ION EXCHANGE

Refreshing the Planet

Complete **Water Solutions** for Rural India

Introduction

Safe drinking water is more precious than gold for India's rural population. Arsenic, iron, fluoride, nitrate, uranium, brackishness and pathogens in groundwater affect millions in rural India and in developing countries across the globe, causing severe health hazards. Although the effects of these water contaminants can be reversed in the early stages, in the long term, they can lead to serious life-threatening diseases and, in some cases, even death.

Ion Exchange, a specialist in water and environment management, has developed cost-effective systems to treat contaminated water. These systems are adaptable to fit onto hand pumps, a major source of drinking water in rural areas. They are also available as point-of-use and community-level systems.

Ground Water Solutions

INDION® Hand Pump & Power Pump Attachments
Arsenic, Iron, Fluoride, Nitrate, Uranium and Heavy Metal Removal Units

Groundwater is susceptible to contamination by arsenic, iron, fluoride, nitrate, uranium and heavy metal present in soil and rocks. Ion Exchange offers resin-based solutions in the form of hand pump and power pump attachments, as well as solar pump attachments and solar-operated gravity-based units for the removal of these contaminants.

Features & Advantages

- Affordable
- Treated water meets WHO drinking water standards
- Hand pump attachment does not require electricity
- Easy to operate and maintain by villagers

Hand Pump Attachment

Solar Attachment

Power Pump Attachment

Contamination Removal Performance - Hand Pump Attachment

Parameter	Specifications			
	Arsenic	**Iron**	**Fluoride**	**Nitrate**
Media Type	INDION ASM*	INDION ISR*	INDION RS-F	INDION NSSR*
Design flow rate litre/minute	8-10	8-10	8-10	8-10
Material of construction of the unit	Powder coated MS	Powder coated MS	FRP	FRP
Backwash frequency	Once in 14 days (site specific)	Once in 2 days (site specific)	During regeneration	During regeneration
Maximum influent contamination concentration	Upto 3 ppm of total arsenic and 15 ppm of total iron	10 to 12 ppm of iron	Upto 10 ppm of fluoride	Upto 150 ppm of nitrate
Reduces to	<10 ppb of total arsenic	<0.3 ppm	<1.5 ppm	<45 ppm
Design pH range	6-8.5	7-9	6-8	6.5-8.5
Max TDS Range	<1000 ppm	2500 ppm	1200 ppm	<1000 ppm

Contamination Removal Performance - Power Pump Attachment

Parameter	Specifications				
	Arsenic	**Iron**	**Fluoride**	**Nitrate**	**Uranium**
Media Type	INDION ASM*	INDION ISR*	INDION RS-F	INDION NSSR*	INDION USR
Design flow rate m^3/h	8-10	8-10	8-10	8-10	1-10
Material of construction of the unit	MS-Epoxy	FRP	FRP	FRP	FRP
Prefilter required	No	No (upto 10 ppm TSS)	No	No	No
Backwash frequency	Once in 14 days (site specific)	Once in 2 days (site specific)	During regeneration	During regeneration	Once in 14 days (site specific)
Tolerance of maximum influent contamination	Upto 3 ppm of total arsenic and <0.5 ppm of total iron	10 to 12 ppm of iron	Upto 10 ppm of fluoride	Upto 120 ppm of nitrate	Upto 2.2 ppm of total uranium
Reduces to	<10 ppb of total arsenic	<0.3 ppm	<1.5 ppm	<45 ppm	<30 ppb of total Uranium
Design pH range	6-8.5	7-9	6-8	6.5-8.5	7-8.5
Max TDS Range	<1000 ppm	<2500 ppm	<1500 ppm	<1000 ppm	<1500 ppm

*Standard systems are upto 10 m^3/h, for higher flow rate, tailor-made solutions are also available on demand.

IAPMO R&T *certified resins - INDION ASM, INDION ISR, INDION NSSR.

Surface Water Solutions

INDION® Lamella - The big advantage of being small

INDION Lamella Clarifier is an effective solution for clarification of water and waste water. INDION Lamella Clarifier achieves solid-liquid separation by directing the liquid between a series of inclined plates called lamella which provide laminar flow.

Features & Advantages

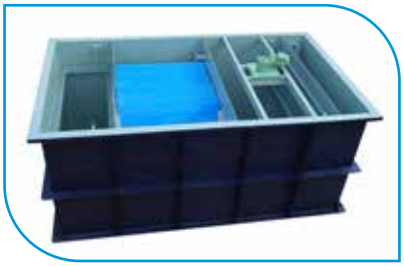
- Modular construction accommodates all equipment in a compact layout. Occupies 1/10th of the space required by conventional clarifiers
- The design ensures laminar, stable flow and excellent effluent quality. Uniform flow across all chambers
- The plates can be lifted easily and cleaned without halting operation
- Can be operated on a diesel generator or on alternate renewable energy sources, allowing operation in areas without electricity
- Available capacities upto 2500 TSS - 17.5 MLD & upto 1000 TSS - 22.5 MLD

Parameters	Unit	Inlet Water Quality	Outlet Water Quality
Total Suspended Solids	ppm	<2500	<5
pH	-	6.5-8.5	7-8
Free Oil & Grease	ppm	<5	<1

INDION® Lampak - Helping communities obtain clean water

INDION Lampak is a compact, single tank unit for treating highly contaminated surface water.

