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# LETTER FROM THE CONTENT HEAD

## 23 SUCCESSFUL YEARS OF EVERYTHINGABOUTWATER MAGAZINE AND 18 WONDERFUL YEARS OF EVERYTHINGABOUTWATER EXPO AND CONCLAVE

*First of all, with this editorial, I would like to send a big thank you all of our readers, authors, subscribers, advertisers and all the well wishers. The past 23 years have been full of hopes, dreams, some ups and some downs. Water and wastewater industry travelled the distance from the side corners to the centre stage and now is a focused domain in India and around the world. This year we are also celebrating the 18th EverythingAboutWater Expo and Conclave from 3rd to 5th August at Pragati Maidan, New Delhi.*

*In an increasingly interconnected globally linked economy, water professionals need to stay on top of the trends and adjust their work accordingly more than ever before. Lately, while discussing the issues with industry government and consulting heads, all of them felt that it is essential that the industry adapts to the fast to the changing environment and renovate itself in the light of the new normal. In the changed times, the market opportunity in the water sector is extremely fluid. Global economy has slowed down and India is expected to overcome and spear head the growth in the coming decade.*

*Technology will act as a dynamic variable. With the basic necessities of water supply having been met, there is a need for cost-effective technologies for handling difficult water remotely. Incremental improvements in process efficiency, operations and running costs are making older technologies obsolete. Research labs and universities across the world are working on the "next big break through" that disrupts current working and changes the status quo.*

*The last big variable is the people gap. The water sector is struggling with shortage of talent, and this is preventing sound execution of plans. Industry leaders needs to address this shortfall, in order to keep moving ahead in dynamic market space. As the world opens up and adapts to these changes, the water industry is set to face some of its greatest challenges in the path of realizing its biggest opportunity. The decade 2023 will be a crucial time in the history of the industry.*

*Our annual issue of EverythingAboutWater looks at the roadmap for the water industry in this decade and tries to understand the issues that will shape the evolution in the post Covid era.*



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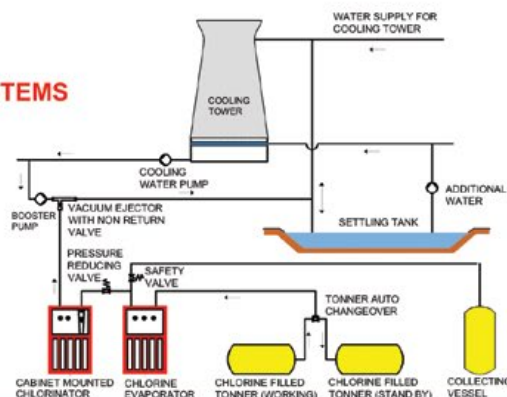
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## DAIKI AXIS TO PROVIDE CUTTING-EDGE JOHKASOU TECHNOLOGY TO NAMAMI GANGE PROJECT IN UTTARAKHAND

**D**ehradun, July 20, 2023: Daiki Axis, a leading provider of decentralized wastewater treatment solutions, is set to contribute its state-of-the-art Johkasou technology to the Namami Gange project, a flagship initiative of the Government of India aimed at rejuvenating the holy River Ganga. Johkasou, a unique and highly efficient wastewater treatment system developed by Daiki Axis, is designed to meet the highest standards of water quality while minimizing environmental impact. In a significant development, the Ministry of the Environment, Japan, has signed a Memorandum of Cooperation (MoC) with the National Mission for Clean Ganga (NMCG) to implement innovative technologies for effective wastewater treatment and management as part of the Namami Gange Project.

The Namami Gange program has recently achieved global recognition as one of the best water restoration projects. During a prestigious event organized by the United Nations (UN), the program received a distinguished award for its remarkable efforts in restoring the holy River Ganga to its pristine state.

Shri G Asok Kumar, Director General of the National Mission for Clean Ganga (NMCG), Ministry of Jal Shakti, Government of India, said, "Ganga has a special place in the Indian context as it is a holy and pristine river and caters to 43% of the population and forms around 23% of the geographical area in view of the deteriorating health of River Ganga and its ecosystem due to urbanization on its banks with a mandate and vision for restoring Nirmalta and Aviralta of River Ganga. Furthermore, the aim is to not just restore Ganga to its pristine glory, but also help the local population connect with its traditional wisdom. By harnessing the latest advancements in the field, we are forging a path towards sustainable development, one that aligns with our shared vision of a cleaner and greener future."

Scheduled for commissioning in 2023-24, a total of nine projects are being undertaken currently, at four different locations covering both Kumaon and Garhwal regions primarily to treat untreated

domestic wastewater currently being discharged in the rivers. The treated water will meet CPCB standards and the latest NGT guidelines for the discharge of sewage-treated water to rivers. Each project will serve as a testament to the versatility and effectiveness of Daiki Axis' Johkasou technology in addressing diverse wastewater treatment needs. All of the products are manufactured locally under MAKE IN INDIA. Daiki Axis India will play a pivotal role as the technology provider, supplying and implementing the advanced Johkasou STPs. These projects will demonstrate the state-of-the-art Johkasou technology and the concept of decentralized treatment of wastewater which is the need of the hour in India especially in smaller cities and towns.

The Uttarakhand Peyjal Nigam, as the main owner of the project from the side of the Uttarakhand Government, will oversee the implementation and operation of these projects, IIT Roorkee will be evaluating the compliance of design to Indian standards and best engineering practices currently being followed in such projects, highlighting the collaborative efforts between Daiki Axis India and the local government body to achieve the common goal of cleaner and healthier water resources.

Mr. Kamal Tiwari, CEO of Daiki Axis India Private Limited said, "By highlighting the paradigm shift from traditional centralized Sewage Treatment Plants (STPs) to decentralized wastewater management systems, we embrace a forward-thinking approach. With a focus on decentralized systems, we unlock numerous advantages, including lower costs, simplified implementation, and reduced complexities surrounding land space and disputes." He further added, "It is essential to recognize that decentralized wastewater management offers a progressive and sustainable approach to water treatment. By treating water efficiently and responsibly at its source, we pave the way for a brighter and more resilient future." Johkasou Technology will emerge as the key solution for wastewater treatment in hilly areas, where sewer networks are unavailable. Johkasou Technology provides the opportunity to

replace outdated conventional systems such as septic tanks and soak pits etc. which were identified as one of the key reasons behind the Joshimath Disaster and the source of contamination of downstream drinking water sources. This transition to Johkasou Technology signifies a significant improvement in wastewater treatment efficiency and environmental impact.



## BENTLEY SYSTEMS ANNOUNCES NEW CAPABILITIES FOR CARBON ASSESSMENT IN ITWIN EXPERIENCE

**C**apabilities Unlock Carbon Data Management for Infrastructure Projects

EXTON, Pa. – June 28, 2023 – Bentley Systems, Incorporated (Nasdaq: BSY), the infrastructure engineering software company, is announcing at the Environment Analyst Global Business Summit, the availability of new carbon assessment capabilities in iTwin Experience to enable infrastructure professionals to seamlessly quantify carbon reduction

opportunities in their projects. The Summit takes place June 27 and 28 in Chicago.

With the new capabilities, infrastructure professionals can fully automate embodied carbon calculation reports and impact analyses by taking advantage of iTwin Experience, enabling them to explore multiple design choices faster and eliminate manual data exports and normalization.

# WATER NEWS

In 2022, Bentley developed an integration service in the iTwin Platform to automate the process of generating embodied carbon reports for infrastructure projects via One Click LCA and EC3. Reports are initiated using the iTwin Platform and then viewed in One Click LCA or EC3. Now, iTwin Experience provides a ready-to-go, bi-directional integration with EC3, enabling carbon assessments to be visualized in a digital twin without the need to write code. iTwin Experience exports a data model to EC3, a free tool for which users need to be separately registered, which performs the embodied carbon calculations and returns results that iTwin Experience seamlessly reads and visualizes.

Organizations that want to include carbon assessment workflows in their infrastructure projects without developing proprietary iTwin-powered apps will benefit from the newly available carbon calculation capabilities in iTwin Experience. The capabilities also unlock the integration of carbon assessment workflows with other Bentley products and solutions for designing and managing infrastructure projects.

The capabilities are being released in Preview and will be available for a restricted number of partners and early adopters.

Kaustubh Page, Director of Product Management with Bentley Systems, said, “Lifecycle assessments, environmental footprint analyses, and reports are becoming standard requirements for infrastructure projects worldwide. Designers and environmental engineers spend critical time generating environmental assessments or reports. Because the required data needed to be manually exported from multiple design authoring tools and then aggregated and verified, generating these environmental assessments has been a time-consuming and potentially error-prone process. With these new capabilities built into iTwin Experience, it is feasible to transform what is typically a six-month process into a six-minute workflow. Our goal is for iTwin Experience users to spend their valuable time on designing, optimizing, and making better decisions, faster – not exporting, aggregating, and validating data.”

Rodrigo Fernandes, Director of ES(D)G with Bentley Systems, said, “We want to enable users to implement carbon analysis and optimization as a natural, repeatable, and standardized procedure, as part of managing every type of infrastructure project, anywhere in the world. The sooner that carbon assessment is integrated

into an infrastructure project, the bigger the carbon reduction opportunities will be. This announcement is focused on embodied carbon, particularly relevant in the early project stages, but iTwin Experience unleashes opportunities for telling the whole ‘carbon story’ of an infrastructure project and asset. We are genuinely unlocking environmental footprint assessments powered by infrastructure digital twins.”

Mark Tablante, Design Technology Director with Burns & McDonnell, said, “Electrification is a critical component to meeting the world’s decarbonization goals. There is a tremendous amount of capital investment needed in electric T&D infrastructure and a carbon-efficient design makes the most of every dollar spent to further decarbonization. Tracking and reporting on progress toward utilities’ net zero goals is important to not only their shareholders, but for the future of our world. Burns & McDonnell is working with Bentley to test their new iTwin-powered carbon reporting capabilities for the electric utility industry. Our sustainability engineers and environmental group are proud to work with our clients and technology partners to help develop vendor agnostic solutions for a brighter future. We look forward to integrating these services and continuing helping our clients track carbon and reach their net zero goals.”

## TOSHIBA RECEIVES CONTRACTS FOR EIGHT (8) SEWAGE TREATMENT PLANTS IN BENGALURU, ENTAILING UPGRADATION, REHABILITATION OF AND O&M SERVICES

**G**urugram, India — Toshiba Water Solutions Private Limited (hereinafter Toshiba Water), a subsidiary of Toshiba Infrastructure Systems & Solutions Corporation (hereinafter TISS) today announced that it has received a contract from the Bangalore\*1 Water Supply and Sewerage Board (hereinafter BWSSB) for Design, Upgradation, Rehabilitation (with capacity augmentation) and Operation & Maintenance (O&M) services of three (3) Sewage Treatment Plants (STPs) and Upgradation & Rehabilitation of five (5) STPs in Bengaluru, Karnataka, India.

On this occasion, Mr. Hiroaki Kobayashi, Chairperson and Managing Director, Toshiba Water said, “After receiving the contract for TK Halli Water Treatment Plant in 2020, these are our second set of contracts with BWSSB. This order for upgradation, rehabilitation (& capacity augmentation) of and O&M services across three sewage treatment plants and upgradation & rehabilitation across five (5) STPs in Bengaluru is a testimony to our superior EPC\*2 and O&M services. By leveraging our water treatment solutions and technologies cultivated through years of development and extensive experience in overseas EPC\*2 and O&M projects, Toshiba Water is committed to contribute to sustainable water recycling systems in India, to turn on the promise of a new day.”

The contract entails the Upgradation, Rehabilitation of and O&M services for the Kadubeesanahalli STP, Mylasandra STP, and Doddabele STP and the upgradation & rehabilitation for other five (5) STPs in Bengaluru. Toshiba Water will commence plant construction and O&M services in sequence.

Consisting of the Bengaluru core area, eight (8) Urban Local Bodies, and 110 villages around Bengaluru is regarded as the “Silicon Valley of India.” Rapid industrial development has led to a growing increase in population and an expansion of the urban area. Therefore, the most urgent issue is to improve the sanitation and water environment of these villages. In 2009, the government



of India launched the National Urban Sanitation Policy with the goal of providing access to safe sanitary facilities through educational and other activities for the residents while the government of the Karnataka state published the Karnataka Water Policy with the goal of providing water supply and sewage services for the entire population of the Karnataka state.

The purpose of the projects that Toshiba Water will engage in is to upgrade sewage infrastructure to cope with the increasing population and conform to the revised latest effluent quality standard.

Toshiba Water engages in EPC and O&M businesses for public water supply, sewage, and industrial water treatment facilities around the world, including in India, Southeast Asia, West Asia, Middle East, and North and Central Americas.

TISS and Toshiba Water endeavor to contribute to the establishment of sustainable water recycling systems and the creation of environmentally advanced communities by combining its monitoring, control, energy-saving, and other solutions with Toshiba Water's expertise and experience in EPC and O&M cultivated through the projects in India and elsewhere.

# WATER NEWS

## CERAFILTEC CELEBRATES INAUGURATION OF LANDMARK PRODUCTION, SCIENCE & TECHNOLOGY CENTER

**N**ew facility is Europe's largest center for production, engineering, and research & development of ceramic filtration technology

Saarbrücken, Germany – CERAFILTEC, the global leader in ceramic flat membrane (CFM) technology, welcomed on 14 June more than 200 guests from around the world to the formal inauguration on of its landmark Production, Science & Technology Center.

CERAFILTEC's new location is Europe's largest production facility, enabling an annual supply of CFMs to treat 3,000,000 m<sup>3</sup>/d of water and wastewater. Filtration modules for projects totaling 200,000 m<sup>3</sup>/d capacity are already produced and stocked for immediate shipment.

The facility also incorporates CERAFILTEC's research & development, engineering operations and administration, centralizing all key functions. Visitors to the new center will find CERAFILTEC's innovative 'DNA' manifest on the exterior of the new building itself, which mirrors its high performance flat membrane module.

"The inauguration of our new center marks a significant milestone for both CERAFILTEC and the broader CFM technology landscape," stated Kay Gunther Gabriel, Founder and Chief Technology Officer of CERAFILTEC. "This strategic investment paves the way for ceramic

flat membrane solutions to be the standard in global filtration. Our Science & Technology Center will spearhead the development of innovative Alumina and Silicon Carbide membranes, leading to new, sustainable, and transformative benchmarks."

In addition to consolidating R&D and production in the new facility, the company also announced plans to expand its support infrastructure and regional reach to best serve its partners and customers across the globe and to meet the growing demand for its cutting-edge technology. Currently, the company has offices in 10 locations with three more opening soon.

Dr. Tillmann Lauk, Chief Executive Officer of CERAFILTEC, underscored two critical milestones recently achieved by the company. "Firstly, in December 2022, we proudly announced the successful completion of a €30 million growth capital investment, thereby expediting our global expansion," he stated. "Moving onto the second key advancement," Dr. Lauk continued, "this newly inaugurated facility will expedite the global transition from traditional sand filters and polymeric membranes to our advanced CFM solution."

"Ceramic flat membrane technology is rapidly becoming the new global standard for filtration, offering superior commercial and technical benefits," asserted Julius Gloeckner, the Chief Commercial Officer. "Moreover, our reusable and recyclable filtration modules will play a crucial role in realizing current and future sustainability targets and reducing waste."

CERAFILTEC has developed novel treatment processes for the selective removal of priority pollutants such as PFAS and other micropollutants utilizing its active cake layer filtration in conjunction with CFMs. This successfully addresses several current pressing water challenges. Furthermore, "utilizing CERAFILTEC's expertise in key applications such as seawater pre-treatment and water reuse enhances global water security," affirms Dr. Martin Kaschek, CERAFILTEC's Chief Science Officer.

## GURGAON GEARING UP FOR 24×7 WATER SUPPLY PROJECT

**T**he Municipal Corporation of Gurugram (MCG), along with the Gurugram Metropolitan Development Administration (GMDA), is deliberating to upgrade the water supply in the city to 24x7 standard to ensure its uninterrupted supply to all, a communication from the corporation said.

The city, currently, has a water demand of 550 MLD which is expected to rise to 1,300 MLD in the next 30 years, the MCG said. The source is primarily the Gurgaon water supply canal and NCR canal with master services under GDMA, and MCG taking care of distribution.

Towards this end, the MCG has engaged IQT Italy as design and supervision consultant and project preparation has reached the DPR stage and onward implementation.

Organising a pre-investor meet on Thursday, the MCG invited large private sector players in water and urban infrastructure space where commissioner PC Meena sought the best practices on how to address challenges of implementing such schemes and the most amenable development model to undertake the envisaged project.

The prospective players briefed the MCG on various projects being undertaken by them with examples from cities like Nagpur, Delhi, Pune and Shimla where such schemes already exist.

The meeting was presided by Meena and a team from the corporation and one from GMDA were present. It was attended by some known industry players like L&T, Veolia, Suez, Ramky, Wabag, Jindal Water, Vishvraj, M P Birla group, Vital Capital & Swach who have been undertaking various 24x7 water schemes in the country, the communication said.

## DELHI FLOOD HIGHLIGHTS: DELHI GOVT TO GIVE RS 10,000 TO EVERY FLOOD-AFFECTED FAMILY, ANNOUNCES CM KEJRIWAL

**D**elhi chief minister Arvind Kejriwal announced Rs 10,000 as financial aid for every flood-affected family in the national capital. "Many very poor families living on the banks of Yamuna have suffered a lot. In some families, the entire household goods were washed away," he said. The CM assured that special camps would be organised for those whose papers like Aadhaar cards etc were lost during the floods. He also said that for children whose clothes and books were washed away, will be provided with the same on behalf of the schools.

CM Kejriwal visited the Mori Gate flood relief camp Sunday and took stock of the situation. "The level of water has reached 205.9 m. Water has receded from most areas, the other areas will also see normalcy return soon," he said. "Houses on the low lying areas near Yamuna were inundated. Delhi government has set up relief camps for residents. Six districts of Delhi are affected. We have set up camps in schools and dharamshalas so that toilets and water are readily available. People said the water came all of a sudden and many have lost their documents like Aadhaar cards. We will set up special camps for them. Many children lost school books and uniform. We will make arrangements for them as well. There is a lot of muck in the area and we will send some dry soil there to help it dry. We are also trying to arrange for ad hoc relief for those who have lost their belongings," he added.



# **DROPLETS**

## **SNIPPETS**

### **1. LANXESS increases prices for ion exchange resins and iron oxide adsorbers**

Mumbai, July 06, 2023 – Specialty chemicals company LANXESS will globally increase its basic prices for all Lewatit ion exchange resins and Bayoxide iron oxide adsorbers for water treatment applications by on average 3 percent. The price increase will be valid starting July 1, 2023 for all deliveries. Customers will be informed individually.

The variable surcharge introduced in the second quarter of 2022 will be retained and adjusted monthly on the basis of key input costs. The cost level of raw materials, energy and transportation remains well above historical averages and LANXESS continues to expect an increased level of volatility in the second half of the year.

### **2. ORG Engitech Limited Unveils Revolutionary TODI Water Purifier, Tailored to India's Unique Water Purification Needs**

14 June 2023: ORG Engitech Limited, a renowned leader in designing and manufacturing innovative water purification solutions, proudly unveils its latest groundbreaking product, the ORG TODI Water Purifier.

The ORG TODI Water Purifier represents a remarkable advancement in addressing the critical need for pure and HEALTHY water. Often when using ROs, the water purified water gets stripped off the essential minerals.

Understanding the significance of maintaining the right balance of Total Dissolved Solids (TDS) in water, ORG has developed the revolutionary TODI technology, which, while incorporating cutting-edge technology to eliminate physical, chemical, and biological impurities, retains the essential minerals for optimal health; what's more, it gives the control in the hands of the customer.

Mr. Anil Gajera, Founder of ORG Engitech Limited, expressed his delight, stating, "We are thrilled to introduce the ORG TODI Water Purifier, the first product in its category that allows

customers to decide the desired TDS level in their purified water. This innovative move will undoubtedly enhance the health and well-being of our customers."

- The ORG TODI Water Purifier features a user-friendly display panel that displays.
- The actual TDS of the purified water
- The Purification process in operation UF/UV or RO
- Low-pressure indication in case the inflow pressure of water is low.
- Storage tank full indication
- Running Service Hours display, telling customers when the next service is due

TODI storage tanks are made of food-grade material. Further, to prevent bacterial contamination due to water storage for an extended duration in the storage tank. ORG TODI Water Purifier incorporates an innovative Ultra Violet system that circulates the stored water every 4 hours, effectively preventing recontamination and maintaining the water's purity at all times.

Designed as a universal water purifier, the ORG TODI caters to varying water sources such as borewells, municipal, or tanker water. It automatically selects the required technology, UF/UV or RO, based on the customer-set minimum and maximum TDS settings.

ORG TODI Water Purifier will be available in market in 3 variants:

- ORG TODI priced at ₹ 16,999
- ORG TODI PLUS priced at ₹ 17,900,
- ORG TODI Alkalinator for alkaline hydrogen-rich water at ₹ 19,900.

Mr. Gajera further emphasized the significance of post-maintenance service, stating, "Regular maintenance is crucial for ensuring ideal water quality every day. With the ORG TODI Water Purifier, customers can enjoy peace of mind, knowing that reliable and comprehensive maintenance services back our product."

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# **DROPLETS**

## **SNIPPETS**

### **3. Palta water treatment plant put on alert after sudden spurt in Hooghly turbidity**

KOLKATA: The Palta water treatment plant which supplies potable water to entire north and central Kolkata and parts of south Kolkata has been put on alert following a sudden spurt in the turbidity level of the Hooghly river.

Engineers at the Garden Reach waterworks that supplies water to the rest of south Kolkata and Behala, and Dhapawater treatment plant that caters to localities along EM Bypass, have also been alerted.

According to a KMC water supply department official, the turbidity level in the Hooghly (near Palta) which is usually around 100 nephelometric turbidity units (NTU) has shot upto 300 NTU units in the last seven days that has set the alarm bells ringing.

NTU is a measure of the opaqueness of water due to the presence of suspended solids. Water is collected in a bottle and the turbidity is measured by shining a light through it. According to a civic official, the NTU count of 100-150 is fine. But when it exceeds the 200 mark, there is reason for concern. Now that laboratory tests have confirmed that it has crossed 300, it is alarming," said a civic official.

According to a KMC water supply department official, out of 262 million gallons of water that the Palta water treatment plant produces, 80 million gallons is treated at the slow sand bed which removes turbidity effectively. For the rest, KMC engineers need to raise the amount of alum so that excess of turbidity doesn't lead to outbreak of enteric diseases.

"During monsoon, we need to exercise extra caution as turbidity in the Hooghly rises. If the level goes to a certain level, we need to combat it on a war footing," said a KMC water supply department official.

Apart from increasing the quantity of alum, the KMC

water supply department is also increasing the amount of residual chlorine from the water booster pumping stations to ensure that when water is supplied to residents, they don't fall ill.

Two years ago, the turbidity in the Hooghly had reached its all-time high level of nearly 700 NTU, threatening normal functioning of the Palta water treatment plant. At that point of time, the KMC water supply department became extremely cautious when residents in several neighbourhoods in north Kolkata such as Ultadanga, Bagmari and Muraripukur complained of getting extremely turbid water. Later, complaints of the presence of turbidity in

### **4. Delhi's Chandrawal water treatment plant back at work after being shut due to flooding**

Delhi Chief Minister Arvind Kejriwal on Sunday July 16th, said the Chandrawal Water treatment plant one of the three shut since flooding has started.

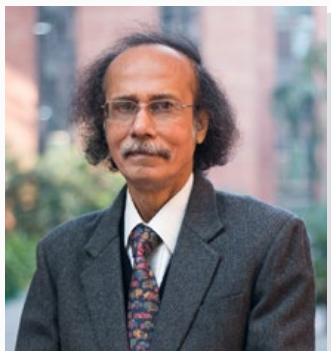
The Okhla plant had been started on Friday after a raging Yamuna showed signs of calming down. "Chandrawal water treatment plant has also started," Kejriwal tweeted on Sunday.

According to officials, the Yamuna's water level declined to 205.98 metres by 9 am on Sunday from its peak of 208.66 metres at 8 pm on Thursday. The decline in the water level is in large part attributable to the decreasing flow from the Hathni kund Barrage in Haryana's Yamuna nagar over the last two days. The water level of the Yamuna, however, is still above the danger mark of 205.33 metres. The normal water supply in the city, which was affected due to flooding in water treatment plants, is likely to be normalised on Sunday.

The chief minister had earlier said that water treatment plants at Wazirabad and Chandrawal will be started by Sunday.

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## *In Conversation with:*

Dr. SK Sarkar,

Former Secretary,  
Ministry of Water Resources,  
Distinguished Fellow, TERI, New Delhi

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### **Q. How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

There is increasing growth of water industry in India over the years. This is due to, inter alia, change of lifestyle of people and increasing economic growth of the country. India's goal is to achieve USD 5 trillion economy in near future. India is implementing "Make in India" programme over the last few years. The national programmes announced by the government is leading the growth of water industry in the country. For example, Jal Jeevan Mission programme of the governments has created opportunities for various industries including suppliers of water meters, water quality monitoring, water management related IT systems, tertiary treatment technology, water related engineering, procurement and construction industries.

The key challenges the water industry faces are how to ensure sustainability of water management on the supply side as well as on the demand side. For example, in the irrigation sector one of the options for water saving is to adopt technology for water use efficiency system. Use of drip irrigation, rain water harvesting, sprinkler system, and cloud based micro irrigation are options which require acceptability to various users in agriculture sector. The cost of water technology is high in some cases. For example, the 'air to water technology' which is used to areas for water access where piped water availability is difficult, is costly. There are technologies in water sector, for example, decentralized water treatment technologies which should have acceptable and reasonable cost to various stakeholders.

### **Q. What are the major trends and developments you have observed in the water industry in India in recent years?**

For many years the concept of water sector was oriented towards managing the supply side of water. Accordingly the water industry got developed in India. In recent years the supply driven water sector concept has changed, and it has become demand driven sector also. In the demand driven sector water industry is likely to accelerate in the coming years. For example, the non-revenue water for water supply varies from 30-50% in Indian cities. To address this problem it requires new technology for metering, automation process, control, etc. Use of renewable technology is the norm of the day. The solar power water supply is increasingly used in rural areas in India. For example, in January 2018, 142,000 solar water pumps were deployed in India by various stakeholders, thus, opening a new area of growth of water industry.

Water sector in India is witnessing 'water stress' situation and India is likely to become a water scarce country in the near future. As per NITI Aayog report (2019), by 2030 the water demand is likely to be twice the available water supply. So water conservation has to be the norm of the day and industry can play a major role. Water conservation is expected in various sectors such as agriculture, industries, and domestic sectors.

### **Q. Could you provide insights into the initiatives that your organization implemented to address water scarcity and promote sustainable water management in India?**

Water conservation in industry is one of the activities which TERI

has been pursuing over the years. Water requirements of various sectors of Indian industries had almost doubled during the last decade and are expected to increase more than three fold by 2050. Various industries require large quantity of water for their manufacturing process where at the same time discharging significant volumes of waste water also occur. Industries are better placed to improve water use efficiency.

Water audit is one of the options where water saving could be taken care of. TERI has been conducting water audit for thermal power sector, textiles sector, paper pulp industries, steel sector etc. for many years. This is expected to help in achieving the goal of National Water Mission for increasing water use efficiency by 20% over the years.

**Q. What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

India's water and waste water treatment technology is increasing at a fast pace. According to Frost and Sullivan report (2022) this market is expected to reach USD 2.08 billion by 2025 from USD 1.3 billion in 2021 growing at CGAR of 9.7%. The government programme of NMCG (National Mission for Clean Ganga) is also using waste water treatment technology for cleaning Ganga for quite some time.

There is another technology called 'air to water' technology which is essential for supplying water to remote and vulnerable areas where piped water access is not possible. The atmospheric water generation under this technology reduces the temperature of collected air below the dew point of water vapor in order to turn it into liquid water. Such machines become pivotal in areas of portable water scarcity. This technology is the order of the day and needs to be spread to all areas where there is problem of extending piped water supply.

**Q. How can public-private partnerships play a role in addressing the water challenges in India? Can you share any successful examples of such collaborations?**

Government's programme for cleaning Ganga is through the National Mission for Clean Ganga setup. The municipal and the industrial effluents pollute water in the river Ganga. This waste water needs treatment for cleaning the water. This waste water industry works with the government and is a good example of public private partnership.

**Q. In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?**

Water industry includes water engineering operation, water and waste water plant construction, equipment supply, waste water treatment etc. Water industry is at the service of other industries as well. The higher potential in the water industry is on the demand side management of water sector. It can be in the agriculture sector, domestic sector and industrial sector.

**Q. How can the water industry in India leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes?**

Water related data at the ground level are often missed and not encouraged. Although the government of India has WARIS information system for data capturing, the information are difficult to obtain from the field. When such data are captured it should come to the policy makers for formulation of policies by the government. JJM Dashboard is a good example in this direction on data driven approach.

**Q. What are the key considerations when it comes to balancing the needs of various stakeholders in the water industry, such as agricultural, industrial, and domestic consumers? How can these conflicting demands be effectively managed?**

The competing water demand is a big issue in recent times. Water is mostly consumed in agriculture followed by industry and domestic sector. There are conflicts over water use by various sectors. The case of 'Cauvery water dispute' is an example as to how the conflict over water demand creates problem of resolution which requires intervention by the highest legislative, executive, judicial authorities. The solution lies in saving of water and reallocate the excess saved water to the deficient sector. Recycle and reuse of waste water could be a right option in this regard. Normally, the waste water is thrown away by various users. There are technologies which converts the waste water into reusable water. This process should be adopted in various sectors.

**Q. What are the key lessons that India can learn from other countries or regions that have successfully addressed water challenges? How can these lessons be applied in the Indian context?**

Israel is a country which has shown to the world that even without rainfall the water problem could be solved. Desalination process

have been adopted in a big way in that country. In Israel, 55% of domestic water comes from desalination process. Recycle of waste water to the extent of more than 80% of domestic water is the norm in Israel. These are big lessons for India as well.

**Q. How do you see the future of the water industry in India? What are your expectations for the next five to ten years in terms of technological advancements, policy changes, and overall development?**

I think the water industry has a big opportunity for growth due to various reasons. For example, government programmes often call for industrial intervention to achieve various goals. Piped water access programme through Jal Jeevan Mission or SBM program for improved sanitation are part of the sustainable development goals which India is committed to implement. The timeline for achieving the SDG 6 safe water and sanitation is 2030. Industry has to take part for facilitating the achievement of the Goal by the government.

**Q. Can you highlight any notable projects or initiatives that your organization or you personally have been involved in to address water-related issues in India? What were the outcomes and lessons learned from these experiences?**

TERI has invented a technology for treating waste water (including grey water, black water, sewage, municipal water, open drains) called TADOX (TERI Advanced Oxidation Technology). TADOX involves nanotechnology in combination with advanced oxidation process which in situ generates hydroxyl radicals leading to

degradation and minimization of pollutants. It helps to bring the parameters such as COD, BOD, POPs even lower than the prescribed norms.

**Q. How can the government, private sector, and civil society collaborate effectively to ensure sustainable water management practices and secure water resources for future generations in India?**

Sustainable development goals 6a calls for strengthening the participation of local communities in improving water and sanitation management. This calls for cooperation among govt. private sector, civil society and important stakeholders such as women and vulnerable sections of the society. Need for political commitment must exist for bringing this cooperative mechanism into practice in water sector.

**Q. What role can innovation and entrepreneurship play in driving positive change in the water industry in India? Are there any promising startups or initiatives that you find particularly inspiring?**

Innovation in approach helps sustainable water management in the country. For example, under Jal Jeevan Mission programme for piped water supply for rural households, the IOT (Internet of Things) technology for captures the raw data from the field for the public in an easy way. This type of innovation should also occur in making the technology less costly and acceptable to the stakeholders. This will help the water industry in a big way.

## Company Details:

**VISION OF MY COMPANY** - Usher transitions to a cleaner and sustainable future through the conservation and efficient use of energy and other resources, and innovative ways of minimizing and reusing waste.

**NUMBER OF EMPLOYEES** - 850  
**KEY ACEIVEMENTS OF THE LAST YEAR** - TERI was able to fulfil its goal in various subsectors in line with achieving sustainable development goals.

