouling of membrane.

The Wave+ unit is compact and consumes less space. The elegant looking body adds to the aesthetics of your kitchen at a competitive price.



Zero B relaunched Suraksha Plus Pro in a rich new look with an advanced faucet and many more innovative features. New Suraksha plus pro has 4 stages of purification which offers washable Hi-Q filter, active disinfectant and a bacteriostatic activated special Megnitube.

Additional features include:

- Non-electric purifier using resin technology which kills bacteria and viruses
- Cartridge which provides you with 3000 litres of purified water
- Inbuilt Indicator with flow rate of 10 l/h
- Container capacity: 15 litres (Upper fill container 5 litres and purified water container 10 litres)



## **INDION® SBR (Sequencing Batch Reactor)**

The new age Indion SBR (Sequencing Batch Reactor) is designed to achieve BOD, COD and nutrient (nitrogen) reduction in treated sewage to meet CPCB disposal norms. Indion SBR is a compact automated system operated in batch mode as anoxic, aerobic and settling processes take place in a single tank. Ion Exchange has both, single tank SBR for smaller capacities as well as two tank designs for higher capacities.



## **INDION® FSTP (Faecal Sludge Treatment Plant)**

Indion FSTP (Faecal Sludge Treatment Plant) treats sludge accumulated in the septic tank. The scheme includes pre-treatment, sludge pasteurization, dewatering unit and dryer. Indion pre-treatment removes large size grits, stones etc from faecal sludge to ensure smooth and efficient working of downstream dewatering unit. The dewatering unit is compact with lower operating cost designed especially for dewatering of faecal sludge. Filtrate from dewatering unit is then further treated in the Effluent Treatment Plant to meet disposal guarantee. The dewatered sludge cake obtained from the dryer can be used as fertilizer meeting Class A-Bio-solids specifications of US EPA (CEPT, 2015).



## Inauguration of Ion Exchange's New R&D Centre In Patancheru, Telangana

Ion Exchange inaugurated its new Research & Development Centre at Patancheru in Telangana. The centre spread over 24,000 sq m, is certified by the Department of Scientific and Industrial Research (DSIR). The R&D Centre will develop new resins, membranes, polymers and speciality chemical technologies related to water, waste water treatment, process separation and purification, speciality process application and catalysis. The microbiology lab within the centre will lay emphasis on enzyme research and application specifically for the textile and food & beverage industry. Many of these products will be import substitutes with very large potential for enhancing the company's exports.



## Channel Partner Meeting in Goa

Ion Exchange organized a channel partner meet in Goa. The dealer meet was an opportunity for Ion Exchange's channel partners to come together on one platform to share insights and brainstorm on common goals. The meeting was also an opportunity for Ion Exchange to discuss its capabilities and its commitment towards its channel partners. It also included a tour of Ion Exchange's state-of-the-art integrated Hydramem membrane manufacturing facility.



## AWARDS

### Rewarding Excellence

Awards not only acknowledge success, they recognise capability, struggle, effort and, above all, excellence. At Ion Exchange, innovation and excellence run hand in hand. We challenge limits and go the extra mile to set new benchmarks and make a lasting impact.

IMC Ramakrishna Bajaj National Quality Award Criteria 2018, in the Service Category



CII National Award for Excellence in Water Management



Water Digest Awards 2019

- Best Water Management - Private Sector
- Made In India - The Best Membrane Manufacturer
- Best Water Treatment Systems - Softener



ET Acetech Design Wall Award for Andicos (Waste to Energy) - Delhi & Bengaluru



Fame Best HR Awards



The National Best Employer Award at ET NOW World HRD Congress 2019



# CSR INITIATIVES



EDUCATION



HEALTH



HYGIENE



## Transforming Lives...Earning Trust.

Ion Exchange is committed to and continues working towards improving the quality of life for the disadvantaged through its CSR arm - Ion Foundation. We believe that a business enterprise has an inherent responsibility towards the society of which it forms a part. Corporate Social Responsibility is an integral part on Ion Exchange's value system and we believe that being socially and environmentally responsible is good for people and the planet. Ion Foundation, has touched scores of lives by supporting the less privileged sections of society in the fields of education, health, hygiene and environment.

### Some of our CSR Initiatives



Disaster management unit supplied during floods, Kerala



Supporting Aapulki Special School, Maharashtra



"Science on Wheels" initiative supporting over 25,000 students, Maharashtra



English tutorial for underprivileged children, Maharashtra



Supporting SMILE Foundation at the TATA Mumbai Marathon 2019



Upgrading Skills via courses in Water Management through Shishu Mandir, Karnataka



Tree plantation drive at Social Welfare Residential Educational Institutions Society, Telangana



Developing Life Skills & Employability Skills through Magic Bus Foundation, Maharashtra

## Corporate Social Responsibility Initiative through Media Outreach

Leading to World Water Day 2019, Ion Exchange successfully launched and executed a multi-channel corporate responsibility communication campaign on television and across social media. The objective of the campaign was to raise awareness across levels of society about the importance of saving water to cope with its scarcity and ensure sustainability.

The campaign used various avenues/channels to maximize impact both internally - leveraging the sheer volume and industry leadership position of IEI employees and externally - using multi-channel platforms such as television, mobile communication, IEI website and social media platforms such as LinkedIn, Facebook, Twitter and YouTube. Ion Exchange also developed its first Television Commercial which was aired on Television and promoted over social media.