Features & Advantages



- Modular construction accommodates all equipment in a single floor-mounted unit
- Minimum Projected Effective Settling Area (PESA) per square foot of plate area due to a unique hydraulic distribution and collection arrangement
- Can be operated on a diesel generator or alternate renewable energy source. Thus, the unit can be operated in areas which do not have electricity supply
- Individual lamella plates can be removed easily for inspection and maintenance by a single operator without shutting down the unit
- Lightweight corrosion-resistant material used for the plates. No 'plate pack' type frame required
- Available in three models: 5m³/h, 10m³/h and 25m³/h

Parameters	Unit	Inlet Water Quality	Outlet Water Quality
Total Suspended Solids	ppm	<500	<5
pH	-	6.5-8.5	7-8
Free Oil & Grease	ppm	<5	<1

INDION® Continuous Sand Filter - Efficient and high quality performance

INDION Continuous Sand Filter is an innovative filtration system, which effectively treats both surface water and contaminated ground water. It treats influent containing several times more dirt than a conventional filter.

Features & Advantages

- Uninterrupted operation - maintaining constant and low pressure drop
- No backwashing - the sand bed is continuously cleaned and regenerated through internal recycling
- Small footprint - low civil construction costs and minimal space usage

Standard Models:

Model Number	Filter Area (m^2)	Diameter (mm)	Height on Straight (mm)	Operation Weight (tons)
DS 30	3.0	1920	4800	16.0
DS 50	7.0	2550	5850	34.0

Parameters	Unit	Inlet Water Quality	Oulet Water Quality
Total Suspended Solids	ppm	<125	<5
pH	-	7-8	7-8
Free Oil & Grease	ppm	<5	<1

Disaster Management Solutions

INDION® Disaster Management Unit - Provides relief by delivering pure water during disasters

The Mobile INDION Disaster Management Unit (DMU) is a compact, containerized/skid-mounted/truck/trolley-mounted unit designed for rapid deployment to disaster-stricken areas to provide clean water for drinking purposes. It is developed to address emergency needs for safe drinking water during disasters such as droughts, cyclones, floods and earthquakes, where water supplies become contaminated with suspended solids, dirt, clay and pathogenic bacteria, leading to the spread of disease and epidemics.

The INDION DMU is offered in two capacities: 2000 Litres and 5000 Litres. It produces 5000 L of pure water per hour from contaminated surface water sources with low (<200 ppm) total dissolved solids, and it also generates 2000 L of pure water per hour from brackish water sources like groundwater with TDS levels as high as 2000 ppm. The unit produces safe drinking water that meets stringent IS 10500 standards, employing ultrafiltration, reverse osmosis and ozonation technologies.

Since it can operate on a diesel generator, the DMU can be used in areas where electricity supplies have been disrupted or in remote villages without electricity. Besides being utilized during natural disasters, the DMU can also serve in locations lacking drinking water facilities, during peacetime military exercises in remote areas by armed forces, and in wartime scenarios.

Features & Advantages

- Mobile, containerized and skid/trolley-mounted, it can be easily and quickly moved to affected locations
- Highly adaptable to prevailing conditions, even adverse ones
- Works on alternate sources of power
- Does not involve the use of chemicals

Community Level Solutions

The community level water treatment solutions offered by Ion Exchange help in determining water pollution as well as treating it. Our community level portfolio includes the following solutions:

INDRO® Packaged Reverse Osmosis System

INDRO Packaged Reverse Osmosis system helps obtain pure water from brackish water. Its reverse osmosis membrane technology produces water containing very low dissolved solids, which is free from particulate, colloidal and organic matter.

Features & Advantages

- Standard system available to treat water upto 2500 TDS. For higher TDS tailor-made systems also available
- Compact & easy to start
- Short delivery periods
- On-line device helps monitor treated water quality and flow
- Available with capacities ranging from 200 LPH to 3000 LPH. For bigger capacities tailor-made systems are available

INDROMATIC Advance Packaged Reverse Osmosis System

INDROMATIC, with its reverse osmosis membrane technology, produces water with very low dissolved solids which is also free from particulate, colloidal and organic matter.