**MAJOR ORDERS WON RECENTLY** - NA

**NAMES OF MANAGING DIRECTOR AND SENIOR EMPLOYEES** -  
- Dr Vibha Dhawan, Director General, TERI

Ms Suruchi Bhadwal, Director, Earth Science and Climate Change,  
Mr A K Saxena, Senior Director, Electricity & Fuels Division,  
- Dr Suneel Pandey, Director, Environment & Waste Management,  
- Dr Nupur Bahadur, Associate Director, Environment & Waste Management,  
- Dr Livleen K Kahlon, Associate Director, Environment Education and Awareness,  
- Dr Banwari Lal, Senior Director, Environmental & Industrial Biotechnology,  
- Dr Veeranna Channashettar, Associate Director, Environmental & Industrial Biotechnology,  
- Mr Girish Sethi, Senior Director, Industrial Energy Efficiency,  
- Mr Prosanto Pal, Associate Director, Industrial Energy Efficiency,  
- Dr G Rudra Narsimha Rao, Director, Industrial Energy Efficiency,  
- Mr Amit Kumar Singhal, Associate Director, Information Technology and

Services,  
- Mr R R Rashmi, Programme Director, Integrated Policy Analysis,  
- Dr P K Bhattacharya, Associate Director, Knowledge Resource Centre,  
- Dr Jitendra Vir Sharma, Senior Director, Land Resources,  
- Mr Shirish S Garud, Director, Renewable Energy Technologies,  
- Mr Souvik Bhattacharjya, Associate Director, Resource Efficiency & Governance,  
- Dr Amit Kumar Thakur, Associate Director, Social Transformation & CSR,  
- Dr Vibha Dhawan, Director General, Sustainable Agriculture,  
- Dr Kiran Kumar Sharma, Senior Director, Sustainable Agriculture,  
- Ms Shabnam Bassi, Director, Sustainable Buildings,  
- Mr Sanjay Sethi, Senior Director, Sustainable Buildings,  
- Dr Shailly Kedia, Associate Director,

Sustainable Development and Outreach,  
- Ms Anupama Jauhry, Associate Director, TERI Publications,  
- Dr Dipankar Saharia, Senior Director, TERI-North East Centre,  
- Mr Sharif Qamar, Associate Director, Transport & Urban Governance,  
- Mr Anshuman, Associate Director, Water Resources,

**Miscellaneous Questions:**  
Favourite Book/Author - **An Uncertain Glory : India and its contradictions by Jean Drèze and Amartya Sen**  
Favourite Movie - **3 Idiots featuring Amir Khan**  
Favourite Holiday Destination - **USA and UK**  
One piece of advice for 'EverythingAboutWater' - **Please pursue your goals through enhanced outreach**

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## *In Conversation with:*

**Dhruv Krishna,**  
Regional Manager,  
CIMCON Software  
India PVT LTD

### **Q. How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

Today's water industry is in a state of high energy and is full of enthusiasm, wherein industry veterans and domain experts are providing solutions that are required at a scale never seen before. The key challenge is to maintain the quality at the execution level since water is a critical utility and a 24x7 job. Only experienced companies that understand the ground realities can provide seamless solutions.

### **Q. What are the major trends and developments you have observed in the water industry in India in recent years?**

A major development has been the large-scale turnkey projects, both green and brownfield, across India in the water sector. The government is implementing a two-fold strategy, which involves refurbishing old infrastructure and establishing new Water Treatment Plants (WTPs), Water Supply (TWS), and Sewage Treatment Plants (STPs) in areas that previously lacked access to piped water. An example of this initiative is the Jal Jeevan Mission (JJM). A positive trend is the widespread adoption of technology such as the Internet of Things (IoT), Remote Monitoring Systems (RMS), and Supervisory Control and Data Acquisition (SCADA) to effectively manage these utilities, which are often located in remote areas.

### **Q. Could you provide insights into the initiatives that your organization implemented to address water scarcity and promote sustainable water management in India?**

Our company has been a leader in SCADA, IoT solutions, and an OEM for the past 35 years. With extensive experience in water management, we have leveraged our expertise to develop customized solutions and logic for remotely controlling and managing such assets. Our hardware and software are designed to improve efficiency by preventing pumps from running under abnormal conditions and stopping water reservoir overflow. This is achieved through smart logic and combinations of our level sensors and RTUs. Furthermore, we have developed and implemented machine learning and artificial intelligence-based anomaly detection and fault management for pump motors using vibration sensors. This provides clients with periodic updates on the health and potential faults, allowing for preventive maintenance, reduced downtime, and improved efficiency. By preventing water wastage and enabling pumps to operate at optimal levels through IoT/SCADA monitoring and control, we actively contribute to water conservation and promote sustainable water management.

### **Q. What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

As mentioned above, the key technologies that are transforming the water industry and improving efficiency and sustainability are:

1. IoT/SCADA technology implementation for remote monitoring/control of assets.
2. Using AI and ML to improve pump efficiency by preventing breakdowns, detecting anomalies, and ensuring continuous operation.
3. Preventing pump motors from running in abnormal electrical conditions through combinations of protection relays and smart logic, thus preventing breakdowns.
4. Avoiding water wastage through overflow by using flowmeters, level sensors, and smart logic to shut down pumps based on the level/flow of water.
5. Ensuring water quality through smart looping/logic with depth sensors, turbidity/chlorine sensors, and chlorine dosing pumps, providing healthy and clean water to end consumers.

**Q. How can public-private partnerships play a role in addressing the water challenges in India? Can you share any successful examples of such collaborations?**

Public-private partnerships are of utmost importance as they assist the government in involving experts and domain specialists to work on projects. The government plays a supervisory role, while private enterprises have the assurance that their payments and other matters are secure due to their contractual agreement with the government. Successful examples of such partnerships include the AMRUT Yojna projects, such as the Atal Mission for improving water infrastructure in cities. Additionally, the ongoing Har Ghar Jal (Jal Jeevan Mission) aims to provide water supply to previously unconnected remote villages.

**Q. In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?**

In the water sector, opportunities are vast across various verticals, whether it is civil work, electrical and mechanical work, SCADA/IOT work, solar grids, etc. We are witnessing significant investments in various water-related projects. The Jal Jeevan Mission (JJM) scheme alone is worth more than 3.50 lakh crores, covering lakhs of villages. Specifically, projects are being designed and commissioned based on water availability and geographic conditions, including both groundwater and surface water sources. The need of the hour is to gear up and enhance our capabilities, build capacity in terms of supply and execution of these projects. It is important to note that these projects have a 10-year maintenance component as part of the contract, ensuring a long-term opportunity for all stakeholders.

**Q. How can the water industry in India leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes?**

It is the need of the hour that digitalization and data-driven approaches are further improved and fine-tuned. Today, governments and clients need to know the site conditions and parameters, such as the amount of water supplied in a day, water quality, reports on water conservation versus wastage, optimum running of pumps, and minimum downtime. This data is the only way to justify the huge investments. Correct data and its interpretation provide a clear message on the performance of an asset, thereby ensuring proper water supply to end consumers. The endeavor of the government is to provide sustainable, clean, and timely water supply to the people of India, thereby improving

the lives and health of its people, who, after all, are the biggest resource for the country. Data gives access to current performance and future planning, which in turn drive investment.

**Q. What are the key considerations when it comes to balancing the needs of various stakeholders in the water industry, such as agricultural, industrial, and domestic consumers? How can these conflicting demands be effectively managed?**

Different sectors have specific water resource management needs. For example, irrigation requires monitoring canals and reservoirs with sensors and managing barrages. In the industrial sector, water usage is tailored to specific requirements to minimize waste. Companies with specialized teams can meet these diverse demands. For instance, we completed a project for the National Hydrology Project, monitoring canals in Haryana using satellite communication and automated pumps. We are also implementing technology-based automation projects in nearly 2000 villages in Uttar Pradesh for the Jal Jeevan Mission scheme, showcasing our ability to provide solutions across various domains.

**Q. What are the key lessons that India can learn from other countries or regions that have successfully addressed water challenges? How can these lessons be applied in the Indian context?**

India is adapting and adopting various solutions that have been implemented across the globe, such as IoT-based monitoring and SCADA solutions, to manage such assets and address water challenges. It is just that the scale and scope in India far exceed any other similar works carried out globally. Lessons learned are that all solutions should be flexible, robust, and scalable to enable smooth rollout and long-term sustenance.

**Q. How do you see the future of the water industry in India? What are your expectations for the next five to ten years in terms of technological advancements, policy changes, and overall development?**

The water industry in India is on an exponential growth path, with a lot of scope and areas still untouched to manage this depleting resource for such a large population like India. Furthermore, the more advancements of 4G/5G networks across the length and breadth of India will enable further implementation of IoT/SCADA solutions. In addition, the ease of accessibility through a network of upcoming roads, etc., will allow for the construction of more water infrastructure faster and in a more manageable manner for years to come. Government policies are tuned in to meet the

requirements of water for this huge population.

**Q. Can you highlight any notable projects or initiatives that your organization or you personally have been involved in to address water-related issues in India? What were the outcomes and lessons learned from these experiences?**

1. Successfully supplied and commissioned the NHP project for the Irrigation Department in Haryana.
2. Successfully automated and managed the Chandigarh water supply for the past 15 years.
3. Successfully automated and managed the Uttarakhand Water supply for over 15 years, encompassing 600+ sites under Pey jal Nigam, Uttarakhand.
4. Automated and successfully integrated nearly 900 sites across various cities in Uttar Pradesh under the AMRUT Yojna, Government of India, U.P Jal Nigam.
5. Successfully delivered various projects in Himachal, inaugurated by the Chief Minister.
6. Successfully commissioned multiple projects across various MESs pan India.
7. Currently working in approximately 2000 villages in Uttar Pradesh for E&I works (Electrical Instrumentation and SCADA works) under the JJM Yojna.

**Q. How can the government, private sector, and civil society collaborate effectively to ensure sustainable water management practices and secure water resources for future generations in India?**

This can be achieved through transparent project bidding, bringing together the best resources from both the government and private sector, such as manpower and expertise and working towards common goals in a time-bound and systematic manner. Additionally, civil society can use its social influence to educate the general public on preserving such assets that are being developed, thereby ensuring that water needs and management can be sustained over a long period.

**Q. What role can innovation and entrepreneurship play in driving positive change in the water industry in India? Are there any promising startups or initiatives that you find particularly inspiring?**

Innovation and entrepreneurship are the keys to driving this industry in India. To meet the huge demands, new solutions that are reasonable, sustainable, and manageable in a diverse land like India need to be developed and implemented. New startups need to utilize the communication and digitization boom that India is witnessing. Resource management is the need of the hour, and making materials available as per requirements would be the driving force for any new startup in this sector. Promises need to be followed by action only then this would be successful.

## Company Details:

### VISION OF MY COMPANY -

Revolutionizing automation and bringing it to the forefront of technology in India.

### NUMBER OF EMPLOYEES - 100

### KEY ACHIEVEMENTS OF THE LAST YEAR -

- CIMCON played an instrumental role in reaching out to a large population and delivering solutions in water.
- In a short span of 10-11 months,

we have been working on JJM, "Jal Jeevan Mission" E&I works in close to 1700 plus villages spread across districts such as Etah, Bhairach, Barabanki, Philibit, Jaunpur, Jalaun, and Lalitpur in Uttar Pradesh.

- We can proudly say that our digital solutions will benefit a population of around 10 million spread across these districts.
- CIMCON has also commissioned a surface water scheme in the parched Bundelkhand Region.
- CIMCON has trained our existing team, site engineers, and site technicians, and hired local talent to execute this enormous task.
- Local guest houses with full support

have been set up to facilitate staff comfort.

- We are fully prepared to accept all challenges and be a part of India's story of transformation in this AMRUT KAAL.

### MAJOR ORDERS WON RECENTLY - NAMES OF MANAGING DIRECTOR AND SENIOR EMPLOYEES -

Rajnish Dashottar – Vice President, Business Development  
Ishu Rastogi – Assistant Vice President  
Sandip Jain – Regional Manager  
Darshak Sanghavi – General Manager, Projects

### Miscellaneous Questions:

Favourite Book/Author - Forrest Gump  
Favourite Holiday Destination - Goa  
One piece of advice for 'EverythingAboutWater' - Your insights, expertise, and credibility can add value to our content and help expand our reach. Aim for accurate and reliable information to maintain credibility.

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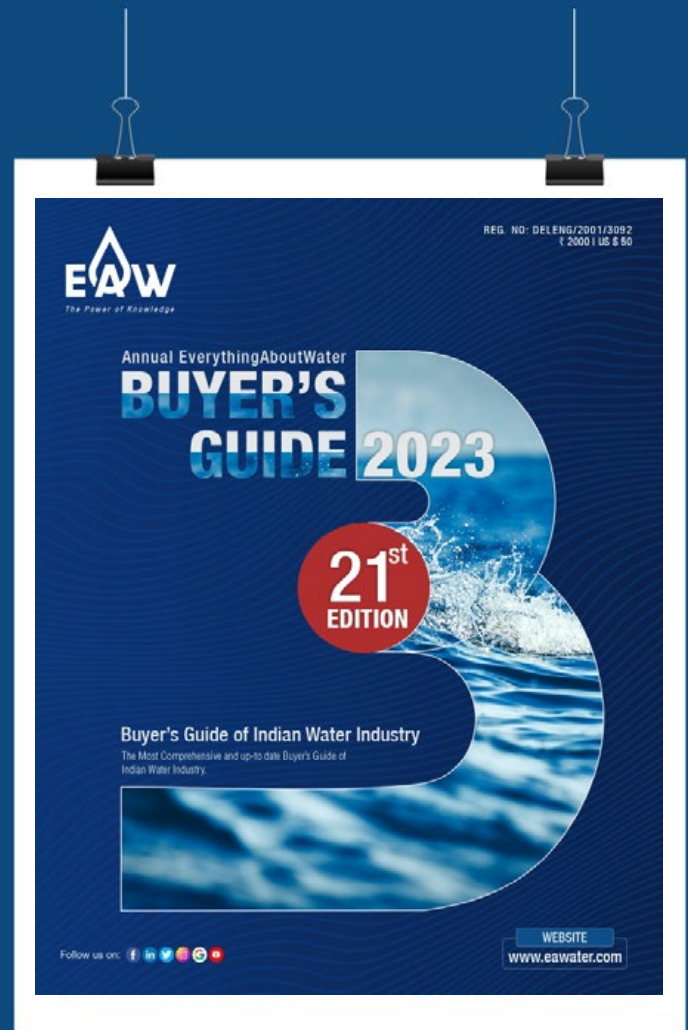
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## *In Conversation with:*

Dr Mayur J. Kapadia,

Trainer, Writer, Editor & Former AGM, Quality Control Dept, GNFC Ltd, Bharuch, Gujarat.

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### **Q. How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

Well, the demand for water has been increasing due to rapid urbanisation and steady economic growth. As a result, there is also a surge in sewage generated. Class I and Class II cities are expected to need approx. 1.2 Lakh MLD water by 2025. At the same time, sewage generation is expected to increase to close to 1 Lakh MLD by 2025. Industrial demand for water is expected to increase multi-fold for sectors like Power, Steel, Paper and Pulp, Oil refineries etc. There has been emergence of new sources of water i.e. desalination, treated wastewater, rainwater harvesting etc.

Over the past few years, the water industry in India has witnessed some key trends and developments in the areas of Piped water supply, Setting up of STPs, Waste to Energy plants, Water Recycling, Desalination, Digitization, Remote sensing, Satellite surveillance etc. for better management of the water infrastructure.

Some of the major challenges faced by Water Sector are high energy costs, water losses due to leakages, financing and the profitability of water industry. Energy accounts for substantial cost when it comes to pumping. It is essential to curtail energy costs by developing and deploying energy efficient pumps & motors, speed regulators, intermittent operation, digitalized operation of pumps and remote control. For a large water network, around 25-30 % of water is lost due to leakages. These cost water companies a vast amount of money, not only in lost revenues but also in treating and pumping back the lost water. Water industries need to develop ways to develop accurate detection of leaks, bursts and other inefficiencies. Software driven programs with advanced

algorithms should be able to detect, alert, manage and provide real-time insights.

Project financing is a substantial hurdle for the Water Industries. It is not possible for governments of many nations to support full financing for the projects. Industry can have their own in-house financing expertise through banks and credit agencies. Moreover, the government needs to proactively address the funding issues being faced by implementing agencies and contractors in order to fast-track project implementation.

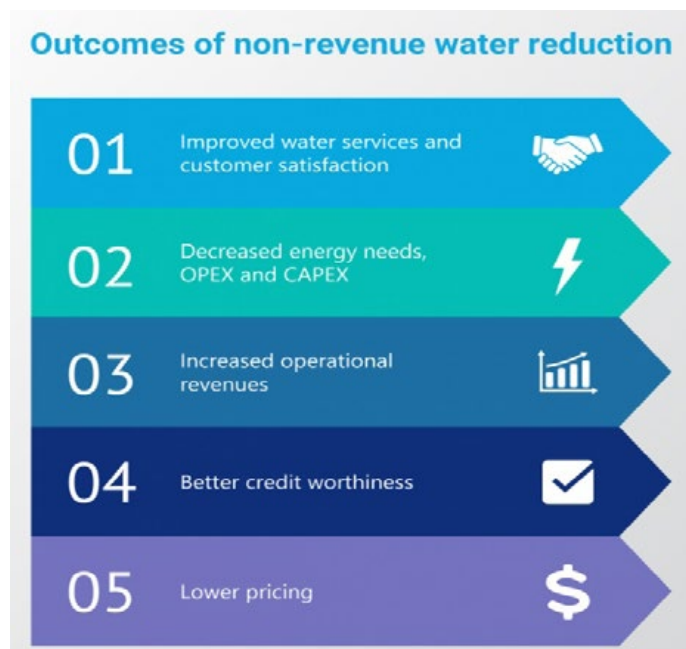
The revenues that Water Industries earn, many a times, do not cover their operating costs. The tax structure for water companies should commensurate with this aspect. Tariff raising or introduction of new taxes should be restricted. The most effective way to address profitability aspect is, however, improvement in plant efficiency and reduction in operating costs by reducing staff and remote controls.

### **Q. What are the key technologies and innovations that are transforming the water industry in India?**

You see, the days, the era and the mindset has been changing! The stakeholders, today, do not try to solve water quantity and quality risks with the same old toolkits! Technical advancements and new capabilities have started disrupting the 'status quo' and spark new ways of solving Indian water challenges. Everybody would agree that innovation and technology have a vital role to play in scarcity & safety, water efficiency, utility operations, monitoring & treatment and data & analytics.

The innovation offered by the remote sensing of water helps in

water accounting and non-revenue water remediation. The Internet of things (IoT) has been enabling smart irrigation, and water quality control, which, when coupled with new computing capacity, allows to develop complex models for water management. New technologies helping utilities to serve their customers digitally, managing water resources remotely in real time, empowering farmers to make water smart decisions and utilizing distributed technology to expand water and wastewater services have been transforming the Water Industry.



'Smarter Home' technology is providing a smart metering and automated leakage prevention system. This technique is useful in apartment buildings in India to save thousands of households in saving approx. 35 percent of water consumption. Mobile management platforms are improving customer care and billing services. It also incorporates data insights to inform infrastructure investment planning, as well as regulatory oversight to monitor the compliance of service.

Machine learning and remote sensing are deployed to send text messages to small-scale farmers with hyper-local information on climates and weather forecasts. This technology has great benefits for farmers, which in turn can trickle down to consumers. Water ATMs, IOT enabled operations and pay-as-you-go cards have also been bringing revolution in water industry.

Technology of onsite chlorine generation eliminates costs and

risks from transportation of chemicals to water and wastewater treatment plants. In-pipe robotic mapping and assessment tools can detect leaks in distribution systems and prevent pollution runoff in urban waterways. The analytics platform to identify the source of contamination in water is also a highly useful technology.

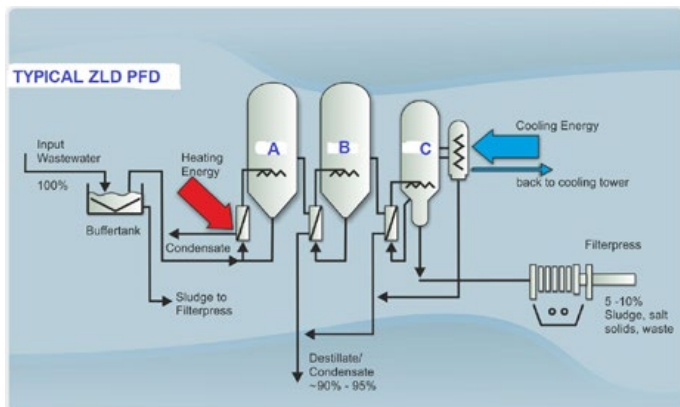
**Q. In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?**

Well, there are numerous opportunities in water sector to invest and improve water availability for a nation like India. Some of them are Desalination, Recycle-and-Reuse Systems, ZLD, Packaged Wastewater Treatment Plants, Water vending machines, Smart meters, Solar-powered pumps and so on. Desalination, is, of course, a significant one in view of the large coastal line available to India. The hybridization of technologies for Desalination have been curtailing the treatment expense and operating costs. Combination of membrane technology with thermal processes is a promising avenue for those who have in-house power generation facilities, since waste heat would be utilized in a constructive way here. The demand for desalination is particularly growing in municipal and industrial sectors of the coastal cities.

Another area is Waste Recycling Plants for industries. The concept of RRR (Reduce, Reuse and Recycle) has become not only popular in India, but also a harsh necessity in view of reduced water availability. Waste water treatment plants having sole aim of recycling maximum water and ensure adaptability to local conditions, compliance to health standards and protection of fresh water resources can have double engine effect - they will reduce fresh water consumption and recycle the wastes.



Zero Liquid Discharge (ZLD) is designed to remove all the liquid waste from a system. Its focus is to reduce wastewater economically and produce clean water that is suitable for reuse (e.g. irrigation), thereby saving money and being beneficial to the environment. Good capacity ZLD plants to manage stubborn waste waters or you know, tough-to-treat waste waters is a wonderful opportunity.



Apart from saving water, these plants could also render recovery of valuable products from waste streams. Use of thermal and non-thermal technologies could bring about economy to operation of ZLD plants.

## Q. How can public-private partnerships play a role in addressing the water challenges in India?

The Indian populations have traditionally viewed water as a free resource, and in the absence of regular supply channels, people have continued to exploit surface and groundwater. Ironically, it is also a matter of fact that even after more than 75 years of independence, millions of adults and children in the rural population are affected by waterborne diseases. This puts a significant burden in terms of loss of life and income on the already-struggling strata of society.

Technically, almost 95 percent of India's rural population has access to water supply infrastructure through state investment and infrastructure. Sustainability and economics have to go hand in hand in a vast country like India, where resources and intent are limited. With the limitations of the state and central governments in terms of reach and funding, the reliance has been on adoption of a collaborative model i.e. Public Private Partnership (PPP). Though PPPs have been common in the urban utility sector, area of water is still governed by the state in most cases. PPP could go a long way in addressing water availability issues.

India needs to overcome the socioeconomic and cultural issues that continue to dominate Pure Private Participation in the area of water management. The key issues are asset ownership, performance monitoring, and regulation of water operators. The introduction of public-private partnerships (PPP) has brought with it a framework. This framework provides the link between the vision and intent of the government upto the end users, the technical expertise of

private sector, funding from private sector, and the missionary zeal of the nonprofit sector.

Since water management has been a state-level subject in India, PPP models in the water sector have been largely project-level initiatives, particularly in rural India. In this sense, the strategic long-term benefits are slow to accumulate for rural India.

Still, some path-breaking work is being carried out through this model where corporates, NGOs and governments tie together under CSR or voluntary models to take forward the vision of a safe water policy for all.

## Q. What are the key considerations when it comes to balancing the needs of various stakeholders in the water industry, such as agricultural, industrial, and domestic consumers? How can these conflicting demands be effectively managed?

You know, the freshwater or the water without significant salt content accounts for only about 6% of the world's water supply. This water is essential for human uses such as agriculture, manufacturing, drinking and sanitation. Hence, agriculture, industry and municipal water supply always compete over scarce freshwater. It must be emphasized that there already exist difficulties in fairly allocating the world's freshwater resources among and within countries. These conflicts at national level are intensifying among agricultural, industrial, domestic and urban sectors with implications on livelihoods and economic development.

Agriculture has priority rights to water in India. Water usage for irrigation accounts for 70% of global annual freshwater withdrawals. The industrial water consumers include economic entities such as oil refineries, mines, manufacturing plants, as well as energy installations. Industrial sector gets water remaining from food production to produce industrial output. As a thumb rule, the industrial water use of a country tends to rise rapidly as a country industrializes and then declines as country moves towards more service-based industries. Accordingly, the stage of a nation's development is the key determinant of future industrial water use. India, being a developing country, needs more water supply for industrial sectors.

Admittedly, investments in water infrastructure are essential to unlock the full potential of economic growth in India's economic development. Efficient water infrastructure can reduce the risk of water scarcity and also help to manage water-related disasters. This, in effect, can make the development efforts of India more sustainable by increasing the resilience of economies to extreme

events. India's national policy should support improvement in water infrastructure because improved infrastructure will bring about improved efficiency of agricultural and industrial water use, which would ultimately improve the economic productivity of water. Efficient agriculture would leave more water for industry and municipal supply, increasing crop output and decreasing sectoral competition.

Furthermore, private sector participation in investment in water and sanitation projects is critical in supplementing ground and surface water for industrial production. Improved balance among various competing sectors would not only drive the economic growth, but will also lead to poverty reduction and employment generation. At the same time, investment in sustainable measures like Reuse & Recycle can also augment water resource supply to different sectors.

It is studied that water use efficiency in agricultural production is high in Brazil. The annual withdrawals for agriculture are considered less efficient in India and also in Russia and China. For India, efficient water management should go hand-in-hand with eco-efficiency as well as agricultural and industrial innovation systems for mitigating water challenges and improve water balance among sectors.

#### **Q. What promise does the untapped water sources hold in terms of tackling water scarcity ?**

This is indeed an interesting question. There are yet several unconventional and untapped water sources available to mankind like Fog, Iceberg etc, which could partially help to tackle water shortage.

In dry coastal areas and mountains, intense fog is regularly seen. The tapping of water imbedded in fog through vertical mesh intercepting the droplet stream can be explored through technological advancements. However, the geography and topography of the region should be conducive for optimum fog interception. If successful, this could be a green technology and low maintenance option to render drinking water. Countries like Chile, Oman, Israel have done work on this concept.

Pulling and towing of icebergs from polar ice caps, though practically seeming impossible, is the subject that is considered by scientists, politicians and students as a potential source of fresh water. Moving an iceberg through ocean is technically feasible, but power requirement, melting during transit and economics of the endeavour have to be suitably accounted for.

Artificial enhancement in rain falls through Cloud seeding technique has a potential to harvest more water from air. Artificial frost nuclei are introduced to the already-existing natural frost nuclei within clouds. These particles act as a starting point for raindrops or ice crystals, promoting their formation. In turn, this makes it more likely to rain or snow. Some countries in arid and semi-arid regions have used this technology to increase rainfall volumes. The process however is a very complex and costly process involving advanced equipments and facilities such as a radar technology.

Rain water harvested via rooftop systems and collected in tanks could be used for livestock watering. Rain water collection of ground run-off water into a pond could be very well used for agriculture.

#### **Q. How do you see the future of the water industry in India?**

Water Industry in India is set to introduce various new technologies and changes in coming future. Climate change, Increasing fresh water demands, Automation and Digitization are the main and important factors for water companies to stay competitive within the industry. Such factors will eventually turn into futuristic opportunities which will benefit businesses, customers and the environment.

The smart cities mission and AMRUT mission focus on reducing non-revenue water, which is accounted for approx. 30-50 % in Indian cities. For addressing non-revenue water, technology is required to be introduced for metering, automation and monitoring. This poses a potential for metering, instrumentation and equipment supply businesses. The raising of water efficiency in agriculture processes from 30-35 % to higher target puts forward the business prospects for drip irrigation, rainwater harvesting, cloud based micro irrigation, sprinkler equipments etc. For enhancement in rain water harvesting, new plumbing technologies and water storage methods have a high growth potential in coming years. With increased industrial water requirements and reduced resources, there will be a strict requirement to treat domestic sewage and use in industries. Sewage treatment plants would be a promising business activity in next several years. The government has been targeting increased use of energy efficient water distribution network. Solar powered water pumps seem to be an excellent business opportunity.

#### **Q. How can the government, private sector, and civil society collaborate effectively to ensure sustainable water management practices and secure water resources for future generations in India?**

Active participation and cooperation of private sectors, non-government organizations (NGOs), various levels of government, and civil society are critical for ensuring better management and allocation of water resources. The key issues for such participation, cooperation and collaboration are asset ownership, performance monitoring, and regulation of plant operations.

For collaboration to be effective, each partner needs to fulfil its own obligations. The government should provide a framework. It should also provide a complete linkage to the end users to observe and appreciate the vision of the government and life-cycle of the sustainable water projects implementation on real time basis. While the private sectors should bring up the technical expertise and funding, the non-profit sectors should exhibit the missionary zeal for success of water project. Civil society promotes the interests of citizens, consumers, marginalized populations, workers, grassroots movements and social causes in their efforts to find collaborative solutions. Therefore, civil society organizations and leaders should continue to be vital collaborators in addressing today's regional challenges with industry and government.

For success of these collaborative efforts, it must be ensured that there are appropriate participants to play various roles effectively. Some of the agencies should act as Mediators or Experts, while there also should be Implementers and Watchdogs. The Mediators need to brokerage the trust of community and facilitate dialogue to negotiate transitions and a more equitable future of work. The Champions need to inspire actions, promote shared societal values and advocate for marginalized and disempowered communities. The local experts & leaders have to provide traditional wisdom for nature-based solutions, whereas the Subject Experts having in-depth knowledge, insights, techniques, industry practice have to extend support for responsible technology design, deployment and use. The driving front-line actions to deliver positive socioeconomic



change must be taken by a group of Implementers, which could be a local organization. A high level of transparency, accountability, impartiality and neutrality to drive reform is also required to be ensured by the Watchdogs.

Creation of water recharge ponds, high pressure recharge wells and similar projects have been successfully implemented through cooperation of NGOs and Banking institutions in some states of India. However, collaborative models in the water sector have been largely project-level initiatives, particularly in rural India at present times. In this sense, the strategic long-term benefits are slow to accumulate for rural India.

The time has come to look at an improved collaborative model – a model that looks at a human-centric approach. The road ahead in the war to achieve water conservation and management in India is long, difficult and tiring. Dependence on reliable partners for collaborative efforts is the way forward for India.

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VISION OF MY Ex-COMPANY – To be a growth nucleus for the country  
NUMBER OF EMPLOYEES – 5000+  
NAME OF MANAGING DIRECTOR AND SENIOR EMPLOYEES –

- Mr Pankaj Joshi, IAS,
- Mr YN Patel
- Mr PA Shah
- Mr DV Parikh

## Miscellaneous Questions:

Favourite Book – The Wings of Fire  
Favourite Author – Mr Jay Vasavada  
Favourite Movie - Deewar  
Favourite Holiday Destination – Coorg, India

One piece of advice for 'EverythingAboutWater' – The march towards water sustainability is an on-going and endless journey. 'EAW' has been undertaking marvellous assignments towards this goal and should continue with great zeal and enthusiasm.



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## *In Conversation with:*

Mandarr Kkamthe,

Industry Expert-Water

### **Q. How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

The water industry in India plays a critical role in addressing the country's water-related challenges, including water supply, sanitation, irrigation, and water resource management. India's water sector encompasses various stakeholders, including government bodies, public and private utilities, NGOs, and community-based organizations. Despite ongoing efforts to improve water management, India faces several significant challenges:

- **Water Scarcity:** India is facing a growing water scarcity problem due to a combination of factors such as population growth, urbanization, climate change, and inefficient water management practices. Many regions in the country, particularly arid and semi-arid areas, experience water stress, leading to a lack of access to clean water for drinking, sanitation, and agriculture.
- **Unequal Access:** Access to clean and safe water is not uniform across the country. While urban areas generally have better water infrastructure, rural regions often lack adequate access to clean water and sanitation facilities. This disparity exacerbates health issues, particularly for marginalized communities.
- **Groundwater Depletion:** Excessive reliance on groundwater for irrigation and drinking water purposes has led to widespread

depletion of aquifers in various parts of India. Over-extraction, coupled with inadequate recharge mechanisms, has caused declining groundwater levels, posing a significant threat to water security.

- **Water Quality:** Water pollution is a pressing concern in India, affecting both surface and groundwater sources. Industrial effluents, untreated sewage, agricultural runoff, and improper waste disposal contribute to water contamination, leading to health risks and environmental degradation.
- **Inefficient Water Management:** Inefficiencies in water distribution, treatment, and infrastructure contribute to the challenges faced by the water industry in India. Outdated systems, inadequate maintenance, and high non-revenue water (water lost due to leaks, theft, or inaccurate measurement) further strain the sector's ability to provide reliable water services.
- **Climate Change Impacts:** Climate change poses additional challenges to the water industry in India. Erratic rainfall patterns, increased frequency of droughts and floods, and rising temperatures affect water availability, agriculture, and water infrastructure. Adapting to these changes requires sustainable water management practices and infrastructure upgrades.
- **Institutional and Policy Issues:** The water sector in India faces governance challenges, including fragmented institutional frameworks, lack of coordination among agencies, and inconsistent policy implementation. Strengthening institutional capacities and improving policy frameworks are crucial for addressing water management issues effectively.

To address these challenges, the Indian government and various stakeholders have been implementing initiatives such as the National Water Mission, Atal Bhujal Yojana, Swachh Bharat Mission, and the Namami Gange program to improve water management, infrastructure, and access to safe water and sanitation facilities. However, sustained efforts, investment, and holistic approaches are required to overcome the complex water challenges in India.

### **Q. What are the major trends and developments you have observed in the water industry in India in recent years?**

In recent years, the water industry in India has witnessed several trends and developments aimed at addressing the country's water challenges and ensuring sustainable water management. Here are some of the major trends and developments:

- **Water Conservation and Management:** With increasing water scarcity and stress, there has been a growing focus on water

conservation and management. The implementation of water-saving technologies, rainwater harvesting, and wastewater treatment and reuse initiatives are gaining momentum across the country.