Ion Exchange and NDTV's month long campaign ran in English (on NDTV 24X7) and in Hindi (on NDTV INDIA) and hit its crescendo on World Water Day with a panel discussion on NDTV which was live streamed. The panel discussion focused on "Water Security, Sustainability and Circular Economy". The highlight of the campaign was a panel discussion by eminent personalities from academia, policy, politics, corporate, social sectors including Ion Exchange CMD, Mr. Rajesh Sharma.

Social media played an important role in campaign promotion with constant reminders, promos, thought leadership posts and live streams posted across our platforms. Internally, emailers were posted at regular intervals to internal employees which were further cascaded to stakeholders, distributors/dealers, business associates, customers, government agencies, NGO's etc.

Through this campaign, the secondage Ion Exchange received on NDTV was over 63,000! The cumulative reach of Ion Exchange World Water Day Campaign on NDTV Network was 47,31,000. Not only did the campaign create awareness about water and waste water management, but was also taken notice of and highly appreciated by industry peers, business associates, social organizations and customers. Relevant and meaningful content and cross-channel integration bought the entire campaign to life making it an astounding success!

### Bytes from Ion Exchange Management Team



### Bytes from Celebrities and Sports Stars



Factoids in English on NDTV 24X7



**WORLD WATER DAY**

साल 2030 तक साफ पानी की मांग वर्तमान सप्लाई से दोगुनी हो जाएगी। साफ पानी के अभाव में भारत की जीडीपी को करीब 6 फीसदी का नुकसान होता है।

स्रोत: Composite Water, जून 2018. नीति आयोग

Factoids in Hindi on NDTV India



**WORLD WATER DAY**

70% of our water is contaminated; India is currently ranked 120 among 122 countries in the water quality index.

Source: Composite Water, June 2018. Niti Aayog

Ion Exchange's First Television Commercial



Panel discussion on 'World Water Day 2019' on NDTV 24X7



Panelists from L to R: Mr. U. P. Singh - Secretary, Dept. of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti, GoI, Mr. Rajesh Sharma - Chairman & Managing Director, Ion Exchange (India) Ltd., Ms. Leena Srivastava - Former Vice Chancellor, TERI School of Advanced Studies

Moderator: Ms. Manvi Dhillon - Chief Revenue Officer, NDTV



**WORLD WATER DAY**



# EMPLOYEE ENGAGEMENT

## Jaltarang: Creating Memories

Jal Tarang, the Annual get-together of Ion Exchange employees from Head office, Vashi and Rabale and their families is the perfect platform to showcase hidden talents. It is all about getting together, having fun and being part of the close-knitted Ion Exchange family! Jaw-dropping dance performances, mesmerizing acoustic recitals and gripping skits were the absolute highlight of Jal Tarang. Keeping in line with Ion Exchange's tradition, employees were felicitated for their dedicated long service in the company. The evening closed with a scrumptious dinner and the day ended with a feeling of exhilaration and accomplishment for each and every one who had put in efforts to make Jal Tarang the success that it was!



## Ion Exchange Cricket Premier League (IECPL) - Let's Play!

Whatever the challenge, Ion Exchange believes in transforming it into an achievement. Our annual Ion Exchange Cricket Premier League (IECPL) was an action-packed, thrilling event with a nail biting finish! The men's and women's IECPL matches were played between multiple teams from Head Office, Vashi and Rabale who competed fiercely for the win.

In the women's tournament, out of the three teams, Vashi emerged victorious in the finale and claimed the prestigious 'Ion Exchange Women's Cricket Trophy'.

Eight competitive teams locked horns in the men's tournament. The finals were played between Rabale 1 and Rabale 2. It was a thrilling finale with Rabale 1 whisking away the 'Ion Exchange Men's Cricket Trophy'.

It was an electrifying atmosphere where employees displayed unparalleled talent and exhibited the true Ion Exchange winning spirit!



## Celebrating Childhood: 'Bring Your Children To Work' Day

Ion Exchange opened its doors and hearts to welcome a little naughtiness at the 'Bring your Children to Work' day at its head office and Vashi & Rabale branches. It was a day dedicated to children complete with exhilarating fun activities such as drawing and painting competitions, games and movie-time. With 'Taking care of the Environment' as the central theme, the children left us in awe with their creative illustrations and thought process. It was a day like no other filled with laughter, joy and happiness!

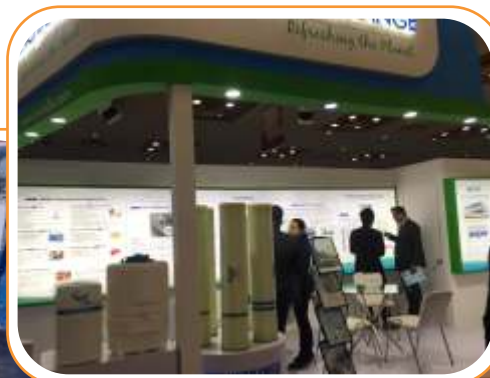


## Exhibitions & Beyond

Ion Exchange showcases its innovative technologies and integrated solutions across industries by participating in numerous domestic and global exhibitions on water, waste water and environment management thereby seizing opportunities to interact with potential customers personally. The carefully hand-picked exhibitions present a perfect platform for us to network, exchange ideas and do business.

Our drinking water dispensing stations ET ACETECH provided pure drinking water to the visitors.

We see exhibitions as opportunities to captivate our audience with creative designs, and crowd-pulling displays while we deliver targeted messaging.





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