Applications

- Provides safe drinking water for communities, hotels, restaurants, bottled water plants, hospitals and residences
- Provides water for laboratory and other pharmaceutical processes
- Provides water for various process applications in food and beverages, electronics and other industries
- Used as pretreatment to deionisation system, reducing chemical consumption and operating cost
- Treating water for boiler water feed for reducing scaling potential

INDION® Sewage Treatment Plants

INDION Decentralised Sewage Treatment systems are single tank compact units with low sludge volumes. They require minimal electricity and have low operational cost. Available in capacities from 10 - 100 m^3/d.

Ion Exchange offers a range of technologies, including Packaged Sewage Treatment Plants based on Membrane Bio-Reactor, Sequential Batch Reactor, Moving Bed Bio Reactor and an advanced version of the attached growth process NGPSTP.

Technology	Prefabricated Range	Civil Construction Range
Membrane Bio Reactor (MBR)	upto - 20 KLD	50 KLD to 300 KLD
New Generation Packaged Sewage Treatment Plant (NGPSTP)	upto - 100 KLD	
Sequential Batch Reactor (SBR)		50 KLD to 600 KLD
Fluidised Media Reactor (FMR / MBBR)	upto - 250 KLD	50 KLD to 5000 KLD

Solutions for Institutions

ZERO B Eco Smart

It is a High Capacity RO Purifier with smart alerts and water saving capacity. Available in 50, 100, 150, 250 & 1000 LPH.

Features & Advantages

- Unique RO Purification system with high water recovery of 70% and more than 80% raw water saving compared to conventional RO systems
- Protects purified water from recontamination in the water storage tank. Prevents slime formation in tank hence ensuring 24x7 protection through auto sanitization
- Dynamic Monitor and Controller (DMC) System: making machine user and service friendly

ZERO B Eco Chill

It is an advanced water purifier cum storage cooler providing safe and purified cold drinking water. It is ideal for commercial institutions and complexes.

Features & Advantages

- Comes with RO + ESS technology
- Equipped with unique Dynamic Monitor and Controller (DMC) system which informs the user about quality and temperature of water. It also gives early warning for replacement of unit
- A high food-grade stainless steel water tank to store purified water for drinking
- Taste Enhancer Cartridge: A unique mineralizer that improves the taste of water by correcting the pH value of water & adding minerals

Home Water Solutions

Non-Electric Water Purifiers

ZERO B Puriline 4L

Zero B Puriline 4L is an advanced water purifier based on the globally acclaimed resins technology - a proven concept for water purification.

Features & Advantages

- For safe and natural tasting water based on Zero B Resin Technology
- Eliminates disease causing bacteria and viruses
- Removes unwanted odour, taste and colour to give natural tasting water
- Does not require electricity
- Separate water meter to indicate capacity utilisation
- Higher dispensing capacity of 4 litres per min.

ZERO B Suraksha

Zero B Suraksha Tap attachment safeguards against bacteria and viruses present on surfaces of fruits, vegetables, milk packets and hands.

Features & Advantages

- A globally acclaimed iodine-based resin technology that kills bacteria and viruses causing waterborne diseases
- In-built indicator to indicate when the unit's life is exhausted
- Product purification life gives 7500 litres of safe, bacteria-free drinking water
- Design to fit any tap

ZERO B Suraksha Plus Pro

Zero B Suraksha Plus Pro is an easy-to-install non-electric water purifier that safeguards against waterborne diseases.

Features & Advantages

- Involves four stages of water purification
- Cartridge purification life gives 3,000 L of bacteria and virus free drinking water
- Based on globally acclaimed resin technology
- Kills bacteria and viruses that cause water-borne diseases
- Efficiently removes mud, sand, dust and other suspended impurities

ZERO B D-Ferrous Iron Remover

India's most effective and innovative shield against iron that effectively eliminates iron precipitates in water.

Features & Advantages

- Removes foul metallic taste from water
- Keeps skin soft, glowing and healthy
- It is fitted with a unique, user-friendly backwash valve that regulates all functions

Electric Range of Water Purifiers

Zero B Eco RO

Zero B Magna Plus

Zero B Wave Plus

Zero B Power RO

Water Testing Solutions

INDION® Water Potability Test Kit

It measures eight most important chemical parameters of drinking water within the range specified by the Bureau of Indian Standards - pH, total hardness, alkalinity, chloride, fluoride, chlorine dioxide, iron, nitrate, calcium, sulphites, silica, FRC, hypochlorite, bromine, orthophosphate, phosphonate, zinc, nitrite, DEHA, hydrazine, E-coli.

Features & Advantages

- Accurate and quick results
- Simple, user friendly
- Can be used by a semi-skilled person
- Inexpensive

At Your Service

- The largest organised service provider for water and waste water treatment systems
- Provides laboratory services, enviro-care services, instrument services, comprehensive annual maintenance and operation services
- Complete responsibility for supply of treated water in required quantity and of desired quality

Digital 24/7 service

Our state-of-the-art manufacturing facilities are ISO 9001, ISO 14001 & ISO 45001 certified.

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.

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