- **Policy and Regulatory Reforms:** The Indian government has taken significant steps to reform policies and regulations related to water management. Initiatives like the National Water Framework Law and the Jal Jeevan Mission have been launched to enhance water governance, improve access to safe drinking water, and ensure efficient water allocation.
- **Decentralized Water Treatment and Solutions:** There has been a shift towards decentralized water treatment and solutions, particularly in rural areas. Community-based water projects, such as the construction of decentralized water treatment plants and water ATMs, are being implemented to provide safe drinking water to underserved communities.
- **Adoption of Water-Efficient Technologies:** Various sectors, including agriculture and industries, are adopting water-efficient technologies to optimize water usage. Precision irrigation systems, drip irrigation, and micro-irrigation methods are being promoted to reduce water wastage in agriculture. Similarly, industries are implementing water recycling and reuse systems to minimize their water footprint.
- **Smart Water Management:** The integration of technology and data-driven approaches into water management has gained traction. Smart water meters, IoT-based monitoring systems, and real-time data analytics are being deployed to optimize water distribution, detect leakages, and improve overall water efficiency.
- **Public-Private Partnerships (PPPs):** Public-Private Partnerships have emerged as a significant trend in the water sector. Collaborations between government entities, private companies, and NGOs are being fostered to develop and manage water infrastructure, improve service delivery, and attract investments.
- **Awareness and Education:** There is an increased focus on creating awareness and educating the public about water conservation and sustainable practices. Campaigns, workshops, and educational programs are being conducted to promote responsible water usage and behavior change.
- **Water Quality and Pollution Control:** The issue of water pollution and deteriorating water quality is receiving attention. Efforts are being made to control industrial pollution, implement stricter wastewater treatment standards, and protect water bodies from contamination.

These trends and developments indicate a growing recognition of the importance of sustainable water management and the need for

comprehensive approaches to address India's water challenges. However, it's important to note that the water sector in India still faces significant challenges, including inadequate infrastructure, inefficient water use practices, and regional disparities in water availability.

#### **Q. What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

Several key technologies and innovations are transforming the water industry in India and contributing to improved efficiency and sustainability. Here are some notable advancements:

- **Water Treatment Technologies:** Advanced water treatment technologies, such as reverse osmosis (RO), membrane filtration, and ultraviolet (UV) disinfection, are being widely adopted in India. These technologies help remove contaminants, pathogens, and pollutants from water, ensuring access to clean and safe drinking water.
- **Internet of Things (IoT) and Sensor Technologies:** IoT-based water management systems and sensor technologies are being deployed to monitor water usage, detect leakages, and optimize water distribution. Real-time data analytics enable proactive maintenance, efficient resource allocation, and early detection of potential issues, thereby reducing water losses and improving overall system efficiency.
- **Smart Water Meters:** Smart water meters are replacing traditional meters in many areas, enabling accurate monitoring of water consumption and promoting efficient water use. These meters provide real-time data on water usage, allowing consumers and water utilities to track their usage patterns and make informed decisions regarding conservation measures.
- **Water Recycling and Reuse Systems:** Advanced water recycling and reuse systems are gaining prominence, particularly in industries and urban areas. Technologies such as membrane filtration, activated carbon filters, and advanced oxidation processes are used to treat wastewater, making it suitable for various non-potable purposes like industrial processes, irrigation, and groundwater recharge.
- **Remote Sensing and GIS:** Remote sensing technologies, coupled with Geographic Information Systems (GIS), are being used to monitor water resources, assess water availability, and identify potential areas of water stress. Satellite imagery and remote sensing data help in water resource mapping, drought monitoring, and efficient planning of water management strategies.
- **Cloud Computing and Data Analytics:** Cloud computing and

data analytics play a crucial role in managing large volumes of water-related data efficiently. Cloud-based platforms enable the storage, analysis, and sharing of water-related information, facilitating better decision-making and resource optimization.

- **Decentralized Water Treatment Systems:** Decentralized water treatment systems, such as community-level water purification plants, are being implemented in rural and remote areas. These systems use technologies like solar-powered filtration, gravity-based filters, and compact treatment units to provide safe drinking water to underserved communities.
- **Mobile Applications and Digital Solutions:** Mobile applications and digital solutions are being developed to promote water conservation practices, raise awareness, and enable citizen engagement. These tools provide information on water-saving techniques, water quality monitoring, and reporting of water-related issues, fostering a participatory approach to water management.

These technologies and innovations are improving efficiency and sustainability in the water industry by optimizing water use, reducing wastage, enhancing water quality, and enabling better decision-making based on real-time data. They contribute to the conservation of water resources, address water scarcity challenges, and support sustainable development in India's water sector.

## **Q. How can public-private partnerships play a role in addressing the water challenges in India? Can you share any successful examples of such collaborations?**

Public-private partnerships (PPPs) can indeed play a significant role in addressing water challenges in India. By combining the resources, expertise, and efficiency of both the public and private sectors, PPPs can help improve water infrastructure, expand access to clean water, promote sustainable water management practices, and enhance the overall water governance system. Here are a few successful examples of PPPs in the water sector in India:

- **Nagpur 24x7 Water Supply Project:** The Nagpur Municipal Corporation partnered with a private consortium led by Veolia Water India to implement a 24x7 water supply project in Nagpur. The consortium is responsible for improving the water supply infrastructure, reducing water losses, enhancing service delivery, and ensuring round-the-clock water availability to the city residents.
- **Bangalore Water Supply and Sewerage Project:** The Government of Karnataka partnered with a consortium of private companies, including Suez Environment, to improve

water supply and sewerage services in Bangalore. The project aimed at reducing water leakages, increasing water availability, enhancing wastewater treatment capacity, and improving service quality for residents.

- **Yettinahole Diversion Project:** The Karnataka government entered into a PPP with private companies to implement the Yettinahole Diversion Project, which involves transferring water from the Yettinahole River basin to address the water scarcity in the drought-prone districts of Karnataka. The private sector contributes to the design, construction, and operation of the project.

These examples illustrate how PPPs have been instrumental in addressing water challenges in India by leveraging the technical expertise and financial resources of the private sector while benefiting from the governance and regulatory oversight of the public sector. However, it is essential to ensure that such partnerships are structured effectively, transparently, and with appropriate safeguards to protect public interests and guarantee long-term sustainability.

## **Q. In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?**

In India, the water sector offers several significant opportunities for investment due to the country's growing population, increasing urbanization, and water resource management challenges. Here are some areas that hold great potential for growth and development:

- **Water Infrastructure Development:** Investing in the development of water infrastructure, including dams, reservoirs, canals, and pipelines, can help address water scarcity and improve water distribution systems. This area presents opportunities for public-private partnerships (PPPs) and investment in large-scale projects.
- **Water Treatment and Purification:** With the rising demand for clean and safe water, investing in water treatment and purification technologies is a promising area. This includes technologies like reverse osmosis, filtration systems, and disinfection methods. There is a growing market for both household-level and industrial-scale water treatment solutions.
- **Wastewater Treatment and Reuse:** Given the increasing water pollution and the need for sustainable water management, investing in wastewater treatment and reuse is crucial. Technologies for treating industrial and municipal wastewater,

as well as initiatives for promoting water recycling and reuse, present attractive investment opportunities.

- **Desalination:** India has a long coastline, and investing in desalination plants can help harness seawater as a freshwater resource. Desalination technologies, such as reverse osmosis and multi-stage flash distillation, can play a significant role in addressing water scarcity in coastal areas.
- **Water Conservation and Efficiency:** Promoting water conservation and efficiency measures is another area with great potential. Investment opportunities exist in technologies that enable efficient irrigation systems, water-efficient appliances, leak detection systems, and smart water management solutions.
- **Rainwater Harvesting:** Encouraging rainwater harvesting techniques can help recharge groundwater and provide a decentralized source of water. Investing in rainwater harvesting infrastructure, such as storage tanks, rooftop collection systems, and filtration methods, can be beneficial.
- **Water Management and Data Analytics:** The effective management of water resources requires accurate data collection, analysis, and decision-making tools. Investing in water management technologies, remote sensing, IoT devices, and data analytics platforms can support better water resource management.
- **Water Awareness and Education:** Promoting awareness and education about water conservation and the importance of sustainable water practices is vital. Investments in public campaigns, educational programs, and community engagement initiatives can contribute to long-term water sustainability.

It's worth noting that the water sector in India is subject to government regulations and policies, and partnerships with local entities or understanding the regulatory landscape is important for successful investment in this sector. Additionally, considering the social and environmental impact of investments is crucial for sustainable development in the water sector.

#### **Q. How can the water industry in India leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes?**

The water industry in India can leverage digitalization and data-driven approaches in several ways to enhance water management practices and decision-making processes. Here are some key strategies and technologies that can be employed:

- **Smart Metering:** Implementing smart water metering systems

can provide real-time data on water consumption, leak detection, and usage patterns. This data can help in identifying areas of high water demand, detecting leaks promptly, and optimizing water distribution networks.

- **Remote Sensing and IoT:** Employing remote sensing technologies such as satellite imagery and IoT devices can enable real-time monitoring of water resources, including rivers, reservoirs, and groundwater levels. This data can aid in assessing water availability, predicting drought conditions, and supporting efficient water allocation.
- **Data Analytics and Modeling:** Utilizing advanced data analytics techniques and modeling tools can help analyze large volumes of data, identify trends, and derive actionable insights. This can facilitate proactive decision-making, such as optimizing water allocation, predicting water demand, and identifying areas prone to water scarcity.
- **Water Quality Monitoring:** Implementing digital sensors and IoT devices for continuous water quality monitoring can help detect contaminants, ensure compliance with water quality standards, and promptly address any water pollution issues.
- **Decision Support Systems:** Developing decision support systems that integrate real-time data, models, and scenario analysis can aid in optimizing water allocation, forecasting water demand, and evaluating the impact of policy interventions. These systems can assist policymakers and water managers in making informed decisions.
- **Mobile Applications and Citizen Engagement:** Creating mobile applications that allow citizens to report water-related issues, track water supply, and provide feedback can enhance citizen engagement. This information can be valuable for identifying problem areas, improving service delivery, and promoting water conservation practices.
- **Water Network Optimization:** Applying digital tools to optimize water distribution networks can improve efficiency, reduce water losses, and identify potential infrastructure upgrades. Techniques like hydraulic modeling, pressure management, and network optimization algorithms can help achieve these goals.
- **Water-Energy Nexus:** Integrating data from the water and energy sectors can provide insights into the interdependencies between water and energy systems. This can help in identifying opportunities for water and energy conservation, optimizing energy use in water treatment, and developing sustainable water-energy management strategies.
- **Capacity Building and Training:** Promoting digital literacy and providing training on data analysis tools and techniques can enhance the capacity of water professionals to utilize digital technologies effectively. This will enable them to extract

meaningful insights from data and make informed decisions.

- **Collaboration and Data Sharing:** Encouraging collaboration among stakeholders, including government agencies, water utilities, research institutions, and technology providers, can foster data sharing and exchange of best practices. This collective effort can lead to more comprehensive data sets, improved data quality, and better-informed decision-making.

By embracing digitalization and data-driven approaches, the water industry in India can enhance water management practices, optimize resource allocation, and improve the overall sustainability of water resources in the country.

**Q. What are the key considerations when it comes to balancing the needs of various stakeholders in the water industry, such as agricultural, industrial, and domestic consumers? How can these conflicting demands be effectively managed?**

Balancing the needs of various stakeholders in the water industry, including agricultural, industrial, and domestic consumers, requires careful consideration and effective management. Here are key considerations and strategies to manage conflicting demands:

- **Resource Allocation:** Efficient allocation of water resources is crucial. Prioritize water allocation based on the importance and urgency of each stakeholder's needs. Consider factors such as water availability, economic value, public health, and environmental sustainability.
- **Stakeholder Engagement:** Engage with all stakeholders to understand their needs, concerns, and priorities. Encourage open communication, collaboration, and participation in decision-making processes. This can help build consensus and create a sense of ownership among stakeholders.
- **Integrated Water Management:** Adopt an integrated approach to water management that considers the interdependencies between different sectors. Develop policies and strategies that promote water conservation, reuse, and efficiency across all sectors. Encourage the implementation of innovative technologies and practices to optimize water use.
- **Regulatory Frameworks:** Establish clear and transparent regulatory frameworks to govern water allocation and use. Ensure that regulations are fair, enforceable, and adaptable to changing circumstances. Implement mechanisms for monitoring, reporting, and enforcement to prevent misuse and ensure compliance.
- **Economic Instruments:** Utilize economic instruments such as water pricing, subsidies, and incentives to promote efficient water use and encourage conservation. Implement

mechanisms that reflect the true cost of water, accounting for resource scarcity, treatment, and infrastructure maintenance.

- **Sustainable Practices:** Encourage stakeholders to adopt sustainable practices that reduce water demand and minimize negative impacts. Promote the use of water-efficient technologies, precision irrigation methods in agriculture, and water recycling in industries. Raise awareness about the importance of water conservation among domestic consumers.
- **Environmental Considerations:** Protect and restore ecosystems that provide water resources. Implement measures to prevent pollution and degradation of water sources. Consider the environmental impacts of water allocation decisions and strive for a balance that supports ecosystem health and biodiversity.
- **Long-Term Planning:** Develop long-term water management plans that account for population growth, climate change, and other factors affecting water availability. Assess future water demands and plan infrastructure investments accordingly. Consider alternative water sources and diversify supply options to reduce reliance on a single source.
- **Conflict Resolution Mechanisms:** Establish mechanisms for resolving conflicts that may arise between stakeholders. Mediation, arbitration, or other dispute resolution techniques can help find mutually acceptable solutions and avoid prolonged conflicts.
- **Continuous Monitoring and Evaluation:** Regularly monitor and evaluate the effectiveness of water management strategies. Assess the impacts on stakeholders, identify areas for improvement, and make necessary adjustments to ensure a balanced approach.

By considering these key considerations and implementing effective management strategies, it is possible to balance the needs of various stakeholders in the water industry and manage conflicting demands more effectively.

**Q. What are the key lessons that India can learn from other countries or regions that have successfully addressed water challenges? How can these lessons be applied in the Indian context?**

India can learn several key lessons from other countries or regions that have successfully addressed water challenges. Here are some of those lessons and how they can be applied in the Indian context :

- **Integrated Water Management:** Countries like Australia and Israel have implemented integrated water management approaches, which involve a combination of strategies such

as water conservation, rainwater harvesting, wastewater recycling, and efficient irrigation practices. India can adopt a similar approach by promoting integrated water resource management plans that focus on both supply-side and demand-side measures.

- **Water Pricing and Economic Incentives:** Implementing appropriate pricing mechanisms for water can help incentivize conservation and efficient use. Countries like Singapore and Denmark have successfully used pricing mechanisms to manage water demand. India can consider introducing tiered pricing structures that charge higher rates for excessive water consumption and provide subsidies for efficient water use.
- **Rainwater Harvesting:** Many countries, including Germany and Brazil, have successfully implemented rainwater harvesting systems at various scales. India can encourage the widespread adoption of rainwater harvesting techniques, especially in urban areas, through public awareness campaigns, incentives, and regulations. Government buildings and new constructions can be mandated to incorporate rainwater harvesting infrastructure.
- **Wastewater Management and Reuse:** Countries like Singapore and Namibia have developed advanced wastewater treatment technologies and reuse systems. India can invest in decentralized wastewater treatment plants and promote treated wastewater reuse for non-potable purposes such as irrigation and industrial uses. This can help alleviate the pressure on freshwater sources.
- **Community Participation and Awareness:** Successful water management initiatives often involve active community participation and awareness campaigns. The experience of countries like Japan and the Netherlands highlights the importance of engaging citizens in water conservation efforts. India can promote community-based water management programs, involve local communities in decision-making processes, and raise awareness about the value of water through education campaigns.
- **Technology and Innovation:** Countries like Israel and the Netherlands have been at the forefront of water technology and innovation. India can foster research and development in water-related technologies, such as efficient irrigation systems, sensor-based water management, and water treatment technologies. Encouraging collaboration between universities, research institutions, and industry can drive technological advancements.
- **Policy and Governance:** Strong policy frameworks and effective governance structures are crucial for addressing water challenges. Learning from countries like Germany and South Africa, India can focus on developing robust water policies,

strengthening regulatory frameworks, and establishing dedicated institutions for water management. Clear roles and responsibilities, along with transparent decision-making processes, can enhance water governance.

- **International Cooperation:** Collaboration and knowledge-sharing with other countries can provide valuable insights and solutions to water challenges. India can engage in international partnerships, join global water forums, and exchange best practices with countries facing similar water issues. This collaboration can contribute to the development of innovative solutions and facilitate technology transfer.

It's important to note that the application of these lessons should be tailored to the specific needs, socio-economic conditions, and water resource availability in different regions of India. Local context and stakeholder involvement should be considered while implementing any strategies or policies to address water challenges effectively.

**Q. How do you see the future of the water industry in India? What are your expectations for the next five to ten years in terms of technological advancements, policy changes, and overall development?**

Some insights and potential expectations for the future of the water industry in India over the next five to ten years. However, please note that these are speculative and based on current trends and information available up until my knowledge. The actual developments may vary.

• **Technological Advancements:**

- a. Water Treatment and Desalination:** India may witness increased adoption of advanced water treatment technologies, including desalination plants, to address water scarcity issues. Desalination can help provide a sustainable source of freshwater, particularly in coastal regions.
- b. Smart Water Management:** The implementation of smart water management systems, including IoT-based sensors and data analytics, can help monitor water usage, detect leaks, and optimize distribution networks. This technology can improve water efficiency and reduce wastage.

• **Policy Changes:**

- a. Water Governance and Regulation:** India might experience stricter regulations and policies to manage water resources effectively. This could involve water allocation mechanisms,

groundwater management, and conservation initiatives.

**b. Water Pricing and Metering:** To promote water conservation, the government may encourage the adoption of water metering systems and revise pricing structures to reflect the true value of water.

## • Overall Development:

**a. Water Infrastructure:** The government could invest in developing and upgrading water infrastructure, including pipelines, storage facilities, and wastewater treatment plants. This would improve water accessibility and sanitation.

**b. Rainwater Harvesting:** With a focus on sustainable practices, there may be a greater emphasis on rainwater harvesting techniques at individual, community, and institutional levels. This can help recharge groundwater and reduce dependency on external water sources.

**c. Public Awareness and Education:** There could be increased efforts to raise public awareness about water conservation, efficient water use, and the importance of sustainable practices. Educational programs and campaigns may be launched to foster a culture of responsible water management.

It's important to note that the future of the water industry in India is subject to various factors such as government policies, technological advancements, funding availability, and public participation. The actual trajectory of the water industry in India may differ from these expectations, and it's crucial to consult up-to-date sources for the most accurate and recent information.

## 12. How can the government, private sector, and civil society collaborate effectively to ensure sustainable water management practices and secure water resources for future generations in India?

Collaboration among the government, private sector, and civil society is essential for effective and sustainable water management practices in India. Here are some key steps that can be taken to foster collaboration and ensure secure water resources for future generations:

- **Establish a Multi-Stakeholder Platform:** Create a platform where representatives from the government, private sector, and civil society can come together to discuss water management issues, share knowledge, and collaborate on

solutions. This platform should be inclusive, transparent, and encourage active participation from all stakeholders.

- **Policy Framework and Regulation:** Develop a comprehensive policy framework and regulatory mechanisms that promote sustainable water management practices. This should include clear guidelines, standards, and incentives for water conservation, pollution control, and efficient water use. The government should engage with the private sector and civil society in the formulation of these policies to ensure broad-based support and ownership.
- **Public-Private Partnerships (PPPs):** Foster partnerships between the government and the private sector to leverage their respective strengths and resources. PPPs can be established for water infrastructure development, such as building dams, water treatment plants, and distribution networks. These partnerships should incorporate mechanisms for social and environmental accountability.
- **Capacity Building and Awareness:** Invest in capacity building programs to enhance the skills and knowledge of government officials, private sector professionals, and civil society organizations working in the water sector. This can include training programs on sustainable water management practices, water conservation techniques, and monitoring and evaluation methods. Additionally, awareness campaigns should be conducted to educate the public about the importance of water conservation and responsible water use.
- **Information Sharing and Technology Adoption:** Facilitate the exchange of information, data, and best practices among stakeholders. Embrace the use of technology, such as remote sensing, IoT devices, and data analytics, to improve water monitoring, forecasting, and management. Encourage the private sector to develop innovative solutions and technologies that promote water efficiency and conservation.
- **Community Participation and Empowerment:** Involve local communities and civil society organizations in decision-making processes related to water management. Encourage their participation in water governance through community-led initiatives, water user associations, and decentralized water management systems. Empower local communities with the necessary skills, resources, and authority to manage water resources sustainably.
- **Financial Mechanisms:** Develop innovative financing mechanisms to support sustainable water management initiatives. This can include impact investment funds, water tariffs, and incentives for private sector engagement in water-related projects. The government should also allocate adequate funds for water infrastructure development, maintenance, and conservation measures.

- **Monitoring and Evaluation:** Establish robust monitoring and evaluation systems to assess the effectiveness of water management initiatives and ensure accountability. Regularly review and update policies and regulations based on the feedback received from all stakeholders. Encourage independent audits and evaluations to provide an objective assessment of the progress made.

By fostering collaboration, promoting sustainable practices, and ensuring inclusive decision-making processes, the government, private sector, and civil society can work together to secure water resources for future generations in India.

**Q. What role can innovation and entrepreneurship play in driving positive change in the water industry in India? Are there any promising startups or initiatives that you find particularly inspiring?**

Innovation and entrepreneurship can play a significant role in driving positive change in the water industry in India. By introducing new ideas, technologies, and business models, entrepreneurs can address the challenges related to water scarcity, pollution, and inefficient water management practices. Here are some ways innovation and entrepreneurship can contribute:

- **Water conservation technologies:** Startups can develop innovative solutions to conserve and manage water resources efficiently. This can include smart irrigation systems, leak detection technologies, water treatment and purification methods, and rainwater harvesting systems.
- **Water quality monitoring:** Startups can develop affordable and portable water quality testing devices that enable regular monitoring of water sources. These technologies can help identify contamination issues and provide early warning systems for waterborne diseases.
- **Water purification and desalination:** Innovative startups can focus on developing cost-effective and sustainable methods for purifying water and desalination. This can be crucial in addressing the challenges of providing clean and safe drinking water to the growing population.
- **Water management platforms:** Entrepreneurs can create digital platforms and applications that enable efficient water management and distribution. These platforms can utilize data analytics, IoT devices, and artificial intelligence to optimize water usage, monitor consumption patterns, and detect leaks or wastage.
- **Community engagement and education:** Innovative startups can play a vital role in raising awareness about water conservation and promoting behavior change among individuals and communities. This can be achieved through educational programs, social campaigns, and interactive tools.

Several promising startups and initiatives in India are already working towards positive change in the water industry. For example:

**a. Sarvajal:** Sarvajal is a social enterprise that focuses on providing clean and affordable drinking water through a network of water ATMs and decentralized purification systems.

**b. Infraplan Engineering Services:** Infraplan offers energy efficiency solutions for water pumping systems, helping industries and institutions reduce their water and energy consumption.

**c. Arrior Techsol:** Indra Water is a startup that uses AI and IoT technologies to monitor and optimize water distribution networks, reducing leakage and improving efficiency.

**d. 3S Water:** 3S Water provides innovative water treatment solutions using electrocoagulation technology, offering a sustainable and cost-effective approach to wastewater treatment.

**e. Waterlab Solutions:** Waterlab is working on the critical issue of ground water management in India and came out with the innovation of Bhujal Borewell Monitoring App.

**f. Neerain :** Young startup to transform India from water scarce to water surplus Nation. Rainwater Harvesting.

**g. Jalsmruti:** leading a water start up NGO with the vision of making India Sujalaam Sufalaam (Sanskrit for well hydrated and well vegetated) through the mission of empowering urban and rural water user groups with powerful tools and techniques to become water secure by themselves sustainably.

These are just a few examples among many inspiring startups and initiatives in the water industry in India. The continuous growth of innovation and entrepreneurship in this sector holds great potential for driving positive change and addressing the water-related challenges faced by the country.

**Miscellaneous Questions:**

Favourite Book/Author - Do Epic Shit by Ankur Warikoo

Favourite Movie - Sholay

Favourite Holiday Destination – New Zealand

One piece of advice for 'EverythingAboutWater' –

Keep doing the Good work for water industry. My best wishes for your Future..



## *In Conversation with:*

Dilip Yewalekar,

Senior Vice President, Jain Irrigation Systems Ltd.

### **Q. How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

Let us see the recent news:

- a. Breaking news (ABP Maza-23.6.2023) 'Koyana Dam (Satara District, Maharashtra)' is getting dry in June 2023, which used to receive rain of more than 3,000 mm. Now there is a huge shortage of water as well as power generation.
- b. BMC (Mumbai) has announced to curtail drinking water supply from 15% to 50%.
- c. Similarly, many villages in Vidharbha, Marathwada, and Kandesh regions are already getting water from water tankers.
- d. Two years back, the Latur district got water from a special water train.

Such kinds of situations occur every year even after independence in every state.

UN-Water Report (2021) says India comes under medium to high water stress (50-70%) country in the world. This means in 2030, there won't be adequate water to meet the demand for drinking, agriculture & industries.

After independence, all state and central governments are struggling to resolve the issues of water scarcity, the creation of water resources, water storage, water supply, management, sanitation, pollution, treatments, climate change, and reuse but have not succeeded fully.

To address these challenges, the Government of India has launched ambitious plans & policies such as, 'National Water Mission, Central Water Commission, Jal Jeevan Mission, Har Ghar Pani (water for

every home), Har Kheti Pani (water for every farm)'.

So there is a huge potential for the industries working in the water sector for the next 50 ++ years.

The water industry in India is a complex and challenging sector for Governments, Corporates, Private Companies, Consultants, Industrialists, Manufacturers, Agriculture, Engineers, Stakeholders as well as the community.

While addressing these challenges requires comprehensive strategies and actions, including sustainable, water management practices, improved & advanced infrastructure development, pollution control measures, treatment, awareness campaigns, and participation of communities for long-term water security.

### **Q. What are the major trends and developments you have observed in the water industry in India in recent years?**

In the last 6-7 years, there is a drastic change, innovations, and development happening in various products, IOT, automation, design software, power, and revenue model in the water sector. i.e. water supply, irrigation, wastewater treatment, and irrigation which saves time and generates information accurately.

Some of them are in use by water companies.

- a. GIS/Google map: Use to collect the actual ground map, road networks, houses, existing infrastructure, and water resources, agricultural land correctly with ground elevations (contours).
- b. Smart Water Management Technologies: AI (Artificial Intelligence), IOT, Embedded sensors, Software, Electronic devices, Radio Terminal units, Wireless Devices, PC, Mobile Apps are used to

get real-time data from the project site and optimize the utilization of resources and design engineering.

c. Wastewater Treatment & its uses: The focus on wastewater treatment and reuse has increased in recent years. Efforts are being made to improve wastewater treatment infrastructure and promote the use of treated wastewater for agriculture, irrigation, cleaning, and groundwater recharge.

d. Desalination projects: Due to the increasing pressure of water scarcity along coastal cities, there is a potential for desalination projects to meet the demand for drinking water for the community. A few states Tamilnadu, Gujrat, and Andhra Pradesh have implemented it successfully. Considering the scarcity of water, there is substantial potential for desalination projects in India.

e. Revenue model: To encourage efficient water use and address financial sustainability, water pricing, and revenue model –water metering is used for monitoring and regulating water consumption and offering on-time services to consumers effectively.

**Q. Could you provide insights into the initiatives that your organization implemented to address water scarcity and promote sustainable water management in India?**

In water scarcity areas, Jain Irrigation Systems Ltd has executed successfully a number of water management and irrigation projects - Drip Irrigation & Sprinkler Irrigation, Water Harvesting & conversions projects, Use of Treated Wastewater for Agriculture, and advanced agriculture in India and Abroad at undulated terrain, inadequate rainfall, poor soil conditions, poor water quality, poor yield, etc.

Here, highlighting the success story (youtube) of an innovative project - IOT –Web-based Micro Irrigation Project for multi crops in the area of 12,500 ha at Ramthal Micro Irrigation Project, Karnataka state. (<https://www.youtube.com/watch?v=6-QC2yX306A&t=5s>)

**Q. What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

Several technologies and innovations are transforming the water industry in India, improving efficiency and sustainability in water management. Some of them are :

a. IOT-based Sensors are being used to monitor and manage water resources more efficiently. These technologies enable real-time data collection on water quality, consumption patterns, leak detections, and remote operation of water infrastructure.

By providing accurate information, they enable better decision-making, reduced water wastage, and improved maintenance.

b. Water Treatment Technologies for drinking purposes such as membrane filtration, RO, UV treatment are being adopted to purify the water and remove contaminants.

c. Desalination technology is mainly based on RO.

**Q. How can public-private partnerships play a role in addressing the water challenges in India? Can you share any successful examples of such collaborations?**

Public-Private partnerships (PPPs) can play a crucial role in addressing water challenges in India by leveraging the strengths and expertise of both the public and private sectors, thereby bridging gap in infrastructure development, service delivery, and resource management. PPPs can bring in private sector investment, technical expertise, and efficient project management capabilities to develop water infrastructure, such as water treatment plants, and distribution networks. This can accelerate the pace of infrastructure development and improve access to safe water and sanitation services.

Jain Irrigation has executed many successful innovative water supply projects in India and abroad:

- DAWASA (Dar-es Salaam Water and Sewerage Authority, Tanzania) 24x7 Water Supply Project.
- Belgavi Water Supply Project (Karnataka) 24 x 7 water supply project.

**Q. In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?**

In the water sector in India as well as abroad, there is much potential for investment, growth, revenue, and development. These opportunities arise from the need to address water challenges, improve infrastructure, and promote sustainable water management practices.

- Water infrastructure.
- Wastewater Treatment.
- Desalination.
- Water Quality Monitor & treatment.
- Smart Water Management Solution (IOT-Web based, Sensors)
- GIS/Google mapping.
- Revenue model.
- O & M.

## **Q. How can the water industry in India leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes?**

Digitalization and data-driven approaches can play a transformative role in enhancing water management practices and decision-making processes in the water industry in India. By leveraging technology and harnessing data, the sector can improve efficiency, optimize resource, allocation, and promote sustainable water management.

- Digital Sensors and IoT devices can be deployed to monitor water infrastructure, such as water sources, treatment plants, and distribution networks, in real-time monitoring.
- Data analytics and forecasting (Software) techniques can analyze historical water consumption patterns, demographics data, and other relevant factors to forecast future water demand.
- Smart Water metering enables accurate measurement and monitoring of water consumption at individual households, commercial buildings, and industrial facilities.
- Water Quality Monitoring by digital sensors and IoT base sensors.
- Mobile applications (apps)
- Remote Sensing and GIS can be used to monitor water bodies, watershed boundaries, land use patterns, and soil moisture contents.
- Digitization can help to collect revenue.

## **Q. What are the key considerations when it comes to balancing the needs of various stakeholders in the water industry, such as agricultural, industrial, and domestic consumers? How can these conflicting demands be effectively managed?**

Balancing the needs of various stakeholders in the water industry including agricultural, domestic consumers, and industrial tasks. Conflicting demands for water can arise due to different priorities, resource availability, and usage patterns. Managing conflicting demands in the water industry requires a holistic and inclusive approach that considers social, economic, and environmental dimensions. Collaboration, transparency, and adaptive management are key principles for achieving a sustainable balance among the needs of different stakeholders in the water sector.

b. Adopting an integrated approach to water resource management, involves considering the interconnectedness of water sources such as surface water and groundwater.

c. Engaging stakeholders in decision-making processes fosters understanding builds trust and ensures that diverse perspectives are considered.

d. Clear prioritization criteria for water allocations need to be established considering factors such as economic importance, social significance, and environmental impact of water usage.

e. Promoting water efficiency, and conservation practices, and encouraging the adaption of efficient irrigation methods, water-saving technologies, and sustainable industrial processes can help minimize water demand and reduce conflicts.

f. Implementing water pricing mechanisms, incentive programs, and regulatory frameworks can influence water consumption patterns and promote efficient water use.

g. Timely and accurate data sharing among stakeholders is vital for effective water management, transparent and accessible data on water availability, consumption, patterns, and environmental conditions can facilitate informed decision making collaboration, and conflict resolutions.

h. Clear policies, laws, and regulations can define the rights and responsibilities of various stakeholders and provide a framework for equitable water allocation and usage.

## **Q. What are the key lessons that India can learn from other countries or regions that have successfully addressed water challenges? How can these lessons be applied in the Indian context?**

India can learn valuable lessons from other countries successful in water management and overcome the issue of water scarcity.

### **Australia – Integrated Water Resources Management (IWRM):**

The importance of comprehensive water planning, stakeholder engagement, and adaptive management –can be adopted in India by strengthening coordination among water-related institutions, involving stakeholders in decision-making, and integrating water management across sectors and levels of governance.

### **Singapore**

Water scarcity involves implementing tier water pricing systems and demand management strategies.

### **Brazil**

Large-scale rainwater harvesting program implemented in Brazil. Also, groundwater recharges and builds against droughts.

### **Israel**

Wastewater treatment and its use for agriculture.

**South Africa**

Community-based water management, rainwater harvesting, watershed.

**Germany**

Rainwater harvesting, Waste Water Treatment- use for landscape, garden.

**Q. How do you see the future of the water industry in India? What are your expectations for the next five to ten years in terms of technological advancements, policy changes, and overall development?**

- a. In the coming years, we can expect advancements in areas such as water treatment technologies, remote sensing & monitoring, data analytics, and IoT.
- b. Adaptation of digital platforms, data analytics, and modeling tools for improved water management practices, demand forecasting, leak detection, and infrastructure optimizations. Integration of various data and use of Artificial Intelligence (AI) and Machine learning (ML) techniques to enhance the decision-making process very fast.
- c. Water pricing and revenue collections, water metering as per the actual consumption.
- d. Water-Food nexus will be crucial for sustainable agriculture in India. Water use efficiency.

Food security, precision agriculture, crop selection, and integrated water management in the agriculture sector to optimize water use and increase crop productivity. More crop per drop.

**Q. Can you highlight any notable projects or initiatives that your organization or you personally have been involved in to address water-related issues in India? What were the outcomes and lessons learned from these experiences?**

I remember, in 1988, the first innovative pilot community water management (drip irrigation) and water harvesting project was done on 200 acres at the village Ralegaon-Siddi (Ahmednagar district, Maharashtra).

**Background:**

R. Ralegaon Siddi comes under a drought-prone zone with, average rainfall of 300-400 mm. This rainfall was not even sufficient to meet the drinking demand of the community, so there is no question of meeting the irrigation demand for agriculture.

S. Barren undulated terrain - slope 2 to 10%.

T. Murum soil.

U. Water source - not available.

V. Crops – Rain-fed crops (Jawar, Bajara) for 2-3 months.

W. Source of income for community: Only agriculture and livestock.

**Project:**

- X. Executed Water harvested structure to store the rainfall in the water tank.
- Y. Said water tank was providing water for the community as well as agriculture.
- Z. Water balancing was done to meet the community water demand as well as agriculture demand.
- AA. Micro (Drip) Irrigation management project executed for irrigation water.
  - Cropping pattern was selected based on market demand, variety, seasons, yield, and returns so that the community could get income every month like a salary.
- BB. Selected low-water demand crops.
- CC. Crop root zones were covered with grass/plastic mulching to minimize evaporation.

**Outcomes:**

- Improved access to water for community and agriculture.
- DD. Increased awareness and participation of the community in water management.
- EE. Enhanced collaboration between government agencies, NGOs, Corporates, Educational institutes, and communities.
- FF. Water conversions, precious use of water for community and agriculture.
- GG. Increasing greenery (forestry crops) to maintain the ecosystem.

**Q. How can the government, private sector, and civil society collaborate effectively to ensure sustainable water management practices and secure water resources for future generations in India?**

The government plays a vital role in creating policy and regulatory frameworks that incentivize sustainable water management practices under various schemes. However, the government has limitations and its own priority so it cannot reach everywhere Civil Society, Corporates, Institutions, and NGOs can function very well in remote places, tribal areas, hilly areas, and forests through

demonstration, training, practices, and implementation.

- Currently, the central government and state government jointly provide a 90% subsidy to farmers to implement micro (drip) irrigation systems.
- Government has launched an ambitious missions like 'Har Ghar Pani', 'Har Kheti Pani', Amrit Yojana- Water 24 x 7 supply scheme for various cities.
- The incentive for the rainwater harvesting scheme by the government is provided.
- Under CSR funds Private /Corporate sector shall implement Wastewater treatment and use of TWW (treated wastewater) for garden, landscape, and cleaning purposes.
- Awareness programs on water conversion, management, recycle & reuse of water shall be conducted jointly by Govt, the Corporates, NGOs, and Institutions & Communities.

**Q. What role can innovation and entrepreneurship play in driving positive change in the water industry in India? Are there any promising startups or initiatives that you find particularly inspiring?**

At present use of IoT –Web-based technology and AI (Artificial Intelligence) are not familiar in water sectors and are implemented on a small scale.

This business comes on a small scale but with substantial revenue. So there is great potential for startups or an entrepreneur to focus on such areas where they can promote the use of IoT-web-based sensors, monitors, and AI (Artificial intelligence) in water supply, water management in agriculture & irrigation, wastewater treatment, water quality monitoring, revenue and O & M.



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

### **Miscellaneous Questions:**

**Favorite Book/Author :**

You can win by Shiv Khara, Vastav Ramayana (True Ramayana) (Marathi) by Dr Vartak.

**Favorite Movie :**

Tomorrow Never Dies, The World is Not Enough.

**Favorite Holiday Destination –**  
Singapore, Dubai

**One piece of advice for 'EverythingAboutWater' –**  
Water Literacy is priority for everyone, always respect water as the god particle, never abuse & misuse.

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- IFSC/RTGS/NEFT: IDFB0040101, SWIFT CODE: IDFBINBB, Branch: Gurgaon Golf Course Extension Road, GSTIN: 07AADCE2666A1Z1, PAN No- AADCE2666A

Date \_\_\_\_\_ Signature \_\_\_\_\_

Mail to: Earth Water Foundation, 7, Khullar Farms, Mandi Road, Mehrauli, New Delhi - 110 030 (INDIA)

Call: 91- 85958 45490, Email: subscription@eawater.com, Web: www.eawater.com/in

## *In Conversation with*

Alan M. Weiss,  
*President, Global Water Group, Inc.*

### **Q. How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

As with most municipal water systems on the planet, India's water systems are basically archaic. Potable water utilities do not follow the World Health Organization ("WHO") clear explanation of How To Purify Water: 1. Remove all parasites; 2. Remove all hazardous chemicals, heavy metals, insecticides, radon, etc., etc.; and 3. Remove all bacteria and viruses.

Wastewater systems do not remove the organic sludge (which is the number killer and health problem on the planet); and does not produce effluent that is re-usable and even potable.

### **Q. What are the major trends and developments you have observed in the water industry in India in recent years?**

Still too much graft; too much influence from companies (especially foreign) whose low prices with poor quality affect purchasers' determinations.

### **Q. Could you provide insights into the initiatives that your organization implemented to address water scarcity and promote sustainable water management in India?**

Without question, Global Water Group (Arlington, Texas, USA), a 34-year old company with proven technologies for the U.S. Military, has the two most important patents for solving both water purification and wastewater processing. [www.globalwater.com]

### **Q. What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

For "water purification," Global's systems (for fresh water, brackish water or desalination), since 1990 have, removed PFAS (even though in 1990 we never heard of PFAS), removed Covid and other viruses; and in Global's website you can see Global's new patent for a Nano-Technology water purification process that was created to solve potable water problems for the 21st century (and is a partnership with the U.S. Department of Energy). Considering what Global manufactures

in quality, it is the most cost effective and easiest process to operate and maintain.

### **Q. How can public-private partnerships play a role in addressing the water challenges in India? Can you share any successful examples of such collaborations?**

As President of Global Water, I have been to India with a group from the U.S. Commerce Department and by personal invitations from the Indian Navy, the Ministry of Indian Villages and small towns, and from the Senate committee working on "cleaning" the Ganges. I found too many obstacles to not solving your problems. However, I did have some meetings several years ago with the heads of three divisions of Tata, and we feel that a PPP arrangement would work perfectly for all water utilities. Currently, Global has just begun working with Rotary International, UNEP and International River Foundation on a 5-year program to provide systems for humanitarian purposes worldwide. We are currently quoting, as a sole source provider, for Global's innovative wastewater systems in three cities in India.

### **Q. In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?**

Every aspect of water is an opportunity.

### **Q. How can the water industry in India leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes?**

Change all of your perceptions of what water systems should provide and how to achieve those goals.

### **Q. What are the key considerations when it comes to balancing the needs of various stakeholders in the water industry, such as agricultural, industrial, and domestic consumers? How can these conflicting demands be effectively managed?**

True purification for water effluent. Remove 100% of the organic sludge in wastewater processing and then recycle 100% of the effluent.

**Q. What are the key lessons that India can learn from other countries or regions that have successfully addressed water challenges? How can these lessons be applied in the Indian context?**

As an example, if you follow every book on wastewater and follow every local, state and federal regulation, you would be just regurgitating systems that don't work. It is time to move to the best innovative water systems that work, are cost effective, are easier to operate and easier to maintain.

**Q. How do you see the future of the water industry in India? What are your expectations for the next five to ten years in terms of technological advancements, policy changes, and overall development?**

Very simple, look at Global Water's website and you will see the future for water.

**Q. Can you highlight any notable projects or initiatives that your organization or you personally have been involved in to address water-related issues in India? What were the outcomes and lessons learned from these experiences?**

Again, our Global website answer this question, as all of the other questions. Start with Water 101 and move on to the Wastewater short videos.

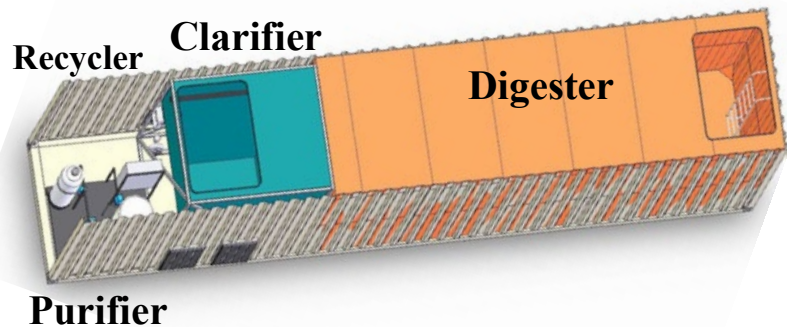
**Q. What role can innovation and entrepreneurship play in driving positive change in the water industry in India? Are there any promising startups or initiatives that you find particularly inspiring?**

While we are not a start-up, 90% of what we have produced for 34-years has been in a very limited basis for the U.S. (and other) Military: primarily Special Operations in every branch of the U.S. Military. Now we are opening our technologies to the "non-military" marketplace.

*Global Water Group, Inc.*  
Alan M. Weiss, President  
<http://www.globalwater.com>



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**3<sup>rd</sup> – Produce 100% Re-usable, Drinkable, Purified, New Water**



#### **Company Details:**

**VISION OF MY COMPANY –**  
The future of WATER.

**NUMBER OF EMPLOYEES**  
- 10

**KEY ACEIVEMENTS OF**

**THE LAST YEAR –** See our new “slide” released at the International Convention of Rotary International in Melbourne, Australia (last month).

**MAJOR ORDERS WON RECENTLY –** Everything

from Back-Packs, Mobile & Modular Military systems up to Military Base Camp Systems.

**NAMES OF MANAGING DIRECTOR AND SENIOR EMPLOYEES –** Alan M. Weiss, Chairman, CEO, President,

and Director

**Miscellaneous Questions:**  
Favourite Book/Author – Ayn Rand  
Favourite Movie - Exodus  
Favourite Holiday Destination - Cruising



## *In Conversation with:* Vijender Reddy Muthyala, Co-founder & CEO, DrinkPrime

### **Q. How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

Less than 50% of the Indian population has access to safe drinking water. The water industry in India currently faces significant challenges when it comes to providing clean drinking water access to people. One of the key challenges is the limited availability of water sources, especially clean ones, which has led to the need for water purifiers and bottled water. Unfortunately, the penetration of water purifiers in India is still less than 7%. The main barrier to the wider adoption of water purifiers is their relatively high purchase cost and the recurring annual maintenance cost, making them unaffordable for many households, particularly those in rural and low-income areas.

Not only that, traditional water purifiers follow a one-size-fits-all approach. With this, the users get over-purified or under-purified water, not perfectly purified water.

### **Q. What are the major trends and developments you have observed in the water industry in India in recent years?**

In recent years, the water industry in India has witnessed several notable trends and developments. One prominent trend is the preference for bottled water over water cans. Within the bottled water market, there has been a shift in consumer preferences from water

cans to packaged bottled water. Bottled water is perceived as safer and more hygienic compared to water stored in cans. This change in consumer behavior has influenced the market dynamics, with bottled water gaining more popularity and market share. The increased availability has also contributed to the growth of the industry and made it easier for consumers to purchase packaged drinking water.

But one important thing to note is along with the growth of the bottled water industry, concerns have been raised about the safety and quality of packaged drinking water. Some studies have indicated that certain brands of bottled water may not meet the required quality standards, leading to potential health risks. This issue highlights the need for strict regulation, monitoring, and quality control measures within the water industry.

### **Q. Could you provide insights into the initiatives that your organization implemented to address water scarcity and promote sustainable water management in India?**

DrinkPrime is on a mission to make clean, safe, and healthy drinking water accessible to everyone. To take this mission forward and address water scarcity and sustainable water management, we have implemented a range of initiatives.

**Subscription-based model-** One of our key approaches involves offering a subscription-based model that caters to the water needs of urban communities, particularly in areas where lakes have been closed and groundwater is overexploited. Our subscription-based model not only helps in conserving water resources but also makes it accessible and affordable to people.

**Donate with DrinkPrime-** As part of our Donate with DrinkPrime CSR initiative, we have made a significant impact by providing safe drinking water to over 8+ schools and more than 750 students.

**Lake rejuvenation projects -** As a company focused on improving water quality+availability, we understand the significance of preserving and restoring natural water bodies. This is why we are in the process of taking up lake rejuvenation projects to actively contribute to these efforts.

**Creating awareness about reusing wastewater:** Through our blogs and informational videos, we create awareness about the importance of reusing waste Reverse Osmosis (RO) water. We provide insights, tips, and practical solutions to encourage individuals to make the most of their RO water waste by utilizing it for various purposes like gardening or household cleaning. This content not only helps individuals make a positive impact but also contributes to a broader understanding of sustainable water management practices.

**Q. What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

The water industry in India is undergoing transformative changes, thanks to key technologies and innovations that are revolutionizing the way water is treated and managed. These advancements are enhancing efficiency and promoting sustainability in the sector. Here are some key technologies making a significant impact: Customisation, IoT technology, and CDI.

**1. Customisation:** Personalization of drinking water is becoming increasingly important, considering the fluctuating water quality from one area to another. Customization technology allows for tailored treatment of water based on its unique characteristics and specific needs. This is why we have adopted this technology at DrinkPrime by customizing our water purifiers with filters that suit the input water quality of a particular area or household. This ensures optimal purification and delivers clean, safe, and healthy drinking water.

**2. Internet of Things (IoT) Integration:** IoT technology is being used to monitor and manage various aspects of the water industry. IoT-enabled devices can collect real-time data on water quality, consumption patterns, and infrastructure performance. This data can help in identifying potential issues, optimizing resource allocation, and improving operational efficiency. Additionally, IoT integration enables remote monitoring and control of water treatment systems, leading to timely maintenance and improved overall performance.

**3. Capacitive Deionization (CDI):** CDI technology is gaining attention as an energy-efficient method for desalination and water purification. This is because CDI is a low-cost and sustainable alternative to traditional desalination techniques, as it requires less energy and does not involve the use of chemicals or membranes. This technology has the potential to provide access to clean water in areas with limited freshwater resources.

**Q. How can public-private partnerships play a role in addressing the water challenges in India? Can you share any successful examples of such collaborations?**

Public-private partnerships (PPPs) have a crucial role to play in addressing water challenges in India by leveraging the strengths and resources of both sectors. Such collaborations can drive innovation, improve access to clean water, and ensure sustainable water management. One successful example of a PPP in the water sector is the establishment of Water ATMs, where private companies set up water kiosks with the support of the government. This initiative addresses the issue of water scarcity by making safe drinking water

easily accessible, particularly in areas where access to clean water is limited.

Through PPPs, private companies invest in the infrastructure and technology required for setting up Water ATMs, while the government facilitates the necessary regulatory frameworks, permits, and operational support. These partnerships allow for the efficient deployment of resources and expertise, enabling the establishment of a sustainable and scalable network of water kiosks.

By combining the resources, expertise, and reach of both sectors, PPPs can drive sustainable solutions, improve water access, and contribute to the overall water management goals of the country.

**Q. In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?**

In my opinion, India's water sector presents significant investment opportunities, with several areas holding great potential for growth and development. Here are some key areas that offer promising investment prospects:

**1. Infrastructure Investments:** Investing in water infrastructure projects, such as the development of pipelines, can prove to be a lucrative opportunity. Improving the distribution network and ensuring efficient water supply to both urban and rural areas is crucial for addressing water challenges. By investing in infrastructure, including storage, treatment, and distribution systems, investors can contribute to enhancing water accessibility and management.

**2. Centralized Purification Systems:** Establishing centralized water purification systems at the city level can be a fruitful investment opportunity. These systems can cater to the water needs of a large population, ensuring the delivery of safe and clean drinking water.

**3. Water Recycling:** Investing in water recycling initiatives holds immense potential in India. Recycling water at the apartment or residential complex level can help reduce water consumption and alleviate the burden on freshwater sources.

**4. Rainwater Harvesting:** Constructing rainwater harvesting structures, such as rooftop collection systems, storage tanks, and recharge wells, can help capture and store rainwater for various purposes. Investing in rainwater harvesting infrastructure can support water availability during dry periods and recharge groundwater reserves.

By investing in these sectors, investors can contribute to addressing water scarcity, improving water quality, and promoting water conservation practices.

## **Q. How can the water industry in India leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes?**

The water industry in India has immense potential to leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes. By harnessing the power of technology and data, the industry can achieve more efficient and effective water treatment and delivery systems. One significant application of digitalization in the water industry is the monitoring of water quality.

For e.g., we have successfully utilized data-driven approaches to enhance our water purification. By leveraging water quality data specific to each area, DrinkPrime customises its water purifiers with filters based on the input water quality of that particular region. This targeted approach ensures that the purification process is optimized to address the specific contaminants and challenges prevalent in each locality ensuring the safest drinking water to people.

## **Q. What are the key considerations when it comes to balancing the needs of various stakeholders in the water industry, such as agricultural, industrial, and domestic consumers? How can these conflicting demands be effectively managed?**

Balancing the needs of various stakeholders in the water industry, including agricultural, industrial, and domestic consumers, requires careful consideration and effective management. Here are key considerations and approaches to addressing the conflicting demands:

### **1. Regeneration of Lakes and Rivers for agricultural industry:**

One crucial consideration is the regeneration of lakes and rivers to ensure an adequate water supply for agricultural needs. Implementing measures such as restoration projects, watershed management, and water conservation practices can help replenish water bodies and ensure sustainable water availability for agriculture.

**2. Rainwater Harvesting for Domestic Consumers:** Rainwater harvesting is an effective approach for meeting domestic water requirements. Encouraging and promoting rainwater harvesting systems in residential areas can reduce dependence on traditional water sources and relieve the pressure on freshwater supplies.

### **3. Sustainable Water Management Practices for Industries:**

Industries play a significant role in water consumption and should implement sustainable water management practices to minimize their impact on water resources. This includes adopting technologies for water reuse and recycling, implementing efficient

water treatment processes, and adhering to stringent pollution control measures.

By considering these key considerations and implementing sustainable practices, it is possible to strike a balance among the needs of various stakeholders in the water industry.

## **Q. What are the key lessons that India can learn from other countries or regions that have successfully addressed water challenges? How can these lessons be applied in the Indian context?**

India can draw valuable lessons from other countries and regions that have successfully addressed water challenges.

**1. Israel:** Israel has made remarkable progress in water management, particularly in recycling and reuse. India can learn from Israel's expertise in wastewater treatment and recycling to address water scarcity issues. Implementing advanced wastewater treatment technologies and promoting the reuse of treated water for non-potable purposes, such as irrigation, can significantly reduce the strain on freshwater sources in India.

**2. UAE:** The United Arab Emirates (UAE) has excelled in desalination technology to meet its water demands. India, with its long coastline, can learn from the UAE's experience and explore desalination as a potential solution in coastal regions facing water scarcity. However, it is essential to consider the environmental impact, energy requirements, and cost-effectiveness of desalination projects before widespread implementation.

**3. Singapore:** Singapore is renowned for its successful water recycling initiatives. India can take inspiration from Singapore's comprehensive approach to water management, including the use of advanced technologies for wastewater treatment, purification, and reuse.

India can adapt and tailor these lessons to its specific water challenges and local contexts. By leveraging successful approaches from other countries, India can enhance its water management practices, ensure water security, and create a sustainable and resilient water future for its citizens.

## **Q. How do you see the future of the water industry in India? What are your expectations for the next five to ten years in terms of technological advancements, policy changes, and overall development?**

The future of the water industry in India holds immense potential for

positive change and development.

**1. Technological Advancements:** With increasing awareness about water scarcity and the need for sustainable solutions, we foresee a surge in innovative technologies. Water purification systems will become more efficient, cost-effective, and eco-friendly.

**2. Policy Changes:** As people become more conscious of water conservation, we anticipate the government to introduce policies and initiatives similar to those seen in the electric vehicle sector. Water-driven projects, such as rainwater harvesting, wastewater treatment, and desalination, may receive greater support and incentives. Additionally, policies aimed at reducing the Goods and Services Tax (GST) on water-related products and services can make them more accessible to the masses.

**3. Privatization and Infrastructure Development:** Privatization of the water sector is likely to gain traction, fostering investments in infrastructure development. Private players can bring in expertise, technology, and efficiency to enhance water supply and management. This may result in improved infrastructure, reduced leakages, and better distribution systems, ensuring a more reliable and accessible water supply for both urban and rural areas.

**Q. Can you highlight any notable projects or initiatives that your organization or you personally have been involved in to address water-related issues in India? What were the outcomes and lessons learned from these experiences?**

Two notable initiatives we have been involved in are the Donate with DrinkPrime CSR initiative and our focus on monitoring water quality and customisation.

**1. Donate with DrinkPrime:** Through the Donate with DrinkPrime initiative, we have been able to provide safe drinking water to over 8+ schools and more than 750 students. Recognizing the importance of clean and safe drinking water for children, who represent our future generation, we donate water purifiers to schools in need. These water purifiers ensure that students have access to purified water, promoting their health and well-being.

The outcomes of this initiative have been significant. Students now have a reliable source of safe drinking water, reducing the risk of waterborne diseases. This contributes to improved attendance, concentration, and overall academic performance. By supporting the education system with clean water, we believe we are nurturing a healthier and brighter future for the children of India.

**2. Monitoring Water Quality and Customisation:** At DrinkPrime,

we prioritize monitoring water quality data to provide customized solutions. Unlike traditional RO water purifiers that filter all water the same way, every DrinkPrime water purifier is customized with a filtration system to suit the input water quality of a household. DrinkPrime is customized at four levels: city, area, product, and household.

The lessons learned from these experiences are invaluable. We have recognized the importance of collaboration with schools and the need to implement sustainable solutions.

Effective monitoring and data analysis has allowed us to continuously improve our products and services, ensuring they align with the specific requirements of the different cities we offer our services. Additionally, these initiatives have reinforced our belief that access to safe drinking water is essential for the well-being and development of children, and we remain committed to expanding our efforts in this area.

**Q. How can the government, private sector, and civil society collaborate effectively to ensure sustainable water management practices and secure water resources for future generations in India?**

Collaborative efforts among the government, private sector, and civil society are vital for ensuring sustainable water management practices and securing water resources for future generations in India. Here are some key aspects of effective collaboration:

**1. Government Reforms and Support:** Strong reforms are needed to prevent industries from polluting lakes and rivers, ensuring stricter enforcement of environmental standards. Additionally, the government can support companies and organizations that are actively working on water conservation initiatives through financial incentives, grants, and recognition programs.

**2. Private Sector:** The private sector brings innovation, expertise, and resources to the table. Companies should prioritize sustainable water management practices, including reducing water usage, implementing efficient technologies, and adopting responsible waste management systems.

**3. Society Participation:** Society as a whole should actively practice water recycling, efficient usage, and responsible management. This can involve implementing rainwater harvesting systems, using water-saving fixtures, promoting education on water conservation in schools and communities, and adopting sustainable agricultural practices.

**Q. What role can innovation and entrepreneurship play in driving positive change in the water industry in India? Are there any promising startups or initiatives that you find particularly inspiring?**

Innovation and entrepreneurship have a significant role to play in driving positive change in the water industry in India.

We can unlock new solutions and approaches to addressing water-related challenges by fostering a culture of innovation and supporting entrepreneurial endeavors. Here's how innovation and entrepreneurship can contribute:

**1. Technology-driven Solutions:** Innovation can lead to the development of advanced technologies that enhance water purification, treatment, and conservation. Startups and entrepreneurial ventures can introduce cutting-edge filtration systems, smart water management tools, IoT-enabled monitoring devices, and data analytics platforms.

**2. Affordable and Scalable Solutions:** Startups and entrepreneurial

initiatives often focus on creating cost-effective and scalable solutions. By leveraging innovation, they can develop affordable water purification technologies that cater to the needs of underprivileged communities. These solutions can bridge the gap in access to safe drinking water, particularly in rural areas where affordability is a significant concern.

**3. Business Models and Partnerships:** Entrepreneurship brings fresh perspectives to the water industry, fostering the development of new business models. Startups can explore innovative approaches like water leasing, pay-per-use models, or community-driven initiatives that provide affordable access to clean water.

There are numerous inspiring startups in the water industry, but what truly drives me is the pressing need to solve the issue of safe drinking water access in our country.

Unlike being just a water purifier manufacturer, we aim to be a comprehensive drinking water solution provider. We are committed to doing whatever it takes to fulfill our mission and ensure that clean and safe drinking water is accessible to all.

## Company Details:

### VISION OF MY COMPANY –

At DrinkPrime, our vision stems from a fundamental problem: how can we ensure access to safe drinking water for all? This vision drives us to strive for a world where clean, safe, and healthy drinking water is accessible to all.

Over the seven years, we have constantly monitored and innovated - product, service, processes, and systems - to ensure we move closer to achieving our vision.

**NUMBER OF EMPLOYEES -**  
187

## KEY ACHIEVEMENTS OF THE LAST YEAR

1. Our revenue grew by 3X in the past year
2. We are serving clean, safe, and healthy drinking water to 1 Lakh+ people

### MAJOR AWARDS WON

RECENTLY – Forbes Asia 100 to watch, Fast Company (Most innovative Companies 2021), Fast42 by Inc42, Top Online Rental Tech Startup in Tracxn's Emerging Startup, Dun & Bradstreet Startup 50: The Trailblazers

**NAMES OF MANAGING DIRECTOR AND SENIOR**

## EMPLOYEES –

### 1. *Vijender Reddy Muthyala*

Co-founder & CEO, DrinkPrime

### 2. *Manas Ranjan Hota*

Co-founder & COO, DrinkPrime

### 3. *Sanjay Sunku*

Angel Investor & CBO, DrinkPrime

### 4. *Harish Abhichandani*

Consulting CFO

### 5. *Akhil Shastry*

Vice President – Operations

### 6. *Dr.SK Sankar*

VP, Hardware Product & R&D

### 7. *Ashwin Dhumal*

VP, Retention & Customer Experience

### 8. *Rajath Kedilaya*

VP, Product & Tech

## Miscellaneous Questions:

Favourite Book/Author – Start with Why, Simon Sinek

Favourite Movie - Interstellar  
Favourite Holiday Destination - Scotland

One piece of advice for 'EverythingAboutWater'

- Cover the incredible innovations happening in remote villages.

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## *In Conversation with:*

Riddhish Soni,

Designater Partner,  
Aumsat Technologies LLP,  
Ex-ISRO Scientist and  
part of Chandrayaan 2 Mission

### **Q. How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

As of 2023, the water sector in India finds itself in the throes of a multitude of challenges primarily attributed to rapid population increase, hastened urban expansion, the repercussions of climate change, and aging infrastructure. The nation is currently contending with an escalating issue of water scarcity, with predictions indicating that approximately half of its populace will experience water stress by 2030. The ubiquitous lack of adequate facilities and widespread pollution are further exacerbating the problems of water wastage and public health hazards. Moreover, difficulties in water resource management, enforcement of pertinent regulations, and the escalating impacts of climate change persistently compound these challenges.

### **The following factors highlight the state of India's water industry:**

- **Demand and Scarcity:** By 2023, accelerated urbanization and population growth in India had resulted in a heightened demand for water, with impending water scarcity expected to impact almost half of the population by 2030.
- **Infrastructure and Pollution:** The water sector was grappling with an aging and inadequate infrastructure that led to significant water wastage and irregularities in supply. Compounding this issue was the rampant water pollution, resulting from harmful biological and chemical contaminants.
- **Management and Governance:** The sector faced considerable challenges due to ineffective management practices and governance, characterized by poor enforcement of water regulations and prevalent corruption.
- **Climate Change and Financial Strain:** The effects of climate change, including altered precipitation patterns and an increase in extreme weather events, worsened the water scarcity issue and strained the already stretched infrastructure. Financial difficulties were heightened by the unsatisfactory recovery of water taxes compared to the investment in the water sector.

- **Monitoring and Cost Implications:** The crucial role of water monitoring for public services emphasized the need for reliable hydrological data. Costs associated with securing safe water sources and developing drought-resilient systems were substantial, with incorrect assumptions about water quality and quantity posing potential financial risks. To mitigate these issues, improvements in infrastructure, water conservation, and quality control, strengthened governance, and the integration of advanced technologies like IoT, AI, and remote sensing were being explored.

**Q. Could you provide insights into the initiatives that your organization implemented to address water scarcity and promote sustainable water management in India?**

Our organization has embarked on several endeavors to address water scarcity and enhance sustainable water management across India. We have instituted Water and Pipeline Leak detection systems in establishments such as PHED Udaipur, Marriot Surat, KVK Badgaon, Swastik Heights, and ShankardhamChs, leveraging a synergistic blend of Robotic, Information, Geophysical, and Engineering Technologies. A standout accomplishment is the development of a bespoke SCADA system dedicated to digitalization and leak management.

A key achievement was the identification of 116 leakage points in Udaipur District, resulting in substantial monthly water conservation. Additionally, we have conducted groundwater source mapping for 619 farmers in Maharashtra, Chhattisgarh, and Telangana, thereby facilitating sustainable water sourcing. Through our bioremediation interventions at Upparpally and JVR Lakes, we have managed to recycle a significant volume of water.

Our Water Conditioning System and Borewell Inspection Robot have proven instrumental in transforming hard water to soft, preventing scaling, boosting crop yield by 32%, and monitoring pipeline internal conditions. These integrated, technologically-driven approaches have made considerable progress in tackling the water scarcity issue in India, underscoring the potential of innovative solutions in the pursuit of sustainable water management.

**Q. What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

In the face of growing water scarcity and quality issues, the water industry in India is increasingly turning to technology and

innovation for solutions. These advancements are improving efficiency and sustainability in several ways:

- **Internet of Things (IoT):** IoT is revolutionizing water management through smart meters and sensors that track water usage, quality, and leakage in real-time. These devices can help in early detection of leaks, thereby reducing water wastage. They also provide valuable data for improving water distribution efficiency and promoting water conservation among consumers.
- **Artificial Intelligence (AI) and Machine Learning (ML):** AI and ML are used to analyze data collected from IoT devices, satellites, and other sources to predict water demand, identify patterns in water usage, and detect anomalies that could indicate leaks or contamination. AI can also be used to optimize water treatment processes, reducing energy consumption and improving water quality.
- **Remote Sensing and Satellite Technology:** These technologies are being used to monitor water resources, track changes in water availability, and predict water-related disasters like floods and droughts. This information is crucial for water resource management and planning at both the local and national level.
- **Advanced Water Treatment Technologies:** Innovations in water treatment, such as membrane technologies, advanced oxidation processes, and bio-remediation techniques, are improving water quality by effectively removing contaminants. Some of these technologies can also recover useful substances from wastewater, such as nutrients and energy, contributing to the circular economy.
- **Cloud and Data Analytics:** Cloud-based platforms and data analytics are enabling the storage, sharing, and analysis of large volumes of water data. This facilitates better decision-making and forecasting, helping to manage water resources more efficiently and sustainably.

By harnessing these technologies and innovations, the water industry in India is not only addressing its current challenges but also preparing for future ones, such as those posed by climate change and population growth. Through better water management, the industry is moving towards a more sustainable and resilient future.

## Q. How can public-private partnerships play a role in addressing the water challenges in India? Can you share any successful examples of such collaborations?

Public-private partnerships (PPPs) can be instrumental in addressing water challenges in India by capitalizing on the competencies of both sectors. While the public sector typically ensures access, regulation, and oversight, the private sector introduces technology, management expertise, innovation, and investment. PPPs can enable the development and maintenance of water infrastructure like treatment plants, pipelines, and distribution systems. The infusion of private sector capabilities in raising capital and project execution, when harmonized with public oversight to maintain equitable access, can lead to enhanced water services. Technological innovation, often spearheaded by the private sector, can be integrated through PPPs to advance water management, ranging from sophisticated treatment technologies to IoT-based systems for leakage detection and AI-empowered data analytics for demand management.

One of the successful instances of a PPP in India's water sector includes the Tirupur Water Supply and Sewerage Project in Tamil Nadu, which marked a milestone by being the first significant PPP project for water supply and sewerage treatment. Another example is the collaboration between the government of Karnataka and Suez for water supply in Davangere. These success stories underscore the potential of PPPs in boosting water management in India, provided a robust regulatory framework, transparent contractual arrangements, and active community participation are in place.

## Q. In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?

Investment opportunities in the water sector in India are abundant, particularly given the current challenges related to water scarcity, quality, and infrastructure. Here are a few areas that hold significant potential for growth and development:

**1. Infrastructure Development:** Investment in water infrastructure, including treatment facilities, pipelines, and distribution systems, is critical. This area has significant potential for growth, given the aging infrastructure in many parts of India and the need for increased capacity to meet growing demand.

**2. Water Treatment Technologies:** The market for advanced

water and wastewater treatment technologies is growing. Investment in the development and deployment of these technologies can help improve water quality and make wastewater reuse more feasible.

**3. Smart Water Management Technologies:** Technologies such as IoT, AI, and remote sensing offer substantial opportunities for improving water management. Investment in these areas can support the development of smart water systems that enhance efficiency, reduce water loss, and enable better decision-making.

**4. Water Conservation and Efficiency:** Products and services that promote water conservation and efficiency, such as water-saving appliances and fixtures, drip irrigation systems, and water management consulting services, represent a growing market.

**5. Desalination:** Given India's long coastline, there is potential for growth in desalination technologies that can provide a new source of freshwater.

**6. Public-Private Partnerships:** Investment in PPPs can support the provision of water services and infrastructure development. These partnerships can leverage the strengths of both the public and private sectors to address water challenges.

## Q. How can the water industry in India leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes?

The water industry in India can leverage digitalization and data-driven approaches in numerous ways to enhance water management practices and decision-making processes:

**1. Data Collection and Analysis:** By using IoT devices and sensors, water utilities can collect real-time data on water usage, quality, and leakage. Analyzing this data can help identify patterns, predict future demand, and detect problems early.

**2. Predictive Analytics:** With Machine Learning (ML) and Artificial Intelligence (AI), predictive models can be developed to anticipate future scenarios, such as potential water shortages or infrastructure failures. This enables preemptive measures, mitigating impacts and avoiding costly repairs.

**3. Smart Meters and Grids:** Digitalization can facilitate the implementation of smart meters and grids, providing real-time information to both utilities and consumers. This can promote

water conservation, enable dynamic pricing models, and improve service delivery.

**4. Cloud Computing:** Cloud-based platforms can store and process vast amounts of water data, making it easily accessible for analysis and decision-making. This improves the efficiency and speed of water management practices.

**5. Geographic Information System (GIS) and Remote Sensing:** These technologies can map water resources, monitor their usage, and track changes over time. This can support more sustainable and equitable water resource management and planning.

**6. Automation and Control Systems:** Advanced control systems, such as SCADA, can automate many aspects of water management, from treatment processes to distribution. This can enhance operational efficiency, reduce human error, and improve service reliability.

**Q. What are the key considerations when it comes to balancing the needs of various stakeholders in the water industry, such as agricultural, industrial, and domestic consumers? How can these conflicting demands be effectively managed?**

Balancing the needs of various stakeholders in the water industry, including agricultural, industrial, and domestic consumers, is a complex task due to the competing demands for this finite resource. Here are key considerations when managing these conflicts:

**1. Water Allocation:** Policies should be in place for equitable water allocation. Consideration should be given to the socio-economic importance of each sector, their water efficiency, and the social and environmental impacts of their water use.

**2. Water Efficiency:** Promoting water efficiency in all sectors is crucial. This can be achieved through technology adoption (like drip irrigation in agriculture, water recycling in industry, and water-saving devices in homes), as well as education and awareness programs.

**3. Pricing Mechanisms:** Water pricing can be used as a tool to manage demand. The challenge is to set prices that reflect the value of water and encourage conservation, without compromising access for low-income households.

**4. Stakeholder Engagement:** Engaging all stakeholders in decision-making processes can help build understanding and consensus. This includes involving them in the development of water management plans and policies.

**5. Infrastructure Investment:** Investment in infrastructure can help meet the needs of all sectors. For example, developing separate infrastructure for potable and non-potable water can allow the use of lower-quality water for industrial and some agricultural purposes, freeing up high-quality water for domestic use.

**6. Legal Frameworks and Enforcement:** Clear legal frameworks are needed to govern water use and rights. These laws need to be enforced to ensure compliance and resolve disputes.

**7. Integrated Water Resources Management (IWRM):** Adopting an IWRM approach, which considers the interconnections between water uses and users, can help balance competing demands. This involves managing water in a way that balances social and economic needs and protects the environment.

**Q. What are the key lessons that India can learn from other countries or regions that have successfully addressed water challenges? How can these lessons be applied in the Indian context?**

Several countries and regions around the world have successfully addressed various water challenges and India can draw valuable lessons from their experiences. Here are a few key lessons and how they can be applied in the Indian context:

**Israel's Success in Water Management:** Known for its innovative water management strategies, Israel has effectively addressed water scarcity through widespread use of technologies like drip irrigation, desalination, and water recycling. India can potentially adopt similar strategies, especially in arid regions, to manage water scarcity. Advanced irrigation techniques could be particularly beneficial given that agriculture accounts for a large portion of water use in India.

**Singapore's NEWater Initiative:** Singapore has achieved water self-sufficiency through its successful NEWater initiative, which treats used water into ultra-clean, high-grade reclaimed water. Given India's challenges with water pollution and increasing urban water demand, such water recycling and reuse strategies could be beneficial.

**California's Groundwater Legislation:** California has implemented comprehensive groundwater management legislation to protect this critical resource. Given the over-exploitation of groundwater in many parts of India, adopting similar robust legal frameworks could be crucial in managing this resource sustainably.

**Australia's Water Markets:** Australia has established water markets to efficiently allocate water resources, especially during times of drought. While water trading has its complexities, if implemented with careful regulation, it could help in more efficient allocation of water resources in India.

**Community Management in Latin America:** Several Latin American countries have successfully involved local communities in water management. Given India's diverse and decentralized nature, such community-based water management approaches could be effective.

**Q. How do you see the future of the water industry in India? What are your expectations for the next five to ten years in terms of technological advancements, policy changes, and overall development?**

Looking into the future, the water industry in India is poised for considerable transformation driven by technological advancements, policy changes, and the imperative of sustainable development.

**1. Technological Advancements:** With the rise of technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), Machine Learning (ML), and remote sensing, we can anticipate increased digitalization of water management. Smart meters, real-time monitoring of water quality and usage, predictive analytics for demand and supply management, and advanced leak detection are all likely to become more prevalent. The use of advanced water treatment technologies, including membrane technologies, advanced oxidation processes, and bio-remediation, could also expand, improving water quality and enabling water reuse.

**2. Policy Changes:** Given the increasing stress on water resources, there's likely to be stronger policy focus on water conservation, equitable distribution, and sustainable use. Regulatory frameworks may be strengthened, with stricter enforcement of water regulations and laws. There may also be

increased emphasis on integrated water resource management, considering the entire water cycle from source to disposal.

**3. Climate Resilience:** In response to climate change, there could be increased efforts to develop climate-resilient water systems. This might involve the adoption of green infrastructure, rainwater harvesting, and strategies to cope with extreme events such as droughts and floods.

**4. Public-Private Partnerships (PPPs):** Given the need for substantial investment in water infrastructure and services, PPPs are likely to become more common. These partnerships can bring in much-needed capital, as well as operational efficiency and technological innovation.

**5. Community Engagement:** In the context of decentralized water management, there may be greater emphasis on community-based water management approaches. This can help ensure that water management strategies are tailored to local conditions and needs.

While significant challenges remain, the increasing recognition of the importance of water security, coupled with technological advancements and policy evolution, holds promise for the future of the water industry in India.

**Q. Can you highlight any notable projects or initiatives that your organization or you personally have been involved in to address water-related issues in India? What were the outcomes and lessons learned from these experiences?**

Our organization has actively engaged in several projects aimed at confronting water-related challenges across India. A noteworthy initiative encompassed the establishment of Water and Pipeline Leak detection systems at various sites such as PHED Udaipur and Marriot Courtyard Surat. This endeavor leveraged a combination of Robotic, Information, Geophysical, and Engineering Technologies, culminating in the creation of a customized SCADA system for digitalization and leak management. The identification of 116 leakage points during the project in Udaipur District led to significant water conservation on a monthly basis. Moreover, we spearheaded a Groundwater Source Mapping project benefiting 619 farmers across Maharashtra, Chhattisgarh, and Telangana, promoting sustainable water sourcing. Additionally, our bioremediation projects at Upparpally and JVR Lakes led to the recycling of a substantial volume of water. Through these experiences, we learned the critical role of

technology and data-driven methodologies in improving water management, underscoring the value of IoT, AI, and remote sensing tools. The projects highlighted the necessity of custom solutions accounting for local conditions and requirements. Lastly, the importance of stakeholder engagement emerged as a vital lesson, demonstrating the role of local authorities, industrial entities, and farmers in successful water management initiatives.

**Q. How can the government, private sector, and civil society collaborate effectively to ensure sustainable water management practices and secure water resources for future generations in India?**

Effective collaboration between the government, private sector, and civil society can significantly enhance sustainable water management and secure water resources for future generations in India. Here's how each sector can contribute:

**1. Government:** The role of the government is fundamental in setting regulatory frameworks, implementing policy reforms, and investing in necessary infrastructure. It can facilitate the adoption of water-saving technologies and practices, promote efficient water use, protect water resources, and ensure equitable access. The government can also facilitate public-private partnerships to leverage private sector capabilities and investment.

**2. Private Sector:** Businesses can innovate and invest in technologies to improve water use efficiency, reduce pollution, and create new solutions for water treatment and management. They can engage in responsible water stewardship by reducing their water footprint, recycling and reusing water, and engaging in collaborative water management initiatives. The private sector can also contribute through corporate social responsibility initiatives focused on water conservation and accessibility.

**3. Civil Society:** Non-governmental organizations, academia, and the general public play a crucial role in raising awareness about water issues, advocating for policy changes, and promoting responsible water use. They can conduct research, provide education and training, mobilize communities, and monitor government and business actions to ensure they are sustainable and equitable.

**For effective collaboration:**

- Clear roles and responsibilities for each sector should be defined.

- Open and transparent communication channels should be established to share data, knowledge, and best practices.
- Stakeholder consultations and participatory decision-making processes can help ensure that all perspectives are considered and that water management strategies are tailored to local conditions and needs.
- Accountability mechanisms should be put in place to ensure all parties fulfill their commitments.

By working together, these different sectors can contribute to a more holistic and integrated approach to water management that balances economic, social, and environmental needs and ensures the sustainability of water resources for future generations.

**Q. What role can innovation and entrepreneurship play in driving positive change in the water industry in India? Are there any promising startups or initiatives that you find particularly inspiring?**

Innovation and entrepreneurship play a significant role in driving positive change in the water industry. They have the potential to introduce groundbreaking solutions that address water scarcity, improve water quality, increase efficiency, and ultimately make water management more sustainable.

**1. Technological Innovation:** Entrepreneurs can develop and commercialize new technologies that can solve water problems in unique ways. This could include IoT devices for smart water management, advanced water treatment technologies, or AI-based platforms for data analysis and decision-making.

**2. Business Model Innovation:** Innovative business models, such as pay-per-use or water-as-a-service, can make water technologies more accessible and affordable. They can also create incentives for water conservation and efficient use.

**3. Social Entrepreneurship:** Social entrepreneurs can address water challenges in underserved communities, for example, by providing affordable water purifiers or community-based water supply systems. They can also raise awareness about water issues and promote sustainable water practices.

**A few inspiring startups in India include:**

- **Sarvajal:** Known as the “ATM of Clean Water,” Sarvajal provides clean drinking water to underserved communities in India. They use cloud-connected water ATMs to ensure 24/7 access to affordable, clean water.
- **Ekam Eco Solutions:** Ekam focuses on eco-friendly sanitation solutions, including a waterless urinal technology that helps save a significant amount of water.

- **WEGoT Utility Solutions:** This startup uses IoT-based solutions to help residential and commercial buildings monitor and reduce their water usage.

These examples highlight the potential of entrepreneurship and innovation to address India’s water challenges. By fostering a supportive ecosystem for water startups, including access to finance, mentorship, and policy support, India can further leverage entrepreneurship to drive positive change in the water sector.

## Company Details:

### VISION OF MY COMPANY

—“Our vision is to spearhead the transformation of India’s water infrastructure into a resilient, sustainable system, ensuring efficient, responsible management and universal access to clean water, thereby securing our water resources for future generations.”

### NUMBER OF EMPLOYEES

- 30

### MAJOR ORDERS WON

**RECENTLY** —We are proud to serve three key ministries in India - the Ministry of Housing and Urban Affairs, the Ministry of Water Resources, and the Ministry of Agriculture and Farmers Welfare, aligning our initiatives with the missions of AMRUT2.0, Atal BhujalYojna, and Jal Jeevan Mission. In addition, our company has recently secured several significant contracts, underscoring

our commitment to innovating sustainable water management solutions. This includes deploying Leak Detection systems for PHED Udaipur and KVK Badgaon, a testament to our technological prowess in water conservation. We have further demonstrated our expertise in environmental sustainability through Bioremediation projects at JVR Lake GHMC and Upparpally Lake. Moreover, we are bolstering our efforts towards groundwater sustainability by undertaking Groundwater Exploration projects in Nandurbar, Nanded, Jhalna, Beed, and Parbhani.

### NAMES OF MANAGING DIRECTOR AND SENIOR EMPLOYEES

—Riddhish Soni, Chetan S., Dr. Kapil Dev Sharma, Dr. Faruk Kazi, Dr. Nilesh Jadhav

### Miscellaneous Questions:

**Favourite Book/Author—**  
“Cadillac Desert: The

American West and Its Disappearing Water” by Marc Reisner  
“The Big Thirst: The Secret Life and Turbulent Future of Water” by Charles Fishman  
“Blue Gold: The Fight to Stop the Corporate Theft of the World’s Water” by Maude Barlow and Tony Clarke  
“Water 4.0: The Past, Present, and Future of the World’s Most Vital Resource” by David Sedlak  
“The Water Will Come: Rising Seas, Sinking Cities, and the Remaking of the Civilized World” by Jeff Goodell  
“When the Rivers Run Dry: Water - The Defining Crisis of the Twenty-First Century” by Fred Pearce

### Favourite Movie—

“Flow: For Love of Water”  
“Watermark”  
“Blue Gold: World Water Wars”  
“The Shape of Water”  
“Erin Brockovich”

**Favourite Holiday Destination—**

penhagen, Aarhus, Bornholm, Oslo, Bergen Stockholm, Gothenburg, Kiruna  
One piece of advice for ‘EverythingAboutWater’ - An invaluable piece of advice for ‘EverythingAboutWater’ magazine would be to consistently integrate digital strategies into their content dissemination. As the world continues to shift towards digital consumption, employing immersive technology such as interactive data visualizations, infographics, and augmented reality can significantly enhance reader engagement. The use of these tools not only makes complex water-related issues more comprehensible but also makes the learning process more engaging for the readers. It’s crucial to continually evolve and adapt to the changing media landscape and audience preferences to maintain relevance and influence in the field of water education and advocacy.



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## *In Conversation with:*

Parimal Pajankar,

Director,

Zen Engineering

### **Q How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

The water industry in India is growing at a very fast pace. But the advent of so many players has resulted in price being the main criteria of selection and not technical aspects of the system. We find people providing technically faulty designed systems just to have a cheaper option and get the orders. This results in a lot of clients having continuous issues with their systems.

### **Q What are the major trends and developments you have observed in the water industry in India in recent years?**

The major trends are people going for reduced wastage of water in the treatment process as well as trying to ensure that water which is drained is close or meeting the standards for discharge as required by Pollution Control Boards.

### **Q Could you provide insights into the initiatives that your organization implemented to address water scarcity and promote sustainable water management in India?**

We provide maximum recovery of reject water from Reverse Osmosis / Effluents etc to ensure water is not wasted. This is done at a low per unit cost per litre. This helps the clients to preserve water and reduce their intakes from other sources.

### **Q What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

Reverse osmosis, Electro Di Ionisation [EDI], Ultrafiltration etc have helped a lot to transform the water industry as it is today. The use of the membrane technologies have reduced the dependence on harmful chemicals for treatment (as in De mineralisation Plant [DM] and Mixed Bed [MB]). This has further reduced the issue of effluent treatment and then draining the reject water into various outlets.

### **Q How can public-private partnerships play a role in addressing the water challenges in India? Can you share any successful examples of such collaborations?**

If you take the case of Mr. Rajendra Singh , the water man of India as he is called. He built so many check dams [johads] in Rajasthan, which collected rain water and increased the water table in the area. This resulted in almost 1000 villages having water again.

Another example is that of Mr. Mahadev Gomare of Latur. He helped with the strong assistance of local people in deepening river beds , planting trees etc to increase the water table and green cover in the area. This has resulted in more crops for the local population.

**Q In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?**

There are various areas of growth. Rivers and lakes cleaning. Sea water desalination . Ballast water treatment. Co generation Water Treatment etc.

**Q How can the water industry in India leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes?**

Due to the loads of available data that we have, everyone can access the data and design efficient and optimum water treatment systems for any water related issues. This is true for management of water resources whether it is on a residential/company/village/town/city level. The data can also provide details of past issues faced, solutions, the trend in rain fall and how to approach the issues in the future with best possible results.

**Q What are the key considerations when it comes to balancing the needs of various stakeholders in the water industry, such as agricultural, industrial, and domestic consumers? How can these conflicting demands be effectively managed?**

If water is conserved properly and everyone is held responsible for their consumption and drainage of water , most of the issues will be tackled . In case of domestic usage , we find that with the use of Sewage Treatment Plants, water treated in these can be reused in the toilet flushing etc. Proper usage of taps [no leakages ] can ensure saving of water also.

In industries the water used in process always is consumed . But the waste water which comes from the industry can be recycled to good extent using affordable ZLD systems. This will help conserve the water and help the industries to reduce their intakes of water and also reduce to some extent their water bill.

In terms of agriculture there are various programs for effective usage of water to get better yields. There is drip irrigation, etc which reduces water intake but provide better output.

**Q What are the key lessons that India can learn from other countries or regions that have successfully addressed water challenges? How can these lessons be applied in the Indian context?**

All countries are facing a water shortage in some way or the other.

Each issue needs to be handled in a different way, which is both cost effective and sustainable for the local population. Major issues that can be handled can be highlighted as follows

- Increase the need for Zero liquid Discharge both for industries as well as households.
- Chemicals and other waste which are currently being drained into the sea / lakes / rivers / farmland have to be treated and ensured that they are good for living organisms. I.e. BOD and COD levels have to be within permissible limits
- Increase rain water harvesting in all areas. Make it compulsory for all residential properties to have the same.
- Check dams put at various points on the rivers.
- Increase the green cover in the areas , so that humidity levels increase , temperature drops and also water table increases and less soil erosion takes place
- Old ponds and lakes which have been covered with debris / filth and not looked after for long, need to be rejuvenated

Besides the above ,there are many ways of handling water issues.

**Q How do you see the future of the water industry in India? What are your expectations for the next five to ten years in terms of technological advancements, policy changes, and overall development?**

As they say “ The 3rd World war will be fought over water issues “ . Good, Clean Water is going to play an important role in the future. Since water resources are limited , it is imperative that they have to be handled well so that they can provide long term benefits.

Water industry in India in the future is going to address these issues more. I.e. to provide clean water to the population as well as ensure that the source of water is prevented from being contaminated for any reasons.

In the next 5-10 years more and more emphasis will be on providing clean water everywhere. Similarly water wastage will be taken seriously and conservation of water will be given more emphasis. In this scenario Zero Liquid Discharge [ZLD] models will be followed everywhere. Farming with minimal water wastage will be carried out and technological advances towards better yield of crops for less water will be carried out.

**Q Can you highlight any notable projects or initiatives that your organization or you personally have been involved in to address water-related issues in India? What were the outcomes and lessons learned from these experiences?**

We have not done many projects in India and are more concentrated on export oriented projects. So we have done ZLD projects for industries as well as effluent treatment systems which help reduce the harmful effects of waste water in the environment.

What we have understood and learnt from our little experience in this sector is that it's not a very difficult issue to handle. If the management of a company decides to provide this kind of treatment scheme for the waste that is generated in their factory as well as reduce complete water wastage in the maximum possible way, then with very little extra cost, this is possible and it results in continuous water availability even in times of crisis [especially summer months]

**Q How can the government, private sector, and civil society collaborate effectively to ensure sustainable water management practices and secure water resources for future generations in India?**

This will have a similar answer as to the one in [9] above.

**Q What role can innovation and entrepreneurship play in driving positive change in the water industry in India? Are there any promising startups or initiatives that you find particularly inspiring?**

There are a lot of innovations happening in water and waste water treatment.

Recently we hear of some startups providing a device to collect water from the atmosphere at a suitable price. This is basically by condensing the water vapour available in the air.

Besides there are desalination plants which treat water from the sea to municipal water quality levels to be used for daily work.

In waste water we have membrane technology [Tubular UF membranes] which are MBR membranes which are outside and not submerged. This helps it to be easier on maintenance and also provides better output than those of submerged MBR.

## Company Details:

### VISION OF MY COMPANY –

TO PROVIDE QUALITY AND AFFORDABLE SOLUTIONS FOR WATER AND WASTE WATER TREATMENT

### NUMBER OF EMPLOYEES

–40 NOS

### KEY ACHIEVEMENTS OF

THE LAST YEAR – MADE A TURNKEY PROJECT FOR MINERAL WATER IN GLASS BOTTLES FOR MALDIVES.

WE SUPPLIED EVERYTHING FROM RINSING, FILLING, CAPPING MACHINE TO ALL AUXILIARIES FOR THE PROJECT. CLIENT HAD JUST GIVEN US THE SPACE AND WE DID EVERYTHING.

### MAJOR ORDERS WON

RECENTLY –FOR PHARMA IN BANGLADESH FOR SUPPLYING COMPLETE WATER, EFFLUENT [ZLD] AND DISTRIBUTION PACKAGE. FOR MINERAL

WATER AND FLAVOURED WATER COMPLETE WATER TREATMENT AND FLAVOURED WATER SYSTEM FOR NIGERIA CLIENT.

NAMES OF MANAGING DIRECTOR AND SENIOR EMPLOYEES –MR. PARIMAL PAJANKAR[MANAGING DIRECTOR], MRS. DARPANA IYER [GM FINANCE], MR. RAKESH PANCHAL [GM SALES AND PRODUCTION]

## Miscellaneous Questions:

**Favourite Book/Author-** BOURNE SERIES/ ROBERT LUDLUM

**Favourite Movie-** SHOLAY

**Favourite Holiday Destination-** ANY PLACE IN INDIA, MATHERAN, GOA, KONKAN, HIMACHAL, NORTH EAST ETC.



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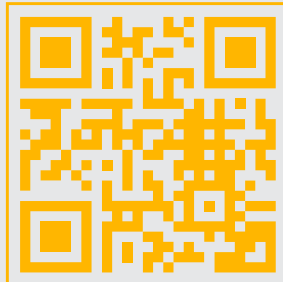


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## *In Conversation with*

*Dr Jeoraj Jain,  
Renowned Water Expert*

**Q How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

Spreading awareness about the necessity to save, conserve and recycle water. The major challenge is in terms of our attitude towards water.

**Q What are the major trends and developments you have observed in the water industry in India in recent years?**

Recycling industry is picking up. Water Mission started by Govt has started changing the attitude and scenario in Water utilization at village level.

**Q Could you provide insights into the initiatives that your organization implemented to address water scarcity and promote sustainable water management in India?**

By developing a simple process to convert supplied potable water into Alkaline water by householders, having a great health coefficient to thwart Osteoporosis and Cancer etc even at village level without any investment.

**Q What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

- Survey has shown that teaching at primary school level the latest Theory that water is a Living-being and imbibing compassion by refraining from wasting a single drop of water will change our attitude to that of respect and frugality towards water.
- Budgeting the requirement of potable water by the family and converting it into alkaline Bhasmi-Jalon daily basis would inculcate the frugality habit and avoid any wastage of water. Will establish the dignity of labour used in preparing the Bhasmi-Jal.

**Q How can public-private partnerships play a role in addressing the water challenges in India? Can you share any successful examples of such collaborations?**

I know one NGO- Bhartiya Jain Sangathan (BJS) having successful public-private partnerships in implementing projects in 100 districts under National Water Mission.

**Q In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?**

- Development of improved Membranes and Catalysts in recycling Industry.
- Spreading awareness and imparting suitable Training through various means including schools and colleges for changes in attitude towards water.

**Q What are the key considerations when it comes to balancing the needs of various stakeholders in the water industry, such as agricultural, industrial, and domestic consumers? How can these conflicting demands be effectively managed?**

By preparing suitable National Standards for water consumption for different sectors, conservation and recycling.

**Q What are the key lessons that India can learn from other countries or regions that have successfully addressed water challenges? How can these lessons be applied in the Indian context?**

Using efficient methods and equipment for optimizing consumption and limiting discharges.

**Q Can you highlight any notable projects or initiatives that your organization or you personally have been involved in to address water-related issues in India? What were the outcomes and lessons learned from these experiences?**

Holding interactive sessions with Students in schools and Colleges for improving the quality of Potable water and changing our Attitude towards water in family to that of compassion and respect.

**Q How can the government, private sector, and civil society collaborate effectively to ensure sustainable water management practices and secure water resources for future generations in India?**

Involve youth in practical training, assign small projects of research and surveys in data generation and collection, in studies of effects of various schemes and rewards in improving its effectiveness, judged by third parties.



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## *In Conversation with:*

N P Singh,

National Sales Manager,  
Mann+Hummel Water and Membrane Solutions

**How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

Thanks for inviting me to this interview.

Water industry in India is on a high growth trajectory, wherein the growth rate is always around and above 10%. The focus of government to provide water to citizens, sanitation, and the treatment of effluents has already given the market great momentum. Industrial development, food & beverages and the pharma industry further enhance the market's attractiveness.

Industry is adapting water saving technologies at a rapid pace. However, in the agriculture sector which consumes 80-90% of fresh water, water saving practices are still not widespread.

One of the major challenges of the Indian water market is its cost and pricing structure. Due to low price structure every role player in the value chain tries to find lowest priced products, resources, chemicals etc. If we think in the terms of total cost of ownership, it is not cost efficient. The customer must change the products more frequently, there will be frequent shutdowns, untrained/lowly trained resources cannot operate the machines to their full potential.

The low-cost market cannot support capex intensive breakthrough innovation in technology, yet it drives cost innovation in the overall value chain of products and systems. A market like this is one where only player with deep pockets survive; those who are smaller and more aggressive are generally in danger of running out of money. If you compare the list of top 20 water project companies 10 years back and now, you will find half of them on the first list are not there in the new list.

**What are the major trends and developments you have observed in the water industry in India in recent years?**

In the past, drinking water applications were trend leaders in this industry. Now the momentum is shifting towards wastewater applications. Keeping waste out of water streams is the ideal solution to ensure available water clean. Nature has its own mechanism to keep water clean if we don't pollute it.

Product and OEM companies are striving to increase water recovery, reduce energy footprint and total cost of ownership. It is also visible that market players are asking for the products with consistent performance, high quality and longer life.

**Could you provide insights into the initiatives that your organization implemented to address water scarcity and promote sustainable water management in India?**

Mann+Hummel's mission statement talks about "separating useful from harmful" and about solving the world's water and fluid challenges so that together we can create a safe, sustainable, and healthy planet.

We have global presence, and for each location we are working on sustainability goals. Our CSR activities also focus on clean water and air.

We are a full spectrum membrane company having membranes for microfiltration, ultrafiltration, nanofiltration, BWRO and SWRO. These membranes are used not only for water and wastewater, but also for food and beverages, dairy products, pharmaceuticals, and leachate, as well as in a wide range of applications

### **What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

In terms of technology and products, the Indian water industry is closely connected with the global industry. So, the availability of the latest technologies in India is not a question. At the system level, people are doing frugal innovations to reduce costs, to make the system more efficient.

If we talk about major innovations, there is a lot of talk about digitization. Quite a few players are working on digital solutions however, implementation is slower in the India region.

Digitization, reusable filters, low fouling membranes, membranes for high TSS & oil, small footprint STP/ETP technologies like MBR, ceramic membranes are some of latest developments and getting popular now. These products solve the problem of efficiency and sustainability by reducing energy consumption, longer life, reusability, and reducing installation size.

### **In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?**

In recent years, the government has done tremendous work and policy making to boost manufacturing in India. PLI & CAPEX subsidization schemes have already shown massive FDI inflows of \$31B+ in automobiles, electronics, EV, pharma, chemicals, and medical devices. So many multinational and Indian companies are setting up manufacturing units in India.

It is also necessary to have something similar for the water industry. Most of the membrane manufacturers are global MNCs. None of them have a membrane sheet or fiber manufacturing facility in India which is the core recipe of filtration system. The government should invite the major global players with capex subsidies and PLIs to get the latest technologies and manufacturing set ups in India.

### **How can the water industry in India leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes?**

Digital technologies can do wonders in managing water assets and operations. The best thing about digital technologies is that these are neutral of product brand and inherent technology of the filtration

plant. First level automation came with standalone sensor devices having digital or binary outputs. However, current technologies are much more sophisticated with the capabilities like capturing all the data, analyzing the trends, prediction models based on the complex analysis of trends and product specifications.

Mann+Hummel has one such innovation called STREAMETRIC. We already have substantial traction in the USA and European markets. We have begun pilots in India. The solution is one of the most advanced digital solutions with strong AI/ML engine within. In India there are so many start-ups who have started working on digital technologies. India being rich in IT engineers and water technologists, let's hope for some exemplary solutions having a deep understanding of water technologies.

### **What are the key considerations when it comes to balancing the needs of various stakeholders in the water industry, such as agricultural, industrial, and domestic consumers? How can these conflicting demands be effectively managed?**

Agriculture sector accounts for the largest share of water use, estimated at 80-90% of the total water withdrawals. Household and industry sectors accounts for about 5-10% each. According to the 80-20 rule, agriculture should be the primary focus of water conservation efforts. However, it is the other way round. There are strict norms for the industrial sector. With time, the implementation of these norms is getting stricter. With recent industrial developments, water consumption is going to increase drastically. Controls at the industrial level are improving with time. At the household level it is imperative to educate people about water saving. Water and energy consuming appliances like water purifier, shower, toilet flush, taps, washing machine, must reduce wastage. Water saving appliances should be cross-subsidized when compared to high water consuming appliances. Imagine that 20-40% of household water is wasted due to leaky taps only. Improvement in municipal supplies of drinking water can solve many problems. People will not be forced to use water-wasting appliances. Supply of clean, high-quality water improves fitting and taps life.

In the agriculture sector, the government should encourage low water-consuming crops and discourage high water-consuming crops. The government has so many methods and means to do it. Latest technologies of micro irrigation should be implemented at a widespread scale. Proper water harvesting, development of catchment areas for water storage, redevelopment of ponds and lakes should help store rainwater

**How do you see the future of the water industry in India? What are your expectations for the next five to ten years in terms of technological advancements, policy changes, and overall development?**

If I could put it in one word, the water industry has a bright future in India and globally. We already have many global capability centers for water system design and have strong manufacturing base for water/ wastewater plants and systems. I foresee there will be many product companies of India origin and global MNCs to manufacture products like membrane sheets, hollow fiber, elements, resins and chemicals and some cutting-edge new materials.

Increasing material research can make many current technologies and products redundant. It is going to be a global phenomenon. Global ER&D, start-ups and incubation centers use Indian talents for research and development. We will see innovation coming from these players. So many specialists of water industry and some IT companies and captive R&D center are already working on IOT / digital products.

Government policies evolve with time in response to the needs of the ecosystem. Environmental norms will be implemented with more strict measures. We should expect cyber security and data sharing norms for digital solutions specific to water / wastewater plants.

I am hopeful that in 10 years everyone in India will have full access to drinking water.

**11. Can you highlight any notable projects or initiatives that your organization or you personally have been involved in to address water-related issues in India? What were the outcomes and lessons learned from these experiences?**

**12. How can the government, private sector, and civil society collaborate effectively to ensure sustainable water management practices and secure water resources for future generations in India?**

**13. What role can innovation and entrepreneurship play in driving positive change in the water industry in India? Are there any promising startups or initiatives that you find particularly inspiring?**

The water industry in India has created a large number of entrepreneurs. A lot of credit belongs to the structure of the water filtration industry. Most of the business is done at the system integration and project execution aspect of the business. Commercially system business can be scaled up faster.

Recently, there have been many entrepreneurs entering the industry with a product or solution in mind. I cannot take the names but I am aware of the recent developments in digital products, material development and cutting-edge solutions by some new age entrepreneurs.

## Company Details Required:

### VISION OF MY COMPANY –

Solve the world's water and fluid challenges so that together we can create a safe, sustainable, and healthy planet

**NUMBER OF EMPLOYEES** - approximately 22000

**KEY ACHIEVEMENTS OF THE LAST YEAR** - one of the fastest growing membrane companies.

**MAJOR ORDERS WON RECENTLY - NA**

**NAMES OF MANAGING DIRECTOR AND SENIOR EMPLOYEES**

Kurk Wilks : CEO  
Cedric Dackam : President and GM – Water and Membrane Solutions

Marco Nava: VP - Water and Membrane Solutions  
Narendra Pratap Singh : National Sales Manager – WMS ( India)

## Miscellaneous Questions:

**Favourite Book/Author** – Recently I am reading William Sarni Book on Digital water.

Good to Great, Seven Habits of highly effective people, The innovator's dilemma, Now Discover your strengths

Favourite Movie – So many.

**Favourite Holiday Destination** – Old historical places, heritage

**One piece of advice for 'EverythingAboutWater'** – Include a section on new technological developments.



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## *In Conversation with:*

Rakesh Uniyal,

Sales Manager, PPS Solution AS, Asia Pacific West  
& South, Automation Systems Business Line,  
Valmet Technologies Private Ltd

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### **How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

According to some market research, the total Indian water market is estimated to be about USD 14 billion with a growth rate of about 18 per cent every year. There exists big potential for growth in Indian water industry.

India has about 16-17 percent of the world's population, but only 4 percent of its water resources, making it among the most water-stressed in the world.

Current challenges include availability, quality, usage and management. While the last two - usage and management depend majorly on our intelligence, awareness and skills supported by the technology; the first two depend majorly on geographical factors and this is where Technology plays a major role.

Urbanization and industrialization have added to the challenges and at the same time opened the opportunities for the technology suppliers to support the water cause with latest and efficient technologies.

### **What are the major trends and developments you have observed in the water industry in India in recent years?**

In view of the challenges that pervade the water resources sector and water utility services in our country, the Government of India has taken numerous steps to address the issue, while emphasizing on the use of technology for the purpose. Previously, water was a subject which was dealt by almost nine Ministries. The present government has integrated the work of these various Ministries and brought them under the Ministry of Jal Shakti with two Departments i.e. Department of Water Resources, River Development and Ganga

Rejuvenation (Jal Sansadhan, Nadi Vikas Aur Ganga Sanrakshan Vibhag) and Department of Drinking Water and Sanitation (Peya Jal Aur Swachhata Vibhag). This initiative is integrated with ensuring source sustainability and gray water treatment.

Government of India initiatives like “Jal Shakti” (setting-up Jakshakti kendras in all district centers, Enumeration, making inventory and GIS mapping of water bodies, Krishi vigyan kendra melas for efficient agricultural use of water, urban wastewater use springshed management in Himalayan districts, Jal shakti abhiyan-catch the rain, Namami Gange etc have been some visionary steps with regards to improve upon the current water challenges.

Good progress is visible also; 2,41,447 water conservation and rain harvesting works completed, 58,901 traditional water bodies renovated. 3,36,093 watershed development works and 4,03,97,526 works for afforestation accomplished.

Agencies like World bank have also been supportive in various projects like “Atal Bhujal Yojna”, “Paani Bachao, Paisa Kamao” (Save Water, Earn Money) scheme incentivizes for Punjab farmers to reduce groundwater usage.

In 2019 the southern metropolis of Chennai reeled under a severe water crisis and water was brought in by train from some 200 kilometers away to save the city. Today, Chennai has become the first Indian city to recycle its wastewater at scale to meet the non-drinking water needs of its industries.

So, in total, there have been efforts to use water wisely, conserve rainwater and not to forget, latest technologies combined with digital tools and automation have been the key tools in recent times.

**What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

The water management industry is adopting digitalization, advances in material science, and hydrological engineering. These trends effectively clean water, conserve it, and reuse it for various purposes. In the future, creative solutions will make these innovations even more accessible, sustainable and cost-effective. Intelligent water management systems, nanotechnology, membrane filtration and desalination are key water purification, conservation, and optimum usage technologies. The innovative technology has made significant breakthroughs in water supply and distribution, drip irrigation, desalination, waste water treatment, automation, asset management, metering and other aspects of water management. Innovations such as affordable desalination plants are need of the time and many states like Maharashtra, Tamil Nadu, Rajasthan implementing it.

The use of AI, AR/VR, and gamification will motivate people to change behavioral patterns and commit more seriously to improving access to water for everyone. Among others, decentralized grid, water recovery, and desalination will transform the sector as we know it today. Identifying new opportunities and emerging technologies to implement into our business goes a long way in gaining a competitive advantage.

All major technology players have their presence in India, be it equipment, digitization or automation and contributing to the sustainability of the key resource Water.

**How can the water industry in India leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes?**

Digital technologies like Industry 4.0, Digital Twin, Geospatial Technologies, Robotics, Big Data, AI have evolved over the recent years and given new dimension on how we see the things and how we strategize our actions efficiently. In modern world no industry can live without digital technologies and water sector is no exception. Right from watershed mapping, change detection, river movement & river basin modelling, flood inundating & forecasting, managing water & sewage networks, workflow management, water distribution models, water availability simulations, smart water grids & systems need the digital tools. In fact, being one of the most critical elements of life on earth, digital technologies have most effective role to play in water sector.

**How do you see the future of the water industry in India? What are your expectations for the next five to ten years in terms of technological advancements, policy changes, and overall development?**

The total water demand in India is projected to increase by 22% and 32% in 2025 and 2050 respectively and, by 2050, 85% of this demand is expected to come from industrial and domestic sectors alone. Among the regions, the south and the northwest are expected to face the worst in next two years. The need is Rejuvenation & conservation of water bodies, Rainwater harvesting, Optimal distribution & re-collection system. Advanced Digital technologies like AI, ML, IoT combined with effective treatment technologies would be key to meet the ever rising demand.

All major technology players need to come-up with sustainable solutions and Indian Government's continuous support would be the major factor to succeed.

**Company Details Required:**

Valmet is a leading global developer and supplier of technologies, automation and services for many industries, including the water and wastewater segment. Valmet has proven flow control and automation solutions to customers in the water and wastewater industry with over 2,000 references globally. Water and wastewater is one of Valmet's growth business areas.

Valmet's offering covers clean water production and wastewater treatment in municipal plants as well as industrial applications. Valmet's automation and measuring solutions portfolio includes decades of pioneering measurement solutions in a wide range of industries.

**VISION OF MY COMPANY –**

Valmet's vision is to become the global champion in serving our customers and in moving the industries forward.

Our mission "converting renewable resources into sustainable results"

**NUMBER OF EMPLOYEES –**

About 1000 employees in India and 17,500 worldwide

One piece of advice for 'EverythingAboutWater' - A proven platform to get the real time pulse of the industry. Thanks to the dedicated team! Looking forward to continued efforts in future as well.



## *In Conversation with:*

Dr. Bijal Sanghvi,

Director,  
Axis Solution Pvt Ltd.

**How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

- Water scarcity is a global challenge. According to recent data from the World Bank, India has 18% of the world's population but only 4% of the water resources, making it one of the most water-stressed countries in the world. India's Bottled water market size was valued at \$22.72 billion in 2022 and is expected to reach \$36.21 billion by 2030, at a CAGR of 6 per cent from 2023 to 2030, said a report by GreyViews Research released in January 2023.
- Industries that have a high usage of water and need for treatment include: brewery and carbonated beverage water; dairy industries; sugar mills and refineries; textile manufacturing; pulp and paper mills; oil and gas; the automotive and aircraft industries and many others
- Agriculture. 70% of the world's freshwater is used for agriculture
- Challenges: These include over-extraction of groundwater, water pollution, inadequate distribution, lack of proper water management, climate change, and conflicts over water. India relies heavily on groundwater, which is being depleted at an alarming rate due to over-extraction for irrigation, industrial, and domestic use.
- The water industry will most likely endure several changes in the years to come due to rapid urbanisation, severe climate changes, rising customer demands and the implementation of emerging digital technologies.
- Current challenges include extreme water stress, contaminated surface water and lack of access to piped water supply. The effects from climate change like droughts and rising sea levels also affect access to safe water and sanitation for families in India.

**What are the major trends and developments you have observed in the water industry in India in recent years?**

The water management industry is adopting digitalization, advances in material science, and hydrological engineering. These trends effectively clean water, conserve it, and reuse it for various purposes. In the future, creative solutions will make these innovations even more accessible, sustainable and cost-effective. Digital Water Management: Increasing global water demand and the need to maintain aging infrastructure necessitate the growth in digital water management. Technologies such as AI, IoT sensors, and advanced meters enable water quality and quantity control as well as remote asset management and responsible water use. Also, geographical information systems (GIS), digital twins, and augmented and virtual reality (AR/VR) technologies visualize and model situational scenarios to identify anomalies and prevent potential damage. 5G, blockchain and cloud technologies ensure speed and data security for water management solutions. This way, digital technologies improve the decision-making and efficiency of water utilities.

**Wastewater Processing :** Large amounts of wastewater are discharged without prior adequate treatment. Lack of control over water wastage in industrial and residential activities causes pollution of freshwater reserves. Emerging innovations in wastewater processing are trying to effectively recover spent water in different industries. Technologies such as advanced oxidation processes, adsorption/biosorption, and biological and anaerobic remedies demonstrate promising results. In combination with solar irradiation, they effectively absorb pollutants from wastewater and reduce the amount of produced sludge via microbial decomposition. This way, wastewater processing solutions mitigate contaminants to meet water demands.

**Advanced Filtration :** Due to the pressing water scarcity problem, startups are paying more attention to fresh and creative methods of water filtration. Nanotechnology advances are enabling the development of filtration membranes that remove hard-to-capture micropollutants. Since nanocomposite membranes have improved chemical properties, they provide higher flux, permeability, and selectivity than conventional solutions. Another important technology is biological filtration which uses bacteria to purify water while converting energy from oxidation into electricity. Together with natural and self-cleaning filters, new advancements contribute to energy-saving and cost-effective water filtration

**Flood Prevention :** Global warming increases the likelihood of extreme droughts and floods. Recent advances involve not only improved device designs but also include solutions that facilitate monitoring, forecasting, and catastrophe modeling. Enhanced water gates, property protectors, dams, and flood blocks guarantee rapid response to the disaster. Further, drone and satellite-based systems capture vital data through clouds and other obstacles. In combination with LiDAR mapping and weather radars startups measure wind directions to predict rainfalls. Apart from these, advanced catastrophe modeling provides potential financial consequences for a more holistic picture. Overall, these technologies rethink traditional flood measures to deliver better risk management.

**Water-saving Technology:** Facing growing challenges with freshwater availability, there is a growing global demand for water-saving technologies. This trend is impacted by water reuse, recycling, intelligent irrigation, and home conservation. To achieve circularity, startups design water-saving toilets, taps, and shower heads. They control water flow, limit the quantity of water used, and redirect it for other purposes. Besides, new recycling technologies extract valuable resources and nutrients for practical repurposing. Efficient irrigation techniques are another important direction that advances precision farming by measuring and minimizing overwatering. This way, startups are using a range of approaches to save water in different settings

**Decentralized Infrastructure :** The interest in decentralized water infrastructure is growing as a measure that improves the resilience of communities. Modular and mobile electrocoagulation treatment makes users independent of centralized systems that are unavailable in remote regions. Further, personalized water systems include off-grid supply, facilitated by real-time digital technologies and tracking apps. Meanwhile, in-home water solutions offer alternative hydration methods by converting air into water. In this way, the distributed practice reduces rising costs and

risks associated with old infrastructure, which ultimately improves general resilience.

**Innovative Materials :** Recent progress in material science provides new opportunities to overcome water supply challenges. Innovative materials such as modular adsorbents, electrode-based reactors, photocatalysts, and nanoparticles are key technologies that are advancing this trend. Their beneficial chemical and mechanical properties offer a smaller footprint while improving selectivity, efficiency, and reliability. By integrating materials with various properties, startups are developing multifunctional systems that achieve multiple functions in water management.

**Desalination :** Water desalination is an industrial process that requires huge amounts of chemicals and energy to proceed. Therefore, startups are focused on developing innovative and eco-friendly solutions that reduce costs. New desalination approaches use renewable energy such as solar power to reduce carbon emissions. Other methods employ biomimicry by which plants and fish extract seawater with minimal energy. Additionally, innovative aquaporin-based technology targets and blocks salt out of water. This way, novel seawater desalination shifts beyond traditionally expensive and fossil-based methods.

**Could you provide insights into the initiatives that your organization implemented to address water scarcity and promote sustainable water management in India?**

- industries are urged to maintain Zero Liquid Discharge (ZLD) whenever possible, enhance technology to reduce waste water output, reuse wastewater, and recycle wastewater.
- Rainwater harvesting is a very effective method of conserving natural water and replenishing the groundwater level. In this method of conservation of water, the rain water is collected and allowed to percolate into a deep pit or a reservoir, so that it seeps down and improves the ground water table
- Water Conservation Campaigns and Schemes like Jal Jeevan Mission (JJM) helps in water conservation in India.

**What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

Digital technologies, including AI, ML and IoT, are making water systems efficient and sustainable. Optimizing water usage is a rising problem for industries and institutions across the globe

Advanced AI and ML, and digital twin technologies are used to

detect water leakages and predict situations in water networks.

- City administrations are leveraging AI-based flood predictions and forecast systems to take necessary actions and reduce calamities and destructions.

Improving and Greening of the Water Infrastructure. Conserving and Eventually Reusing Water. Reducing Costs and Improving Techniques for Water Monitoring. Improving Performance of Small Systems. Reducing Water Impacts from Energy Production. Smart irrigation systems use sensors, controllers, and software to monitor soil moisture, weather conditions, and plant needs, and adjust the water delivery accordingly. This can save up to 50% of water compared to conventional irrigation, while also improving crop yields and quality.

## **How can public-private partnerships play a role in addressing the water challenges in India? Can you share any successful examples of such collaborations?**

Since the 1990s China has emerged as one of the world's most active markets for public-private partnerships (PPPs) in water and sanitation, while the private sector has played a rather limited role in the water sector in India.

From 2001 to 2012, there were 237 PPP projects in water and sanitation in China, accounting for 40% of the total number of such projects globally, and the Chinese population served by private water companies increased from merely 8% in 1989 to 38% in 2008. Development of PPPs in the water sector in India during the same period was insignificant. Our comparative analysis of PPPs in water and sanitation in the two countries highlights the importance of water tariff reform, strong support and oversight from the national government, and the availability of credible regulatory mechanisms to safeguard development and sustainability of PPPs in the water sector

Despite strong economic growth since 2005, India has failed to make proportionate strides in developing its water and sanitation sector: only 48% of the urban population in India has access to piped water supply through house connections, compared to 58% in Pakistan, 67% in Sri Lanka, and 95% in China (Asian Development Bank (ADB), 2013). According to a study conducted by India's High Powered Expert Committee for Estimating the Investment Requirements for Urban Infrastructure Services (HPEC) (2011), 4,861 of the 5,161 cities/towns in India do not have even a partial sewerage network, and only 21% of the wastewater generated in the country is treated. The cost of inadequate water

and sanitation services is borne disproportionately by the urban poor: lower-income household

## **In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?**

- Companies whose business is closely tied to irrigation, utilities, water treatment, or other water-related industries. One can invest in these by buying the stocks of individual companies, or by investing in a mutual fund or ETF with high exposure to water stocks.
- beverage providers, utilities, water treatment/purification firms, and equipment makers, such as those that provide pumps, valves, and desalination units

## **How can the water industry in India leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes?**

- Digital control entails integrating and optimizing smart pumps, valves, sensors, and actuators utilizing IoT-supported, data-driven models.
- Technology enables real-time collection of data on water quantity, quality, and usage through remote sensing, IoT devices, and sensor networks. This data helps calculate water availability, identify trends, and make informed decisions for efficient water management.

## **What are the key considerations when it comes to balancing the needs of various stakeholders in the water industry, such as agricultural, industrial, and domestic consumers? How can these conflicting demands be effectively managed?**

- Step 1: Identify. Identify who your stakeholders are, and what your goals are for engaging with them. ...
- Step 2: Analyse. The more you understand about each stakeholder, the more effectively you can engage with them and influence them. ...
- Step 3: Plan. ...
- Step 4: Act. ...
- Step 5: Review.
- Several possible approaches can prevent conflicts over water. One set of approaches consists of measures to increase the availability of water including reducing use of water, increasing availability of clean water, establishing and maintaining new groundwater wells, methods of desalinization, expanding use of greywater.

- Another set of approaches aims to resolve conflicts over water before they boil over—that is before they become violent or have other serious consequences. Such preventive measures include (1) laws and regulations at the local, state or provincial, national, or international level; (2) proactive cooperation among nations or among states or provinces within nations; and (3) mediation and arbitration. Internationally, there have been more than 3800 unilateral, bilateral, or multilateral declarations or conventions concerning water, including 286 treaties.<sup>7</sup> In addition, throughout the world there have been numerous laws and regulations concerning water use at the local, state or provincial, and national levels. Much needs to be done to strengthen the enforcement of existing laws and regulations and to develop new ones to address current issues.

- 1) Ensure that you hear and represent everyone who is important to the success.
- 2) Make sure you are aware of all the stakeholders' concerns and address them directly.
- 3) Make sure to inform all the stakeholders about progress and decisions.
- 4) Be flexible in how you deal with different stakeholders.

## **What are the key lessons that India can learn from other countries or regions that have successfully addressed water challenges? How can these lessons be applied in the Indian context?**

- Policies, regulations, institutions and incentives that promote more efficient and more productive use of water, e.g., by ensuring the equitable distribution of water among users, and by establishing water tariffs.
- In India, experience with improving water service delivery has been mixed as, only in rare cases, have efforts been embedded in a favorable policy and regulatory environment. When it comes to improving water service delivery, India can learn from Brazil, Colombia, Mozambique and New South Wales (Australia), among others.
- Poor or absent water management policies also exacerbate the effects of climate change on water. On the other hand, sound water management can neutralize many of the water-related impacts of climate change. Vietnam, for instance, has implemented a comprehensive program to manage water-related risks and build resilience. Nigeria has helped prevent erosion, reclaim valuable land and focused on sustainable livelihoods to reduce the vulnerability of people, infrastructure, assets, natural capital, and livelihoods to land degradation.

And the Philippines is implementing comprehensive urban drainage works to improve water management.

## **How do you see the future of the water industry in India? What are your expectations for the next five to ten years in terms of technological advancements, policy changes, and overall development?**

- By collecting data from water storage facilities and combining it with weather prediction and pattern analysis, cities can be better prepared to remove contaminants before returning water to oceans and rivers, and benefit from increased water harvesting.
- The water management industry is adopting digitalization, advances in material science, and hydrological engineering. These trends effectively clean water, conserve it, and reuse it for various purposes. In the future, creative solutions will make these innovations even more accessible, sustainable and cost-effective. For instance, a new technology extracts filtered water from cow manure. However, tech-driven measures are not always enough to combat environmental challenges. The use of AI, AR/VR, and gamification will motivate people to change behavioral patterns and commit more seriously to improving access to water for everyone.

## **Can you highlight any notable projects or initiatives that your organization or you personally have been involved in to address water-related issues in India? What were the outcomes and lessons learned from these experiences?**

- List of Water Conservation Campaigns and Schemes like Jal Jeevan Mission (JJM), PM Krishi Sinchayee Yojna, Sahi Fasal campaign, Mission Amrit Sarovar, etc. helps in water conservation in India.
- The Jal Jeevan Mission's ambition to bring safe drinking water to all rural households is likely to be highly valuable, preventing around 1,36,000 child deaths annually
- The Water Management Trends & Startups outlined in this report only scratch the surface of trends that we identified during our data-driven innovation and startup scouting process. Among others, decentralized grid, water recovery, and desalination will transform the sector as we know it today. Identifying new opportunities and emerging technologies to implement into your business goes a long way in gaining a competitive advantage. Get in touch to easily and exhaustively scout startups, technologies & trends that matter to you!

## *In Conversation with:*

Dr S Sundaramoorthy, A Jayabalan, Jawahar Thomas

Dr S Sundaramoorthy and A Jayabalan are the former Engineering Director and hydro geologist of Chennai Metropolitan Water Supply and Sewerage Board and members of the United Nations development programme Study team on Chennai Conjunctive use of Surface and Ground Water. Jawahar Thomas has completed his Ph D in the same subject as of the present scenario.

### How would you describe the current state of the water industry in India, and what are the key challenges it faces?

Answer. None of the urban water organizations are able to self-sustain financially in the O & M. It is clearly recorded in the report of high power committee appointed by the Ministry of Housing and Urban Development of GOI on Indian Urban Infrastructure and Services in 2011 (<https://icrier.org/pdf/FinalReport-hpec.pdf>) under the segment of Strengthening and securing the financial base of Urban Local Bodies (ULB) and Urban local governments in India are among the weakest in the world both in terms of capacity to raise resources and financial autonomy. While transfers from state governments and the Government of India have increased in recent years, the tax bases of ULBs are narrow and inflexible and lack buoyancy, and they have also not been able to levy rational user charges for the services they deliver.

A classical case is Chennai seawater desalination (SWRO) which is Rs 50 per 1000 liters of product being delivered to the public at about Rs 8 per 1000 liters and SWRO capacity being steadily increased from 100 million liters daily (MLD) product in stages by 100 MLD, 150 MLD and 400 MLD in the pipeline. This is simply illogical. With only half the rainfall, Orange County water district (OCWD) in USA is supplying water to its citizens at about 250 liters per capita daily (LPCD) by coastal aquifer injection and withdrawn inland to almost 500 MLD as in Fig 1.

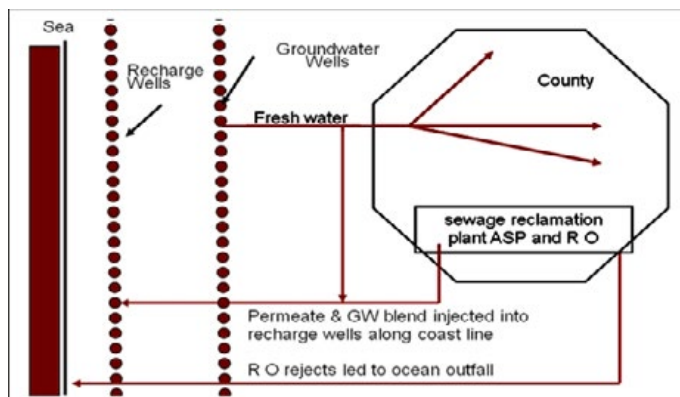
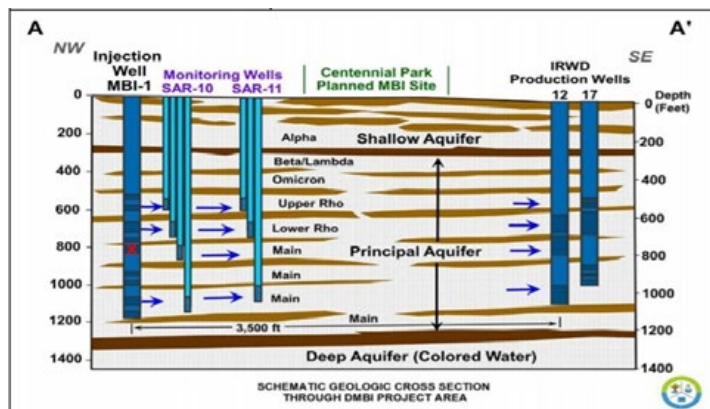


Fig.1 The OCWD sewage reuse schematic and coastal aquifer



Chennai is struggling even for the national guideline of 140 LPCD despite twice the rainfall and borrowing water from neighbor states. OCWD reuses sewage for public supply at 400 MLD whereas 1000 MLD sewage is merrily wasted to sea at Chennai. It can be reused as in Fig.2

Fig 2. The Chennai advantage for sewage use by coastal aquifer. At 508250 sqm and average depth of 20 m and 40 % voids, this can service nearly 4000 cum / MLD as fill & draw. Chennai has proved the technology to treat the sewage in Fig.3

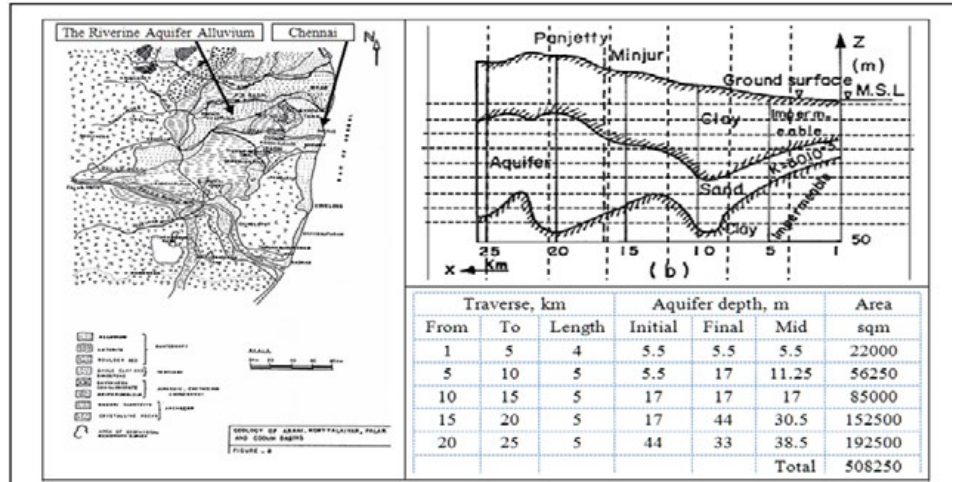


Fig 3. Achievements at Chennai in sewage renovation for industrial grade waer.

Top row from left The renovated sewage of Koyambedu TTRO demonstrated as drinkable by Honourable Minister, Govt of Tamilnadu, Secretary, Ministry of Housing and Urban Affairs of Govt of India and Contractor Firm in 2019

Bottom row- The lead author as the then Engineering Director, Chennai Metropolitan Water Supply and Sewerage Board drinking renovated sewage before the World Bank officials, the chairperson in 1995



## Lesson to be learnt

“ At least a pilot project of costal aquifer injection needs to be taken up before the city eventually ends up a water famine given the grandiose plans to expand the boundaries without warer sources ”

## *In Conversation with:*

Dr S Saktheeswaran

Author is a Ph D with over three decades of national and international experience in sewage and industrial waste management in World Bank, India, Central Public Health and Environmental Engineering Organization (CPHEEO) of Government of India and many national and international industries for over here decades. He has authored the chapter on Sewage Reuse in the CPHEEO manual on Sewage Treatment.

**Can you highlight any notable projects or initiatives that your organization or you personally have been involved in to address water-related issues in India? What were the outcomes and lessons learned from these experiences?**

The term “sewage” and “sewage treatment plant” are respectively understood as the wastewater from domestic use of water which comprises essentially cooking, vessels washing, bathing, cloth washing, urination, night soil defecation etc in a typical household and their treatment by biological processes like aerobic, anaerobic, facultative like the activated sludge, Upflow anaerobic contact bed, stabilization pods etc. In industries also, the same terms are used loosely which is incorrect. The main reason is the industrial related wastewater does not have the night soil in the same proportions in domestic sewage. Technically speaking, the carbohydrate as reflected in The BOD test. Whereas typical value of BOD in sewage is about 320 mg/l arising from typical values of 45 gm from night soil, bathing and kitchen wastes carried in the national standard of 140 liters of water use per person per day. Whereas the 45 gm is almost constant, the water use varies down to even 90 in most urban cities and the BOD becomes higher. This is manageable by appropriate food to microorganism (F/M) values in sizing the units and oxygen supplies. In contrast, these STP processes design is blindly used the designing the treatment plants for the so-called sewage from schools, colleges, three shift industries, airport terminals, bus stations, transit motels etc. It is public knowledge that these treatment plants are not effective and a sort of wild goose chase is tried out without expected results. It is like a typical meal devoid of the carbohydrate. This is devoid of the prescribed ratio for biological growth of 100 : 5 : 1. as BOD : N :P as in Fig.1.



Fig. 1. Illustration of meal with carbohydrate and without carbohydrate

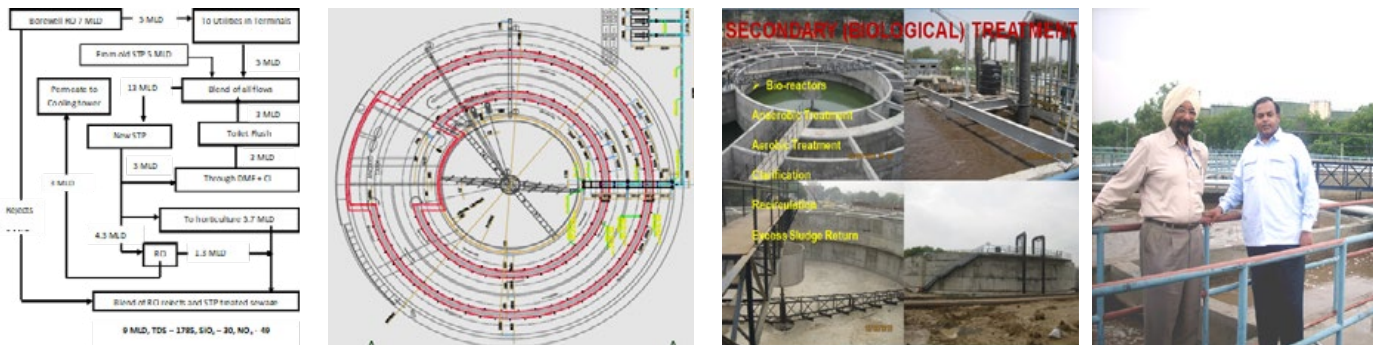


Fig.2. The all-in-one 42 m dia and 7 m LD depth plant of anoxic tank, spiral flow aeration, central clarifier, air diffusers at floor, internal recirculation, micro-nutrients tank, the author at the plant as project manager with Shri Ahulwalia owner's engineer, and performance with inlet 130mg / l BOD and Ammonia as high as 53 mg/l treated to 10 mg/l BOD and 5 mg/l ammonia.

| No | Location                  | BOD        | Ammonia Nitrogen | SS         |
|----|---------------------------|------------|------------------|------------|
| 1  | Raw Sewage                | 110 to 130 | 45 to 53         | 240 to 280 |
| 2  | Biological Treated sewage | 8 to 10    | 1.5 to 3         | 10 to 15   |

## The Critical Design Factors

1. The peak factor was taken as 1.5 as the terminal building is used almost continuously.
2. The Return Activated Sludge was unity and Internal Rate of Return was twice the DWF.
3. HRT in anoxic tank was at 0.5 hours based on all flows through it.
4. HRT in aeration tank was 18 hours based on DWF.
5. Alpha value was consciously restricted to 0.6 as  $K_L$  will be retarded in this sewage.
6. Nitrification oxygen was taken as 4.8 and oxygen credit was taken as 2.86.
7. Mixing air was taken as 30 cum/ minute /1000 cubic meter of aeration tank volume.
8. The phosphorous out of DMF in dissolved form was allowed to go through UF and RO.

## Pointers for Future Pseudo STPs

It is a fact that all sewages from day boarding institutions such as schools, collages, one shift offices, terminal buildings at airports, railheads etc generating only pseudo sewage and not the typical sewage. The standard ratio of 100 : 5 : 1 for aerobic metabolism will never be met and ammonia will be the dominating factor.

Crude solutions will be adding cow dung concentrates with their carbohydrate content but this will be a daily feature. Correct feature will be to add regular sewage from elsewhere develop the microbial culture with micro-nutrients slowly and recognize the fact the microbes have a long genetic memory of their origin and adapting to pseudo sewage. The Delhi airport plant took nearly three months to achieve his and is steady ever since 2005 to this 2023. For very small plants the time tested septic tank with higher detention times is to be adopted.

## *In Conversation with:*

Sanjay Bahl

General Manager,  
Superweld Ecosolutions

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### **How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

We at Superweld Eco Solutions deal with wastewater treatment issues on a daily basis and my work enables me to speak on the current state of the wastewater treatment Industry in India,

There are few critical challenges as I see,

In the government sector there is a huge demand-supply gap.

For example we keep hearing new missions and schemes like Jal Jeewan mission , Amrut scheme which are really very much need of the hour , but given the current state of sewage and effluent discharge into rivers, and the poor urban planning and sewerage infrastructure , which causes floods in even in our country's capital , we can understand that there is a long way to go .

Secondly, in the Industrial segment, there is lack of intent from the stakeholders, the owners of the industry don't have the real intent to build good wastewater infrastructure, they just want to somehow comply to regulatory norms, this short-sighted approach hampers the supply of quality engineers, quality products and technology to treat wastewater.

### **What are the major trends and developments you have observed in the water industry in India in recent years?**

I can see a positive trend of stricter water discharge norms being enforced and this in turn is generating lot of opportunities for work and growth in this field.

### **Could you provide insights into the initiatives that your organization implemented to address water scarcity and**

### **promote sustainable water management in India?**

We are doing significant work to eradicate water scarcity. Simply put we are giving the power to recycle more water, we make innovative biotech products and solutions that enables wastewater treatment plants to recycle more water than any other technology they were using earlier

Our biocultures are SUPER 24, OXYSUPER are today being used in STPs, CETPS, Lakes and ponds and have treated polluted water in record breaking times and economies

### **What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

At Superweld EcoSolutions, we are working with very new and powerful microbial technologies.

This technology has the power to transform the entire wastewater treatment sector, we have about 120 Plus clients who have witnessed enhanced performance of their wastewater plants by adopting beneficial and fast-acting microbes and enzymes.

These advancements have enabled companies to take up projects under stressed budgets, high pollution loads and deliver perfectly treated water parameters.

How can public-private partnerships play a role in addressing the water challenges in India? Can you share any successful examples of such collaborations?

Yes, I believe there are many ways in which public private partnership can play a role.

For example we have worked indirectly in many government-private projects for example CETPS is one example, there is a lot of opportunity in the areas of Lake rejuvenation, Nala remediation, and Decentralized STPs

**In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?**

I think the wastewater sector holds one of the most significant opportunities, as said above the need is to provide more recycled water in the existing budgets, ever-increasing regulations. So, there is so much work to be done here.

**How can the water industry in India leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes?**

Yes, digitalization gives the power to work more effectively, one of our reputed customers have launched a concept called Digital Paani, where there are using sensors to check wastewater parameters and improve STP performance. Tools like this allow expert technology to travel to remote locations too. Long range water meters can now transmit their water readings kilometers away

I encourage the use of such tools.

**What are the key considerations when it comes to balancing the needs of various stakeholders in the water industry, such as agricultural, industrial, and domestic consumers? How can these conflicting demands be effectively managed?**

I believe the only way to meet the conflicting demands is to adopt the 3 R approach: Reuse Recycle and Reduce. Innovative technologies which work on the 3R approach in these fields are the need of the hour. Be it rain water harvesting systems or STPs in the domestic sector, high Efficiency ETPs in Industry or Drip irrigation in the agriculture sector are some examples.

**What are the key lessons that India can learn from other countries or regions that have successfully addressed water challenges? How can these lessons be applied in the Indian context?**

That's a good question, I would say There are lessons from each part of the world ,

The Japanese have Disaster-resilient water infrastructure to ensure continuous water supply during emergencies., Similarly in Germany , and Netherlands brilliant work has been done to manage storm water , Israel as everyone knows is a leader when it comes to recycling technologies

I think India give its unique set of challenges can in matter of few years be a world leader in Innovative approaches too .

**How do you see the future of the water industry in India? What are your expectations for the next five to ten years in terms of technological advancements, policy changes, and overall development?**

The future is very bright, I can especially say about the wastewater sector, Every one understands that it is the need of the hour. Policy changes are going to be favorable.

Digital Analysis of water, smarter wastewater plants, Biotechnology powered STPs, ETPs, Grease traps, insitu drainage treatment will make the present challenge to treat water much easier.

I would like to site an example of our Bio culture product SUPER24 . SUPER 24 develops a well performing biomass in wastewater treatment plants. It has almost eliminated the need to use cow dung, urea, DAP in STPs , this technology can now commission STPs , ETPs in a matter of days which was a matter of few months earlier.

**11. Can you highlight any notable projects or initiatives that your organization or you personally have been involved in to address water-related issues in India? What were the outcomes and lessons learned from these experiences?**

**12. How can the government, private sector, and civil society collaborate effectively to ensure sustainable water management practices and secure water resources for future generations in India?**

**13. What role can innovation and entrepreneurship play in driving positive change in the water industry in India? Are there any promising startups or initiatives that you find particularly inspiring?**

Innovation and entrepreneurship definitely drive change, I would like to cite my organization initiatives

We have developed advanced biotech products that digest oil and grease from kitchen drain lines in hotels, or Industrial effluent, this is being quickly adopted in the industry, Similarly, our product OXYSUPER a dissolved oxygen-booster product has been able to achieve 98% COD reduction and 85 % silica reduction in textile wastewaters.

## Company Details Required:

**VISION OF MY COMPANY** – our vision is to be a bring key changes in the way industry deals with pollution we want to enable every Industry owner, stakeholder to treat their wastewater , solid waste , air pollution effectively and easily.

**NUMBER OF EMPLOYEES** – 9

**KEY ACHIEVEMENTS OF THE LAST YEAR** – 95 % Retention ratio of clients, Growth in new sectors like Paper mills, pharma and Textile, 80% increase in our distributor network

**MAJOR ORDERS WON RECENTLY** – biological consulting contract for CETPs in Himachal, Punjab,  
Yearly open order from Paper Mill in UP

## NAMES OF MANAGING DIRECTOR AND SENIOR EMPLOYEES

-

Narendra Pratap Singh : National Sales Manager – WMS ( India)

## Miscellaneous Questions:

**Favorite Book/Author** - Gita

**Favorite Movie** – Chariots of Fire

**Favorite Holiday Destination** - Goa

**One piece of advice for 'EverythingAboutWater'** - I would say EA water must expand their horizon further and be a bridge between Industry and suppliers like Paper Industry, Pharma Industry, Textile and so on.



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## *In Conversation with* **Ashok Kumar,** *Managing Director,* *Mini Dose Solutions Pumps*

### **How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

The water industry in India faced significant challenges, and it is important to note that the situation may have evolved since then. Some of them are:-

**Water scarcity:** India is a country with a large population and diverse climatic conditions. Many regions face water scarcity due to inadequate water resources, uneven distribution, and unsustainable water management practices.

**Contamination and water quality:** The quality of water in India is a major concern. Surface water and groundwater sources are often polluted with industrial effluents, sewage, agricultural runoff, and other contaminants.

**Lack of public awareness and participation:** Creating awareness about water conservation and efficient water management practices is crucial.

### **What are the major trends and developments you have observed in the water industry in India in recent years?**

In recent years, the water industry in India has witnessed several trends and developments aimed at addressing the country's water challenges. Here are some of the major ones:

**Water Conservation and Management:** There has been an increased focus on water conservation and efficient management practices. The government and various organizations have launched initiatives such as "Jal Shakti Abhiyan" and "Har Ghar Jal" to ensure water availability for all. Rainwater harvesting, wastewater treatment, and water recycling are being promoted extensively.

**Desalination Projects:** With water scarcity issues in coastal areas, desalination projects have gained prominence. States like Gujarat, Tamil Nadu, and Andhra Pradesh have initiated desalination plants to augment their water supply.

**Rural Water Supply:** The government has placed emphasis on providing clean drinking water to rural areas. Initiatives like the National Rural Drinking Water Programme (NRDWP) aim to ensure safe drinking water access in remote and underserved regions.

### **Could you provide insights into the initiatives that your organization implemented to address water scarcity and promote sustainable water management in India?**

Several initiatives to promote sustainable water management. Here are some key insights into these initiatives:

**Water Conservation and Management:** Several states in India have implemented water conservation and management projects, such as the Sujalam Sufalam, Jal Sanchay Abhiyan in Gujarat and the Jal Yukta Shivar Abhiyan in Maharashtra. These initiatives aim to recharge groundwater, improve water storage capacity, and promote water-efficient practices. Our pumps had been distributed to

government abhiyan's and different government projects for water management and water scarcity.

These initiatives demonstrate India's commitment to addressing water scarcity and promoting sustainable water management practices across various sectors. However, it is an ongoing challenge, and continued efforts are required to ensure the effective implementation and long-term sustainability of these initiatives.

**What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

Several key technologies and innovations are transforming the water industry in India, leading to improved efficiency and sustainability. Here are some of the advancements making an impact:

**Smart Water Grids:** Smart water grids leverage advanced sensors, real-time data analytics, and communication technologies to monitor and manage water distribution networks efficiently. These grids enable proactive leak detection, remote monitoring of water quality, and optimized water flow management, reducing losses and conserving resources.

**Water Treatment Technologies:** Advanced water treatment technologies like membrane filtration, reverse osmosis, and UV disinfection are being increasingly adopted in India. These technologies enhance water quality, remove contaminants, and make water suitable for various applications, such as drinking, irrigation, and industrial processes.

**Internet of Things (IoT):** IoT devices and connectivity enable remote monitoring and control of water infrastructure. For example, IoT-based water meters provide real-time data on water consumption, aiding in efficient billing, leak detection, and demand management.

**How can public-private partnerships play a role in addressing the water challenges in India? Can you share any successful examples of such collaborations?**

Public-private partnerships (PPPs) can indeed play a significant role in addressing water challenges in India. By leveraging the strengths of both the public and private sectors, PPPs can help improve water management, enhance infrastructure development, and promote sustainable water practices. Here are some ways in which PPPs can contribute to addressing water challenges in India:

**Infrastructure Development:** PPPs can mobilize private sector

expertise and funding to develop water infrastructure, such as water treatment plants, desalination plants, distribution networks, and wastewater management systems. This can help expand access to clean drinking water and sanitation facilities.

**Operation and Maintenance:** Private sector involvement in the operation and maintenance of water infrastructure can bring efficiency, technology, and innovation to enhance service delivery. It can ensure reliable water supply, reduce leakages, and optimize resource utilization.

**In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?**

In India, the water sector offers several significant opportunities for investment due to the country's diverse water challenges and the need for sustainable solutions. The following areas hold great potential for growth and development:

**Water Infrastructure Development:** Investing in water infrastructure projects such as the construction of water treatment plants, wastewater treatment facilities, distribution networks, and irrigation systems is crucial. There is a need to improve access to safe drinking water, enhance sanitation facilities, and expand irrigation capabilities to support agricultural productivity.

**Water Resource Management:** Efficient management of water resources is essential to meet the growing demand. Investments in technologies and practices that promote water conservation, water harvesting, and efficient water use in agriculture, industry, and urban settings can yield significant returns. This includes initiatives like rainwater harvesting, watershed management, and water recycling.

**How can the water industry in India leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes?**

Digitalization and data-driven approaches can play a crucial role in enhancing water management practices and decision-making processes in the water industry in India. Here are some ways in which the water industry can leverage these technologies:

**Smart Metering and Monitoring:** Deploying smart metering systems can provide real-time data on water consumption patterns, identify leaks, and enable efficient billing systems. By monitoring water usage and identifying abnormalities, water utilities can optimize

distribution, reduce non-revenue water, and improve operational efficiency.

**Internet of Things (IoT) Sensors:** IoT sensors can be installed in water infrastructure to collect data on water quality, pressure, flow rates, and infrastructure conditions. This data can help in proactive maintenance, early detection of leaks or pipe bursts, and efficient resource allocation.

**What are the key considerations when it comes to balancing the needs of various stakeholders in the water industry, such as agricultural, industrial, and domestic consumers? How can these conflicting demands be effectively managed?**

Balancing the needs of various stakeholders in the water industry, including agricultural, industrial, and domestic consumers, and effective management. Here are key considerations and strategies to address conflicting demands:

**Integrated Water Resource Management (IWRM):** Implementing an IWRM approach is crucial to ensure a holistic and coordinated management of water resources. IWRM encourages stakeholder participation, promotes efficient water use, and facilitates the equitable distribution of water resources. **Transparent Governance and Stakeholder Engagement:** Effective governance frameworks that are transparent, inclusive, and participatory are essential. Engaging stakeholders from different sectors in decision-making processes fosters collaboration, facilitates understanding of diverse needs, and helps identify mutually beneficial solutions. Regular dialogue, consultations, and information-sharing platforms can support consensus building and conflict resolution.

**What are the key lessons that India can learn from other countries or regions that have successfully addressed water challenges? How can these lessons be applied in the Indian context?**

India can learn several key lessons from other countries and regions that have successfully addressed water challenges. Here are some important lessons that can be applied in the Indian context:

**Integrated Water Management:** Countries like Australia and Singapore have implemented integrated water management approaches that prioritize collaboration among stakeholders, sustainable water use practices, and long-term planning. India can learn from their experiences and adopt integrated water management strategies to address water challenges effectively.

**Water Governance and Institutional Frameworks:** Many countries, such as the Netherlands and Germany, have established robust water governance frameworks and institutions that promote effective water management.

**How do you see the future of the water industry in India? What are your expectations for the next five to ten years in terms of technological advancements, policy changes, and overall development?**

The future of the water industry in India holds significant potential for advancements in technology, policy changes, and overall development. Here are some expectations for the next five to ten years:

**Technological Advancements:** We can expect increased adoption of digital technologies such as smart metering, IoT sensors, and data analytics to improve water management practices. Advanced technologies like artificial intelligence (AI) and machine learning (ML) may be employed for predictive modeling, leak detection, and optimized water allocation. Innovations in water treatment, desalination, and wastewater reuse technologies are also likely to emerge.

**Policy Changes:** There is an increasing recognition of the importance of integrated water resource management and the need for robust policies to address water challenges. We can anticipate the formulation of comprehensive water management frameworks.

**How can the government, private sector, and civil society collaborate effectively to ensure sustainable water management practices and secure water resources for future generations in India?**

Collaboration among the government, private sector, and civil society is crucial for ensuring sustainable water management practices and securing water resources for future generations in India. Here are some ways in which these sectors can collaborate effectively:

**Policy and Regulatory Frameworks:** The government can establish robust policy and regulatory frameworks that encourage collaboration and provide incentives for sustainable water management practices. This includes setting clear guidelines for water allocation, promoting water efficiency measures, and creating platforms for stakeholder engagement.

**Public-Private Partnerships (PPPs):** The government and private sector can form PPPs to jointly invest in water infrastructure development, operation, and maintenance. PPPs can leverage private sector expertise, technology, and funding while ensuring public oversight and accountability.

**What role can innovation and entrepreneurship play in driving positive change in the water industry in India? Are there any promising startups or initiatives that you find particularly inspiring?**

Innovation and entrepreneurship can play a significant role in driving positive change in the water industry in India. Here's how:

**Technological Innovations:** Startups and entrepreneurs can develop innovative technologies and solutions to address water challenges. This includes advancements in water treatment, desalination, wastewater management, water monitoring systems, and efficient irrigation practices. These innovations can enhance water quality, improve water access, and optimize water resource management.

**Sustainable Business Models:** Entrepreneurship can contribute to the development of sustainable business models that promote water conservation, reuse, and efficient water use. Startups can introduce innovative pricing structures, water-efficient products, and services that encourage responsible water practices among consumers and industries.

## Company Details:

**VISION OF MY COMPANY – TO MAKE OUTSTANDING REACH IN THE INDUSTRY OF WATER TREATMENT PLANTS.**

**NUMBER OF EMPLOYEES - 12**

**KEY ACHEIVEMENTS OF THE LAST YEAR – WE GOT A LOT OF CUSTOMERS FROM OUR LAST YEAR'S TRADE FAIR.**

**MAJOR ORDERS WON RECENTLY – 200 PCS.**

**NAMES OF MANAGING DIRECTOR AND SENIOR EMPLOYEES – MANAGING DIRECTOR- MR. ASHOK KUMAR, SENIOR EMPLOYEE- MR. MANISH KUMAR**



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## *In Conversation with:*

Mr. Amitosh Nagar,  
Regional Sales Manager – North,  
Hanna Instruments India

### **How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

The country, despite comprising 18 percent of the global population, possesses merely 4 percent of its water resources, resulting in it being ranked among the most water-stressed nations worldwide. A recent report from the government's policy think tank, NITI Aayog, highlights that a significant number of Indians experience high to extreme water stress.

Furthermore, over 50 percent of the population lacks access to safe drinking water, leading to a staggering annual death toll of approximately 200,000 people due to water-related issues. If the current rate of water consumption persists, India is projected to have only half the water required by 2030.

Droughts and floods have widespread impacts on all regions globally, presenting one of the most significant challenges for the water industry.

### **What are the major trends and developments you have observed in the water industry in India in recent years?**

The water management sector is embracing digitalization,

leveraging advances in material science, and incorporating hydrological engineering to enhance its operations. These progressive trends play a crucial role in purifying water, preserving it, and facilitating its reuse for diverse applications. As we look ahead, imaginative solutions are set to make these innovations even more readily available, environmentally sustainable, and economically viable.

### **Could you provide insights into the initiatives that your organization implemented to address water scarcity and promote sustainable water management in India?**

We are providing water testing Equipments which can help sustainable water management.

### **What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

Efficient monitoring and control of water supply networks are now made possible by the integration of advanced technologies such as SCADA (Supervisory Control and Data Acquisition) systems, smart meters, and automation. Additionally, the application of Geographical Information Systems (GIS), digital twins, and augmented and virtual reality (AR/VR) technologies allows for the visualization and modeling of situational scenarios, aiding in the detection of anomalies and proactive prevention of potential damage.

Furthermore, the utilization of 5G, blockchain, and cloud technologies ensures swift data transmission and robust security for water management solutions, enhancing the overall effectiveness and reliability of the systems.

### **How can public-private partnerships play a role in addressing the water challenges in India? Can you share any successful examples of such collaborations?**

Public-Private Partnerships (PPPs) offer the private sector a gateway to secure, long-term investment opportunities with reduced risk, supported by government contracts. These agreements facilitate the flow of private capital, present attractive investment prospects, and foster growth in local industries and job markets.

In an ideal scenario, PPPs create a mutually beneficial situation, allowing the private sector to collaborate with governments. Companies take on management responsibilities and a significant

portion of the associated risks in exchange for profits tied to their performance. Consequently, these projects open up new business avenues for companies, while also infusing public endeavors with the expertise, efficiencies, and financial resources of the private sector.

**In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?**

Water trade represents a mechanism that redistributes water to those who place higher value and demand on it, leading to improved market efficiency and water conservation. This effective and efficient water management approach holds particular significance in regions afflicted by severe drought and water scarcity.

**What are the key lessons that India can learn from other countries or regions that have successfully addressed.**

The Central Government continuously undertakes water conservation initiatives through various schemes and programs. These include the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Atal Bhujal Yojana, Pradhan Mantri Sinchayee Yojana (PMKSY), Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Unified Building Bye Laws (UBBL) of Delhi, 2016, Model Building Bye Laws (MBBL), 2016, and Urban and Regional Development Plan Formulation and Implementation (URDPFI) Guidelines, 2014, among others.

To apply the lessons learned from these initiatives in the Indian context, several steps can be taken:

**Integration and Collaboration:** Encourage coordination and collaboration between different governmental bodies, agencies, and stakeholders involved in water conservation efforts. This can avoid duplication of efforts and ensure effective implementation of initiatives.

**Community Participation:** Involve local communities in the planning and implementation of water conservation projects. Engaging the public can create a sense of ownership, leading to better long-term sustainability of initiatives.

**Data-Driven Decision-Making:** Emphasize the importance of data collection, analysis, and monitoring in guiding water conservation efforts. Data-driven decision-making can help identify areas of concern, track progress, and fine-tune strategies.

**Technology Adoption:** Leverage digitalization and innovative technologies to improve water management and monitoring systems. Implementing IoT devices, sensors, and data analytics can enhance efficiency and resource allocation.

**Financial Support:** Ensure adequate funding and financial support for water conservation initiatives. Proper allocation of funds and transparent financial management are essential for successful implementation.

**Awareness and Education:** Conduct awareness campaigns and educational programs to promote water conservation practices among the public, industries, and agricultural communities.

**Rainwater Harvesting:** Encourage the adoption of rainwater harvesting techniques, both at the individual and community levels. This can help recharge groundwater and reduce dependence on surface water sources.

**Efficient Irrigation Practices:** Promote the use of water-efficient irrigation techniques like drip and sprinkler irrigation in agriculture to optimize water usage.

**Reuse and Recycling:** Implement water recycling and reuse systems in urban areas and industries to reduce water demand and wastage.

**Ecosystem Restoration:** Focus on restoring and protecting natural ecosystems like wetlands and watersheds, as they play a crucial role in water conservation and regulation.

By adopting these lessons and strategies, the Indian context can benefit from improved water conservation practices, leading to better management of water resources and addressing water challenges effectively.

**How do you see the future of the water industry in India? What are your expectations for the next five to ten years in terms of technological advancements, policy changes, and overall development?**

India's total water demand is forecasted to witness a significant rise of 22% by 2025 and a substantial 32% by 2050. Notably, about 85% of this escalated demand is expected to be driven solely by the industrial and domestic sectors by the year 2050. Regions in the south and northwest are anticipated to experience the most severe impacts in the coming years.

Over the next decade, various advanced technologies such as machine vision, language processing, speech and gesture recognition, pattern recognition, real-time AI, Embedded AI or ML, AIOps, MLOps, and more are expected to witness notable growth and implementation.

**Can you highlight any notable projects or initiatives that your organization or you personally have been involved in to address water-related issues in India? What were the outcomes and lessons learned from these experiences?**

## **SARHAD DAIRY (KUTCH, GUJARAT)**

In January 2013, Sarhad Dairy initiated its milk processing plant in Lakhond, ta-Bhuj-Kutch, where they began processing milk and packaging it in milk pouches under the renowned brand name "AMUL."

As a member of the Gujarat Cooperative Milk Marketing Federation, Sarhad Dairy plays a crucial role in balancing milk demand and supply. They achieve this by collecting milk from rural areas and distributing it to urban regions.

Previously, the dairy faced challenges in maintaining critical parameters such as COD, BOD, and DO on a daily basis. They relied on the manual titration method (WINKLER TITRATION) to check these parameters. However, complying with government NOMS (National Organic Milk Standards) requirements proved to be difficult due to inconsistent and inaccurate results from manual titration.

To overcome this issue, Sarhad Dairy sought the expertise of HANNA, a specialized company in water analysis and testing equipment. They provided a milk sample for a demonstration to measure specific parameters like DO, COD, and BOD, and the results were found to be satisfactory. With the adoption of HANNA's advanced testing equipment, Sarhad Dairy could now ensure more accurate and reliable measurements, meeting the necessary NOMS standards with confidence.

The HI5421 is a sophisticated bench meter designed for professional use, equipped with a color graphic LCD, specially tailored for precise measurements of DO (Dissolved Oxygen), BOD (Biochemical Oxygen Demand), OUR (Oxygen Uptake Rate), SOUR (Specific Oxygen Uptake Rate), and temperature.

To facilitate DO measurements, the HI5421 comes with a robust clark-type polarographic probe (HI76483), enclosed within a durable hard plastic cap.

For COD (Chemical Oxygen Demand) measurement, the HI83399 multi-parameter photometer offers a compact and versatile solution. This meter features two measurement modes, namely Photometer and Probe. In Photometer mode, it incorporates a CAL Check™ feature and offers an impressive selection of 88 different methods, catering to a wide range of applications. The meter operates based on light absorption phenomena, ensuring accurate and reliable COD measurements.

**How can the government, private sector, and civil society collaborate effectively to ensure sustainable water management practices and secure water resources for future generations in India?**

Civil society plays a pivotal role in influencing water resource management and can significantly contribute to governance processes that impact the approach to water management. One of the essential roles of civil society is to promote the achievement of optimal and sustainable balances among the diverse users and purposes of water resources. By actively engaging in water-related matters, civil society helps shape the nature and dynamics of water management practices, leading to more inclusive and effective solutions for water utilization and conservation.

## **Miscellaneous Questions:**

**Favourite Book/Author – Failure is a teacher by APJ abdul Kalam**  
**Favourite Movie – Apocalypse**  
**Favourite Holiday Destination – Hill stations**





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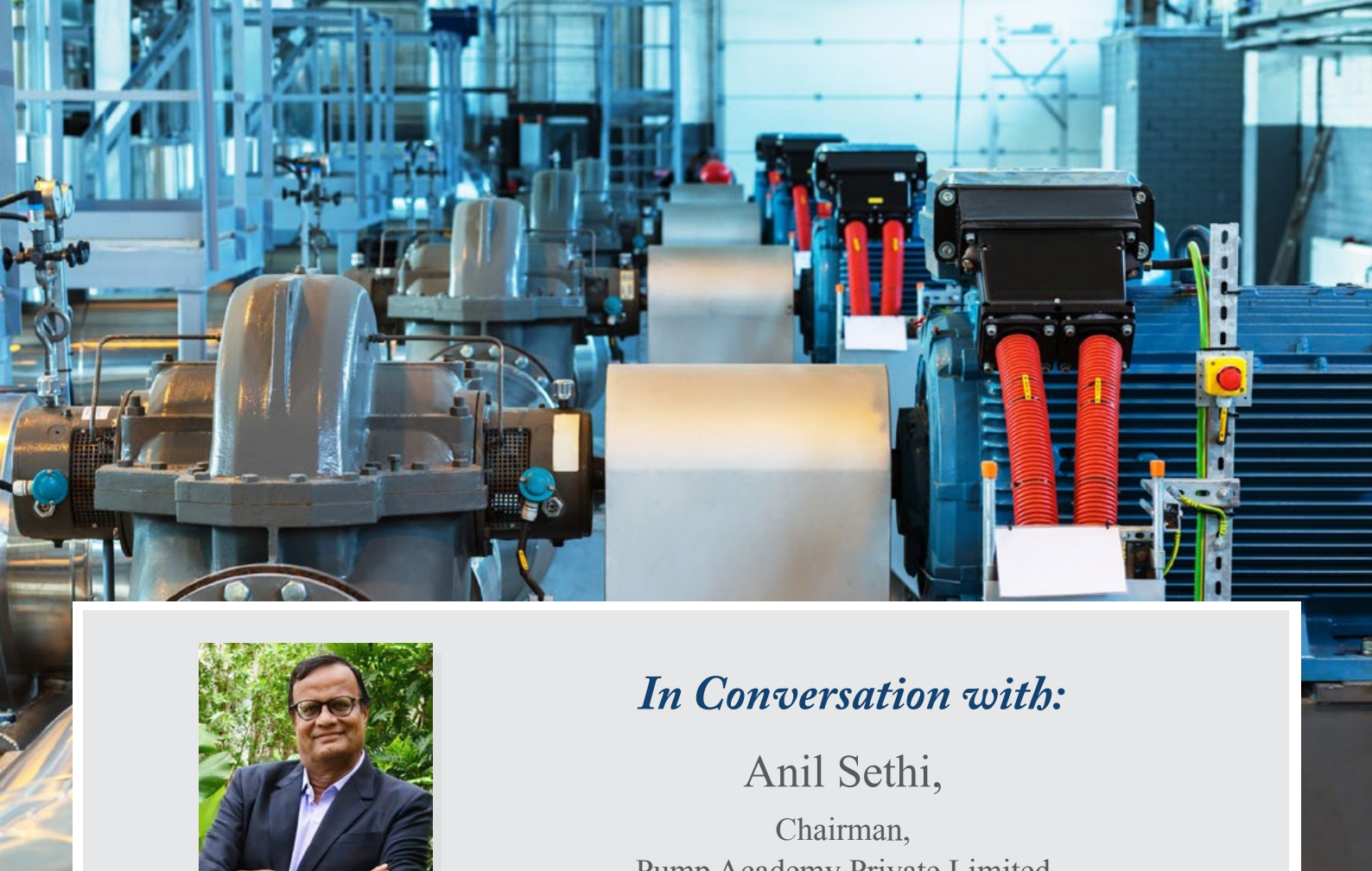
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## *In Conversation with:*

Anil Sethi,

Chairman,

Pump Academy Private Limited

### **How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

Water is essential, not only for humans but also for the economy to prosper. The water sector in India is very important due to its large population and ambitious economic development needs. While the country's population is growing, water resources are depleting making it scarce and leading to a looming water crisis. This alarming situation poses significant challenges to find sustainable solutions to conserve and manage the diminishing water supplies.

Among the key challenges India is facing, the most significant is ensuring access to safe and clean drinking water for its large population. Proper management of wastewater is another pressing concern including water quality issues, contamination from municipal and industrial wastewater discharge, agricultural run-off, and inadequate sanitation practices. Pollutants such as heavy metals, pesticides, and pathogens pose health risks to the population. The scarce resource has put several regions in India under acute water stress; over 40 percent of the total population is suffering. The unsustainable practices in Indian agriculture

sector are a major concern as it accounts for over 80 percent of the total water withdrawals and usage. The water infrastructure is aging and at most places it is in urgent need of repair and upgrades. The huge water loss almost 50 percent of the municipal water supplies is attributed to dilapidated infrastructure and distribution network. Another significant challenge is to organize massive financial investments in rebuilding and refurbishing water infrastructure, adopting technology and implementing best practices for developing resilient water management plans while also mitigating the impacts of climate change.

### **What are the major trends and developments you have observed in the water industry in India in recent years?**

Water industry has witnessed multi-dimensional growth in response to the challenges it faces. The scarcity has enforced the government and other stakeholders to implement several measures to address the crisis. There has been a growing emphasis on water conservation campaigns with rainwater harvesting, watershed management, and water-efficient irrigation techniques to reduce water consumption and improve water availability. The

ongoing efforts to expand water supply network particularly in the rural areas under the ambitious 'Jal Jeevan Mission' with significant fund allocation is progressing well. The government has been investing in the construction of water treatment plants, distribution networks, storage facilities, resource augmentation, and wastewater treatment to enhance water supply capacity and reduce water shortages.

The trend in the past over a decade that is gaining traction is adoption of smart water management tools. The new age technologies including remote sensing, data analytics, Internet of Things (IoT), efficient monitoring, leakage detection, pumping station optimization and management of water resources and distribution networks are being widely implemented. The emerging trends and developments indicate a transition towards sustainable water management practices, remarkable technological advancements, and a comprehensive approach to tackle water challenges in India.

### **Could you provide insights into the initiatives that your organization implemented to promote sustainable water management in India?**

Pumping station is a vital water supply infrastructure and plays a critical role in ensuring continuous and reliable water supply to various destinations, such as households, industries, and agricultural fields. As urbanization and population growth continue to accelerate, the demand for water is escalating and as the infrastructure is aging, optimization becomes essential to meet current and future water requirements while minimizing energy consumption and operational costs. A research conducted by MDPI (Multidisciplinary Digital Publishing Institute), Switzerland reveals that pumping systems consume a staggering 20 percent of world's total energy consumption. This not only poses a significant energy challenge but also places a substantial financial burden on water utilities and industries.

Pump Academy Private Limited has introduced a groundbreaking solution called, iPUMPNET, which aims to revolutionize the operation and management of pumping stations. With a strong focus on encouraging innovation and harnessing the potential of digital technologies, the meticulously designed approach is set to significantly enhance efficiency and transform this landscape. The IoT-enabled iPUMPNET revolutionizes the management of pumping stations by optimizing operations and enhancing energy efficiency, thus transforming ordinary pumps into smart and responsive units. This secure and centralized platform provides real-time monitoring of pumping stations' operation through an intuitive dashboard accessible via internet and mobile applications.

The key benefits of implementing iPUMPNET in pumping stations:

- It can improve operational efficiency upto 35 percent, reduce energy consumption upto 40 percent, reduce the life cycle cost (LCC) of pumping stations upto 45 percent, and extend the lifespan of pumping systems upto 50 percent
- It practically eliminates unscheduled breakdowns and maintenance
- It is estimated that almost 5 GW of energy could be saved if iPUMPNET is implemented across all water pumping stations in India,
- It results in considerable reduction of carbon footprint, almost 3.06 million tonnes, if implemented across India, helping with environmental sustainability
- The return on investment for optimization will happen normally within a year.



### **How can the water industry in India leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes?**

The water industry in India has recognized the potential of digitalization and data-driven approaches as powerful tools to enhance water management practices and decision-making processes. Embracing these technologies offers measurable benefits, including improved efficiency, increased transparency, and better utilization of water resources.

Digital intervention in terms of smart metering, sensors to monitor water consumption, pressure, and flow rate etc. are being implemented by several water utilities in the country. These smart devices provide accurate data, identify leaks, optimize pumping station functioning, improve distribution, and implement demand management strategies effectively. Geographic Information

Systems (GIS) and remote sensing technologies are used to map and analyze water resources, including groundwater levels, surface water availability, and watershed systems. Data analytics and predictive modeling techniques are employed to analyze historical and real-time data to predict demand patterns, optimize water supply, and plan maintenance activities more efficiently. IoT devices are deployed to enable automated control and monitoring of water infrastructure as we are doing for the pumping station through proprietary solution, iPUMPNET.

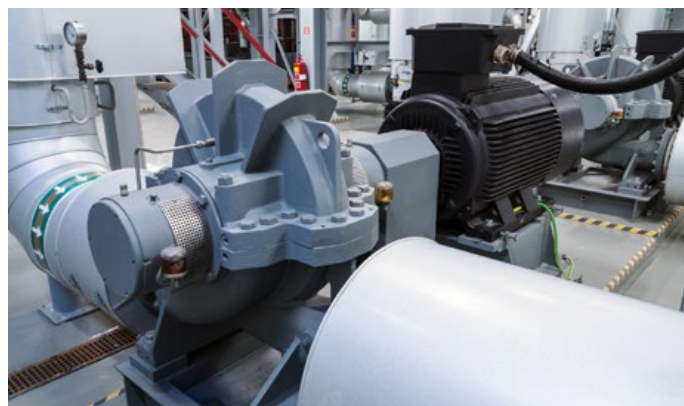
These technologies along with other interventions empower water utilities with valuable insights, enabling them to make informed decisions and address water challenges more effectively, ultimately leading to resilient and sustainable water future.

**Can you highlight any notable projects or initiatives that your organization or you personally have been involved in to address water-related issues in India? What were the outcomes and lessons learned from these experiences?**

My career in water industry spans almost five decades where I have experienced implementing several hundred medium and large water infrastructure projects spread across the length and breadth of India. I have been a part of some of the country's landmark water supply and irrigation projects and have personally supervised the installation, operation, and management of more than 400 large and medium pumping stations across the country. I remember a very challenging project in Rajasthan where we had to implement an urban-rural water supply projects in a very difficult terrain with hostile weather conditions within a tight timeframe.

The water supply project with 108 kilometers pipeline laying in Pali, Rajasthan was completed in record time that has resolved the extreme water crisis of Pali city; benefiting about a million populations residing in 531 villages and 10 towns. There are numerous examples of critical water projects that I have handled in making drinking water provisions for more than 5 crore people in the country, especially in areas of extreme water scarcity where clean drinking water was extremely precious.

Each project's lessons are distinctive, shaped by the specific context and challenges encountered during the implementation. However, the key for successful projects are the commitment to continuous improvement and adaptive management. By embracing these principles, projects can effectively address challenges; implement sustainable solutions that lead to improved water accessibility, long-term infrastructure resilience, and positive environmental impacts.



## Company Details Required:

**VISION OF MY COMPANY** – Energizing a sustainable green world through technology

**NUMBER OF EMPLOYEES** - 200 (group)

**KEY ACEIVEMENTS OF THE LAST YEAR** – iPUMPNET, the technologically advanced pump optimization solutions is being implemented to make a large pumping station smart and responsive in Bengaluru.

**MAJOR ORDERS WON RECENTLY** – The BWSSB order for pumping station optimization

**NAMES OF MANAGING DIRECTOR AND SENIOR EMPLOYEES** – Deepak Sethi, Director Strategy; Ravindra K Shetty, Director Engineering Design; Amar Muniraju, Lead Embedded Engineering; Chandramohan MS, Project Administrator

## Miscellaneous Questions:

**Favourite Book/Author** – “The Big Thirst: The Secret Life and Turbulent Future of Water” by Charles Fishman

**Favourite Movie** – “FLOW: For the Love of Water” by Irena Salina for highlighting world's depleting fresh water supply

**Favourite Holiday Destination** – Mauritius, for its calm and serene seashore and natural habitat

**One piece of advice for 'EverythingAboutWater'** - Strive for accurate and up-to-date information to provide readers with reliable source about water issues, technologies, and solutions.

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*In Conversation with:*  
**Naser Azeez Mohammed,**  
Managing Director,  
Aquality Water Solutions Pvt. Ltd.

**How would you describe the current state of the water industry in India, and what are the key challenges it faces?**

India, the most populated country has a very large water market while also amongst the most water-stressed countries in the world. Estimated over 600 million people are facing extreme water stress. The country is facing a difficult challenge having only 4 percent of world's water resources for catering the needs of 18 percent of the world's population.

The water Industry in India is marked by both opportunities and significant challenges due to various factors, including population growth, rapid trends of urbanization, economic development, faster pace of industrial expansion, and climate change.

The significant challenges being faced by the sector includes extreme water stress, depleting groundwater, contaminated water sources, strained urban water supply systems, aging and

inadequate water infrastructure, and high level of non-revenue water. The other notable challenges are a significant portion of the rural population still lacks access to reliable water sources, apart from inadequate sewage treatment plants leading to large amount of wastewater disposal without treatment making rivers and water bodies more polluted, water governance issues, lack of technology intervention, slow adoption of innovative water management initiatives among others.

The water industry in India presents a complex landscape, demanding continuous commitment from the government, private sector, and communities to address its diverse challenges and ensure the nation's future water management is sustainable.

**What are the key technologies and innovations that are transforming the water industry in India? How are these advancements improving efficiency and sustainability?**

India is not only on the cusp of economic growth, but water sector is also transforming and growing. The Indian water and wastewater treatment (WWT) technology market was valued at USD 2,100 million in 2021 is projected to register a cumulative growth of greater than 8% per annum during the period of 2022-2027.

Some of the key technologies and innovations that are transforming the water industry in India include AMI infrastructure, digital twins, intelligent asset management, geographical information systems, 5G, data analytics, artificial intelligence, internet of things (IoT), remote monitoring, smart metering and control, advance leak detection, and solar-powered water treatment solutions among others. The technology has enabled decentralized water and wastewater treatment systems to reduce burdens on centralized infrastructure and enabling reuse of treated water for non-potable purposes.

The advancements in technology and innovation are improving efficiency and sustainability in the water industry in India. It helps water utilities and municipalities to have a better management and control of water resources, reduction of water losses, optimization of energy consumption, and the provision of safe and reliable water supply. Ultimately, these advancements contribute to water conservation, environmental protection, and long-term sustainability in the water sector.

**In your opinion, what are the most significant opportunities for investment in the water sector in India? Which areas hold the greatest potential for growth and development?**

With growing population and increasing commercial activities, demand for clean water is growing uninterruptedly providing opportunities to large scale investment in Indian water sector. Among the significant opportunities available, investment in water infrastructure is important. It includes projects related to water supply systems, treatment plants, distribution networks, sewage treatment, and solar powered water treatment facilities with a focus on improving water availability, quality, and efficiency. There is a need for even rehabilitation of existing infrastructure.

With large and growing industrial sector, there is a need for effective water treatment and reuse solutions for industries. Investing in industrial water treatment plants, including technologies like reverse osmosis (RO), ultrafiltration (UF), and zero liquid discharge (ZLD) can help industries meet regulatory requirements, reduce water consumption, and minimize pollution.

Investing in water technologies holds the key to driving innovations.



The areas that holds the promising technology intervention are in water treatment and purification, recycling and reuse, smart water distribution and network management, remote sensing and GIS for resource assessment, desalination, and water-saving technologies.

Investing in water sector is not only crucial for addressing current water challenges but also for building a more resilient and sustainable water future. Collaboration between governments, private sectors, research institutions, and local communities is essential to understand the need and address the issues effectively to ensure a more water-secure India.

**What are the key lessons that India can learn from other countries or regions that have successfully addressed water challenges? How can these lessons be applied in the Indian context?**

There are quite a number of successful examples available globally. Several countries have demonstrated positive approaches in effectively addressing water challenges. These shining examples showcase innovative solutions and best practices that have made a positive impact on water management and sustainability.

**Some of the valuable lessons that India can learn and adopt are as follows:**

- **Integrated Water Management:** Australia has implemented integrated water management approaches that consider the entire water cycle and balance the needs of different sectors. India can adopt similar strategies by integrating water resource planning, water allocation, and demand management across sectors to ensure sustainable water management.

- **Water Reuse and Recycling:** Countries like Singapore and Israel have implemented advanced water reuse and recycling systems to treat their wastewater for reuse facilities even for drinking purposes. India can learn from these experiences by promoting safe and efficient reuse of treated wastewater for at least non-potable purposes in irrigation and industries, reducing pressure on freshwater sources and increasing water availability.
- **Sustainable Agriculture Practices:** Countries like Israel and Spain have implemented innovative agricultural practices such as drip irrigation and precision farming to optimize water use in agriculture. India can adopt these practices and promote efficient irrigation techniques, crop selection, and water-efficient agricultural technologies to reduce water demand in the agriculture sector.
- **Technology and Innovation:** Embracing technological advancements and innovation can greatly contribute to addressing water challenges. Countries like Israel have invested heavily in research and development to develop innovative water technologies that is helping them to efficiently catering the water needs despite resource crunch. India can promote research, innovation, and technology transfer in areas such as water treatment, efficient irrigation, leak detection, and data-driven water management solutions.
- **Water Governance and Institutional Frameworks:** Netherlands have established decentralized governance systems, involving local communities, water boards, and stakeholders. Effective water governance and strong institutional frameworks are crucial for successful water management and India can benefit from enhancing stakeholder engagement, establishing clear roles and responsibilities, and creating robust regulatory and enforcement mechanisms.
- **Rainwater Harvesting and Conservation:** India can draw lessons from countries like Brazil and Thailand, where rainwater harvesting and conservation practices have been successfully implemented. Encouraging decentralized rainwater harvesting systems, promoting water conservation practices at the community level, and integrating traditional water management practices can enhance water availability and resilience.

The successful experiences and case studies of other countries in mitigating their water challenges can be replicated in the Indian context to develop tailored strategies and approaches for effectively addressing the issues, ensuring improved and sustainable water management and achieving better water security.

**Could you provide insights into the initiatives that your organization implemented to address water scarcity and promote sustainable water management in India?**

Aquality Water Solutions Pvt. Ltd. is an ISO 9001:2015 certified leading provider of domestic, industrial, institutional and commercial water treatment systems. With the proprietary technologies, it provide innovative and custom-designed high quality water treatment solutions to consistently deliver safe drinking water to its diverse clientele that include civilian households to defense establishments, commercial establishments, institutions, technology companies including ultrapure water to industries.

It firmly upholds the belief that innovation plays a vital role in the growth and sustainability of any organization. While achieving high growth is crucial for success, it alone may not guarantee community development and environmental preservation. In the present socio-economic context, where global environmental concerns have taken center stage, focusing on local efforts that bring widespread benefits becomes imperative.

What distinguishes us is our integrated approach towards water treatment and management. We firmly believe that addressing water-related challenges is not only essential for the growth and sustainability of organizations but also for the well-being of communities and the environment. By combining innovation with effective water treatment and management strategies, we aim to contribute positively to local efforts and global environmental concerns.

At Aquality Water Solutions Pvt. Ltd., our focus on cooperation over competition allows us to collaborate with various stakeholders, pooling resources and expertise to achieve the most efficient and impactful results. Our commitment to sustainability ensures that our water treatment solutions not only meet short-term needs but also preserve precious resources for future generations.

We are passionate about creating livelihood opportunities in the water industry, nurturing a skilled workforce that can contribute to water management efforts worldwide. By delivering holistic solutions and emphasizing value creation, we aim to make a meaningful difference in the communities we serve.

**What kind of innovative water treatment system your company has introduced recently and how it is beneficial for people?**

Aquality Water Solutions Pvt. Ltd. leads the way in making



clean drinking water accessible to people, security forces, and establishments worldwide, particularly in African and Middle Eastern countries where access to clean water poses significant challenges. At the heart of this endeavor lies our pioneering solution, the Solar Powered Water Filtration System, which has played a crucial role in addressing this pressing issue.

It features a high-speed water filtration unit capable of purifying water from virtually any source, whether it's hand pumps, swamps, wells, floods, rivers, or even wastewater. This cutting-edge technology embedded system offers an ideal source of

clean water without the need for significant investment. Our system employs advanced purification techniques to make water absolutely clean, eliminating contaminants and impurities. The result is the production of high-grade water, perfectly suitable for drinking, without relying on conventional electricity requirements.

With this groundbreaking solution, Aquality Water Solutions empowers communities and establishments to access a sustainable and reliable source of clean drinking water, contributing significantly to improved health and well-being across the globe.

### Company Details Required:

**VISION OF MY COMPANY** - Become a market leader in water treatment solutions and setting the benchmark in customer satisfaction with quality, integrity and value creation. We think about creating systems for the future.

**NUMBER OF EMPLOYEES** – 50+

**KEY ACHIEVEMENTS OF THE LAST YEAR** – Completed several water treatment projects as well as recognized as Top Most Water Leaders of India Award 2022.

**MAJOR ORDERS WON RECENTLY** – We received orders for providing drinking water treatment solutions to two international companies and commercial establishments in India.

**NAMES OF MANAGING DIRECTOR AND SENIOR EMPLOYEES** – Mariya Azeez, Director; Afroz Musthafa, General Manager

### Miscellaneous Questions:

**Favourite Book/Author** - "The Water Will Come: Rising Seas, Sinking Cities, and the Remaking of the Civilized World" by Jeff Goodell

**Favourite Movie** - "The Water Diviner" by Russell Crowe which touches upon the importance of water in arid regions and how it impacts communities.

**Favourite Holiday Destination** – Dubai, for its true international culture, a global hub for trade, tourism, and innovation.

**One piece of advice for 'EverythingAboutWater'** – Make it a unique platform for important and up-to-date information on water related topics.



## *In Conversation with:*

Abdul Rahman  
Mohammed,  
CEO,  
Sahara Industry

### **What are the major trends and developments you have observed in the water industry in India in recent years?**

With its huge population and economic development goals, India is among the largest water markets in the world. India's population has been growing at an unprecedented pace, 320 million added in last two decades. This rapid growth put tremendous strain on the water resources, and the quality also severely compromised due to pollution from industrial and municipal waste.

The water and wastewater management market size in India stood at INR 216.03 Bn in 2022 is expected to reach INR 518.15 Bn by 2027, expanding at a compound annual growth rate (CAGR) of 15.95% during the 2023 - 2027 periods.

Given its substantial size and requirements, the water industry in India has witnessed evolving trends in the recent years that include an increasing emphasis on water conservation and efficient management practices owing to rising water scarcity in several regions. Due to increasing water pollution and diminishing freshwater sources, there has been a focus on wastewater treatment and reuse. The adoption of smart technologies in water management is gaining momentum to monitor water quality, consumption patterns, and distribution networks, allowing for real-time decision-making and efficient water allocation. Several water utilities in the country have initiated project development and management through Public-Private Partnerships (PPP) models to improve water infrastructure and services.

Desalination plants are being setup in the regions facing acute water scarcity and other places are exploring desalination as a viable option to meet their freshwater needs. The Government of India has been working on policy reforms agenda to address water-related issues effectively. National and state-level water policies have been updated to incorporate sustainable water management practices, promote water use efficiency, and safeguard water resources. The climate change impacts have increased over the years and efforts are being made for better water security. Climate-resilient water management strategies are being explored to mitigate the effects of extreme weather events on water availability and quality.

**How can public-private partnerships play a role in addressing the water challenges in India? Can you share any successful examples of such collaborations?**

Public-private partnership (PPP) are a way to address infrastructure development challenges by leveraging private sector expertise and financing to deliver projects on time and within budget. PPP can help in developing water infrastructure, such as water treatment plants, distribution networks, and sewage systems. Private entities can bring in investment, technical expertise, and operational efficiency, while the public sector provides regulatory oversight and ensures equitable access to water services. Its role in addressing water challenges in India by leveraging the strengths and expertise of both sectors have been experimented with some successful examples of such collaborations:

- The 24x7 Water Supply Project in Nagpur is a successful PPP initiative. It involves a 25-year concession agreement between the Nagpur Municipal Corporation and a private consortium for the improvement, operation, and maintenance of the city's water supply system. The project has improved service delivery, reduced water losses, and ensured round-the-clock water supply to citizens.
- The Smart Water Grid Project in Hyderabad, undertaken as a PPP, incorporates advanced technology such as smart meters, sensors, and real-time data analytics to monitor and manage water supply. The project has improved operational efficiency, reduced non-revenue water, and enabled consumers to track their water usage in real-time.
- The Delhi Jal Board partnered with a private operator under a PPP arrangement to improve the management of the city's specific areas water supply system. This collaboration involved knowledge transfer, training programs, and capacity building. The partnership helped in enhancing operational efficiency and service delivery.

- The Tirupur Water Supply and Sewerage Project in Tamil Nadu is a PPP initiative that transformed the city's water supply and sewerage systems. The project involved private sector investment and expertise, resulting in improved water supply, better sewerage services, and revenue generation for the project stakeholders.

While PPPs offer opportunities for addressing water challenges, it is important to ensure transparency, accountability, and equitable access in such partnerships. Robust regulatory frameworks, clear contractual agreements, and effective monitoring mechanisms are crucial to mitigate risks and ensure the public interest is safeguarded in these collaborations.

**How can the water industry in India leverage digitalization and data-driven approaches to enhance water management practices and decision-making processes?**

The water industry in India has the opportunity to harness digitalization and data-driven approaches, leading to significant improvements in water management practices and decision-making processes. By integrating technology and utilizing data effectively, several avenues can be explored for enhancing the efficiency and sustainability of water-related operations.

- Real-time Monitoring: Digital sensors and Internet of Things (IoT) devices can be deployed to collect real-time data on water quantity, quality, and infrastructure performance. This data can help monitor water sources, distribution networks, pumping stations and treatment processes, enabling timely interventions and improving operational efficiency.
- Data Analytics: Advanced data analytics techniques can be employed to analyze large volumes of data and extract valuable insights. Machine learning algorithms and predictive modeling can help identify patterns, forecast water demand, detect anomalies, and optimize water allocation and distribution.
- Leak Detection and Water Loss Management: Digital technologies like acoustic sensors and pressure monitoring systems can assist in early leak detection, reducing water losses in distribution networks. Data-driven approaches can help prioritize repairs, improve maintenance practices, and optimize the efficiency of water supply systems.
- Water Quality Monitoring: Continuous monitoring of water quality parameters through digital sensors and remote monitoring systems can provide real-time information on water contamination levels. Data-driven approaches can enable proactive measures for water treatment and



purification, ensuring the supply of safe and clean drinking water.

- **Smart Metering and Consumer Engagement:** Smart water meters can provide real-time information on water consumption patterns at the consumer level. This data, combined with digital platforms and mobile applications, can empower consumers to monitor and manage their water usage effectively. It can also facilitate demand-side management initiatives and promote water conservation.
- **Integrated Water Management:** Digitalization can facilitate the integration of data from different sectors, such as agriculture, industry, and urban planning, for holistic water management. Integrated data platforms and modeling tools can support water allocation, watershed management, and climate change adaptation strategies.
- **Public Awareness and Engagement:** Digital platforms, social media, and mobile applications can play a significant role in raising public awareness about water conservation, pollution prevention, and sustainable water management practices. These platforms can provide educational resources, tips, and tools to engage and empower individuals and communities about best use practices and water conservation.

By leveraging digitalization and data-driven approaches, the water industry in India can enhance efficiency, optimize resource allocation, improve decision-making, and foster sustainable water management practices. It requires investment in technology infrastructure, data collection systems, data analytics capabilities, and the development of robust governance frameworks to ensure data security and privacy.

**Could you provide insights into the initiatives that your organization implemented to address water scarcity and promote sustainable water management in India?**

For the past two decades, Sahara Industry has been a prominent player in the water industry, driven by the mission of providing safe drinking water and efficient solutions for industrial and institutional needs. As a leader in the vast and ever-evolving field of water and wastewater treatment, we offer unparalleled expertise in delivering authentic products and services. Our commitment to innovation is evident as we embrace cutting-edge technology and digital solutions in our endeavors. With a strong focus on clean drinking water, ultrapure water for industries, and wastewater treatment for reuse, we have extended our reach both within India and abroad.



Our ability to leverage state-of-the-art machinery and advanced manufacturing techniques has been instrumental in achieving this feat. With a team of highly qualified engineers at the forefront, we have established ourselves as a homegrown leader in developing cutting-edge water and wastewater treatment solutions that meet global standards. Driven by a market-oriented approach and guided by modern systems and processes, our recent accomplishments include a significant clean drinking water project for a luxurious hotel in Hyderabad and another project for a



prominent chain of stores. As our list of reputable clients continues to expand, we remain dedicated to delivering high-quality products and maintaining excellent service standards.

Our technical expertise and profound understanding of the water sector allow us to offer the most integrated and strategic approach to industrial and municipal water and wastewater treatment systems. Sahara Industry provides multi-disciplinary water and wastewater treatment and engineering services, drawing from our vast experience in implementing numerous water treatment solutions with an integrated project approach.

## Company Details Required:

**VISION OF MY COMPANY** – Ensuring universal access to clean and affordable water for every individual, community, and industry.

**NUMBER OF EMPLOYEES** – 300+

**KEY ACHIEVEMENTS OF THE LAST YEAR** – Several industrial water and institutional water treatment projects completed and commissioned.

**MAJOR ORDERS WON RECENTLY** – Water treatment project order received from Indian and international clients. Collaborate with international solution providers to offer the finest quality water treatment equipment and chemicals.

### NAMES OF MANAGING DIRECTOR AND SENIOR EMPLOYEES -

Mohammed Abdul Rasheed, Head Technical; Faizan Ahmed Khan, Head Projects

## Miscellaneous Questions:

**Favourite Book/Author** - “Cadillac Desert” by Marc Reisner

**Favourite Movie** - “Water on the Table” by Liz Marshall for thought-provoking message on water-related issues.

**Favourite Holiday Destination** - Bali, Indonesia for tropical paradise with spectacular beaches, landscapes and rich cultural heritage.

**One piece of advice for ‘EverythingAboutWater’** – Make it a reliable source of knowledge and valuable resource for people seeking insights and solutions related to water issues and opportunities.

# HOW TO EVALUATE AND SELECT AN OZONE GENERATOR = PART 4

*Continued from last month*

## 1. RUNNING COSTS OF AN OZONE GENERATOR

The variable factors of ozone production can be classified into:

1. Feed Gas - Choice of feed Gas – Air Or Oxygen
2. Power consumption for ozone production
3. Cooling system – Air cooled or water Cooled ozone generators
4. Maintenance costs of the ozone system

The first three forms what is known as the THREE PILLARS OF OZONE GENERATION  
CHOICE OF FEED GAS

The choice of feed gas will determine the running cost of the ozone system. Whether to use Air or Oxygen as feed gas will depend on the application needs. Applications that need high concentration ozone will require the use of oxygen as feed gas. This is because as air Contains only around 21% oxygen, the concentration of ozone produced with air will never exceed 3-5% w/w , whereas with oxygen a concentration of upto 16 % can be used . Some of the High concentration applications are: Paper and Pulp, COD and Color Reduction ,disinfection and Ozonolysis. Other applications such as potable water treatment, process water, and municipal water treatment can use air as feed gas though in most cases oxygen is recommended here as well .Chemical reactions of ozone are not governed by ozone concentrations. Choice of right concentrations will however help in ozone mass transfer (cost of application) and help reduce cost of accessories.

### Air as the feed gas

When air is used as feed gas, the cost of application is determined by

1. Capital costs of air compressor, Air driers and filters

2. Running costs of air compressors and air driers
3. Maintenance costs of air compressor systems
4. Costs of ozone mass transfer

While using Air as feed gas, one should remember that the size of the ozone systems would be large. The cost of ozone mass transfer will affect the cost of application. Due to the volume of the gas involved in such applications, the hydro-injector system, the diffuser systems, the injector pumps have all to be sized accordingly, affecting the overall capital costs.

The technology of the ozone generating system will also determine the volume of air required for a specified ozone production. Good ozone generators require less air for producing the same weight of ozone, thereby bringing about a lower capital and subsequent running costs.

### Oxygen as Feed Gas

Using oxygen means, using a smaller ozone generator (Reduced capital costs) since the same ozone generator can produce



nearly double the quantity of ozone. The overall costs of ozone mass transfer devices will also be lower since relatively lower volume of gas is being used

When oxygen is considered the choice can be using oxygen by LOX (liquid oxygen supplied in tanks @ Rs 8- 12 per kg of oxygen ) , or oxygen produced through PSA or VSA .The choice between the two will depend on the local costs of liquid oxygen when compared to the investment, running and maintenance costs of a PSA system

When using oxygen as feed gas, the question of concentration arises. By using oxygen the concentration of Ozone obtained would be anywhere from 6-14%. Selecting a particular concentration would depend on the following factors

1. The application requirement
2. The local costs of power – the higher the concentration required, the more power would be required to produce ozone, but the requirement of oxygen will also be less. Lower concentration will involve lower power demand, but higher oxygen demand. So the total running costs have to be compared and the best alternative selected

### 3. POWER CONSUMPTION OF OZONE SYSTEM

4. Ozone production is a consequence of high voltage applied across a dielectric. The energy splits the oxygen molecules to atoms that recombine to form some ozone .Therefore along with oxygen requirement; power is also an important consideration.

Research has been done for more than decades to produce ozone with lower power. Today very good technologies are available that produce ozone with lower power. A good ozone generator should be able to produce 1 gram of ozone with about 8 watt of power or less .The higher the power applied, the more ozone is produced and the smaller the sizes of the equipment

5. Ozone produced from Air may require up to 15 Watts per gram of ozone as the power costs of air compression has to be included in the cost of ozone production.



*continued Next month*

**ISSUED IN PUBLIC INTEREST BY V.BARATHARAJ**

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**KOTTIVAKKAM OMR , CHENNAI 600 096**

**Tel: 44 4211 8266 .e-mail :otsilozone@gmail.com.  
web: www.otsil.net**

# TENDERS

## Retrofitting Including Special Repair And Rejuvenation Of Different Units Of 34 Mgd Treatment Plant At Dakshin Roypur For Fhtc Drive Under Surface Water Based W/S Scheme In The Arsenic Affected Areas Of South 24-Parganas District.

|                            |                                                                                                                                                               |                     |                   |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------|
| Authority                  | <b>Public Health Engineering</b><br><b>Name :</b> Se/Swc, Phe Dte.<br><b>Address:</b> 33 And 33/1, Chetla Central Road, Cit Market, 2nd Floor, Kolkata 700027 |                     |                   |
| Location                   | South 24 Parganas   West Bengal                                                                                                                               |                     |                   |
| <b>Bid Open Date</b>       | <b>16 Aug 2023</b>                                                                                                                                            | <b>Tender Value</b> | <b>5.19 Crore</b> |
| <b>Doc Collection Date</b> | <b>16 Aug 2023</b>                                                                                                                                            | FTID                | 230720231560      |

## Replacement Of Ms Pipe 350 Mm Dia And All Other Works For Upgradation Of Sewerage Treatment Plant At Sri Anandpur Sahib Block Sri Anandpur Sahib Distt. Rupnagar. Under Amtc. Sewerage Scheme Sri Anandpur Sahib

|                            |                                                                                                                                                          |                     |                 |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------|
| Authority                  | <b>Water Supply And Sanitation</b><br><b>Name :</b> Executive Engineer<br><b>Address:</b> Water Treatment Plant Dashmesh Academy Road Sri Anandpur Sahib |                     |                 |
| Location                   | Ropar   Punjab                                                                                                                                           |                     |                 |
| <b>Bid Open Date</b>       | <b>28 Jul 2023</b>                                                                                                                                       | <b>Tender Value</b> | <b>9.02 Lac</b> |
| <b>Doc Collection Date</b> | <b>28 Jul 2023</b>                                                                                                                                       | FTID                | 230720220860    |

## Operation And Maintenance Of Sewage Treatment Plant Of 25 Mld Capacity At Abohar Town (12 Months)

|                            |                                                                                                                       |                     |                  |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------|------------------|
| Authority                  | <b>Department Of Local Government</b><br><b>Name :</b> Corporation Engineer<br><b>Address:</b> Municipal Corp. Abohar |                     |                  |
| Location                   | Fazilka   Punjab                                                                                                      |                     |                  |
| <b>Bid Open Date</b>       | <b>09 Aug 2023</b>                                                                                                    | <b>Tender Value</b> | <b>56.46 Lac</b> |
| <b>Doc Collection Date</b> | <b>09 Aug 2023</b>                                                                                                    | FTID                | 230720220480     |

## Renovation And Up-Gradation Of Age Old And Damaged Lt Distribution Panel At Rwps Of Serampore Water Treatment Plant Under Kmda.

|                            |                                                                                                                                                                                                                  |                     |                 |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------|
| Authority                  | <b>Kolkata Metropolitan Development Authority</b><br><b>Name :</b> Ee (Em), Swtp, Kmda<br><b>Address:</b> Office Of The Executive Engineer (Em) Swtp, Em Sector, K.M.D.A., Thakurbati Street, Serampore, Hooghly |                     |                 |
| Location                   | Fazilka   Punjab                                                                                                                                                                                                 |                     |                 |
| <b>Bid Open Date</b>       | <b>26 Jul 2023</b>                                                                                                                                                                                               | <b>Tender Value</b> | <b>2.49 Lac</b> |
| <b>Doc Collection Date</b> | <b>26 Jul 2023</b>                                                                                                                                                                                               | FTID                | 23072027420     |

## Design Build And Operate Of Sewage Treatment Plants Along With Cotreatment Of Used Water And Septage With 5 Years Of Operation And Maintenance In Two Towns Ranirbazar And Mohanpur Of Tripura

|                     |                                                                                                                                                                         |              |              |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|
| Authority           | <b>Tripura Urban Planning And Development Authority</b><br><b>Name :</b> The Ee Tuda 4th Floor Ud Bhawan<br><b>Address:</b> Conference Hall Of Tuda 4th Floor Ud Bhawan |              |              |
| Location            | West Tripura   Tripura                                                                                                                                                  |              |              |
| Bid Open Date       | 30 Aug 2023                                                                                                                                                             | Tender Value | 16.02 Crores |
| Doc Collection Date | 30 Aug 2023                                                                                                                                                             | FTID         | 230720233710 |

## Design Build And Operate Of Sewage Treatment Plants Along With Cotreatment Of Used Water And Septage With 5 Years Of Operation And Maintenance In Three Towns Khowai Teliamura And Ambassa Of Tripura

|                     |                                                                                                                                                                         |              |              |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|
| Authority           | <b>Tripura Urban Planning And Development Authority</b><br><b>Name :</b> The Ee Tuda 4th Floor Ud Bhawan<br><b>Address:</b> Conference Hall Of Tuda 4th Floor Ud Bhawan |              |              |
| Location            | Dhalai   Tripura                                                                                                                                                        |              |              |
| Bid Open Date       | 30 Aug 2023                                                                                                                                                             | Tender Value | 25.95 Crores |
| Doc Collection Date | 30 Aug 2023                                                                                                                                                             | FTID         | 230720233720 |

## Maintenance And Repair Work Of Jackwell And Water Treatment Plant Of Pusad Municipal Council

|                     |                                                                                                                            |      |              |
|---------------------|----------------------------------------------------------------------------------------------------------------------------|------|--------------|
| Authority           | <b>Directorate Of Municipal Administration</b><br><b>Name :</b> Chief Officer Pusad<br><b>Address:</b> Chief Officer Pusad |      |              |
| Location            | Yavatmal   Maharashtra                                                                                                     |      |              |
| Bid Open Date       | 27 Jul 2023                                                                                                                |      |              |
| Doc Collection Date | 27 Jul 2023                                                                                                                | FTID | 230720250820 |

## Selection Of Contractor For Providing O M Of Existing 120 Mld Capacity Wtp At Ramnagra Which Includes, Intake Well, 33 Kv Substations At Intake Location And At Treatment Plant Location, Treatment Plant, Clear Water Pump House (80 Mld) Including All

|                     |                                                                                                                       |      |              |
|---------------------|-----------------------------------------------------------------------------------------------------------------------|------|--------------|
| Authority           | <b>Directorate Urban Administration And Development</b><br><b>Name :</b> Ee Water Jmc<br><b>Address:</b> Ee Water Jmc |      |              |
| Location            | Jabalpur   Madhya Pradesh                                                                                             |      |              |
| Bid Open Date       | 17 Aug 2023                                                                                                           |      |              |
| Doc Collection Date | 17 Aug 2023                                                                                                           | FTID | 230720258050 |

# TENDERS

## Supply Of Water Treatment Plant Ro 250 Lph For Mrs, Rg2 Area

|                            |                                                                                                                                                 |                     |                 |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------|
| Authority                  | <b>Singareni Collieries Company Limited</b><br><b>Address :</b> O/O Gm, Rg2, 8 Incline Colony-505211, Pincode 505211<br><b>City:</b> Ramagundam |                     |                 |
| Location                   | Ramagundam   Telangana                                                                                                                          |                     |                 |
| <b>Bid Open Date</b>       | <b>08 Aug 2023</b>                                                                                                                              | <b>Tender Value</b> | <b>1.06 Lac</b> |
| <b>Doc Collection Date</b> | <b>08 Aug 2023</b>                                                                                                                              | FTID                | 230720464300    |

## Design, Engineering, Supply, And Installation, / Commissioning Of Sewage Treatment Plant Unit , On Board Spares & Commissioning Spares For

|                            |                                                                                    |      |               |
|----------------------------|------------------------------------------------------------------------------------|------|---------------|
| Authority                  | <b>Goa Shipyard Limited</b><br><b>Name :</b> Goa<br><b>Address:</b> Pincode 403105 |      |               |
| Location                   | Goa                                                                                |      |               |
| <b>Bid Open Date</b>       | <b>08 Aug 2023</b>                                                                 |      |               |
| <b>Doc Collection Date</b> | <b>08 Aug 2023</b>                                                                 | FTID | 2307204175260 |

## Providing Arsenic Free Water Treatment Plant At Ganja More At Nimdaria Mouza 135 Sansad No Xii Under Nkpg Of Basirhat I Block Activity Code 57845484

|                            |                                                                                                                                                                    |                     |                 |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------|
| Authority                  | <b>Zilla Parishad</b><br><b>Address:</b> Vill Dakshin Kodalia Po Dakshin Bagundi Ps Basirhat Pin 743429 West Bengal India, Pincode 743429<br><b>City :</b> Bagundi |                     |                 |
| Location                   | Bagundi   West Bengal                                                                                                                                              |                     |                 |
| <b>Bid Open Date</b>       | <b>31 Jul 2023</b>                                                                                                                                                 | <b>Tender Value</b> | <b>3.49 Lac</b> |
| <b>Doc Collection Date</b> | <b>26 Jul 2023</b>                                                                                                                                                 | FTID                | 2307204208420   |





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# EVENT



## June 2023

### International Conference on Sustainable Water Management

01 - 02 Jun 2023  
Mississauga, Canada  
<https://10times.com/icbmse-mississauga>

### Watertech Africa

01 - 03 Jun 2023  
Kenyatta International Convention Centre, Nairobi, Kenya  
[expogr.com/watertech](http://expogr.com/watertech)

### Canadian IWA YWP Conference

01 - 03 Jun 2023  
Vancouver, Canada  
<https://10times.com/e1kf-d00x-3s2x>

### International Conference on Sustainable Water Management

03 - 04 Jun 2023  
Aarhus, Denmark  
<https://10times.com/icbmse-aarhus>

### Symposium on Health-related Water Microbiology

04 - 09 Jun 2023  
Darwin, Australia  
<https://iwa-network.org/events/21st-international-symposium-on-health-related-water-microbiology/>

### Aquatech China

05 - 07 Jun 2023  
National Convention & Exhibition Center, Shanghai, China  
[www.aquatechtrade.com/china](http://www.aquatechtrade.com/china)

### World Environment Expo

05 - 07 Jun 2023  
Pragati Maidan, New Delhi, India  
[worldenvironment.in](http://worldenvironment.in)

### Algeria Electricity & Water Expo

05 - 07 Jun 2023  
Algiers, Algeria  
[expotobi.com/algeria-electricity-water-expo](http://expotobi.com/algeria-electricity-water-expo)

### International Chemical Waste Water Treatment Technology & Equipment Fair

05 - 08 Jun 2023  
Shanghai, China  
<https://10times.com/cwtf>

### Annual Canadian Water Summit 2023

07-09 June, 2023  
Ottawa, Canada  
<https://watersummit.ca/>

### Connecticut Rural Water & Wastewater Association Annual Conference

08 Jun 2023  
Wallingford, USA  
<https://www.ctrwwa.org/conference>

### The Boundary Waters Expo

10 - 11 Jun 2023  
Grand Marais, USA  
<https://10times.com/boundary-waters-expo>

### Conference of the UK Water Network

14 Jun 2023  
Cranfield, UK  
<https://www.cranfield.ac.uk/events/events-2023/16th-conference-of-the-uk-water-network>

### Power & Water Nigeria Exhibition & Conference

20 - 22 Jun 2023  
Lagos, Nigeria  
[prwnigeria.com](http://prwnigeria.com)

### Russian Water Congress Conference

20 - 22 Jun 2023  
Expocentre, Moscow, Russia  
<https://www.watercongress.ru/en/>

### Vodexpo

20 - 22 Jun 2023  
Expocentre, Moscow, Russia  
<https://www.watercongress.ru/en/#exposition>

### World Congress on Environment Management and Climate Change

22 - 23 Jun 2023  
Bengaluru, India  
<https://10times.com/wcem>

### Water Environment Federation Stormwater Summit

27 - 29 Jun 2023  
Kansas City, USA  
<https://10times.com/e1r1-80g3-xzrr>

### African Smart Cities Summit

28 Jun 2023  
Gallagher Convention Centre, Johannesburg, South Africa  
[10times.com/asc-summit](http://10times.com/asc-summit)

## July 2023

### European Water And Wastewater Management Conference And Exhibition

04 - 05 Jul 2023  
The Point at Lancashire County Cricket Club, Manchester, UK  
[ewwmconference.com](http://ewwmconference.com)

### IFAT Africa

05 - 07 Jul 2023  
Gallagher Convention Centre, Johannesburg, South Africa  
[www.ifat-africa.com](http://www.ifat-africa.com)

### INDO WATER

05 - 07 Jul 2023  
Jakarta Convention Center, Jakarta, Indonesia  
[indowater.com](http://indowater.com)

### Water Resources Research Centers Conference

11 - 12 Jul 2023  
Tucson, USA  
<https://wrrc.arizona.edu/conference/2023>

### West Africa Water Expo

11 - 13 Jul 2023  
Landmark Centre, Lagos, Nigeria  
[elanexpo.net/wawexpo](http://elanexpo.net/wawexpo)

### Delhi Water Expo

13 - 15 Jul 2023  
Pragati Maidan, New Delhi, India  
[www.waterex.biz](http://www.waterex.biz)

### Milwaukee Air and Water Show

22 - 23 Jul 2023  
Milwaukee Lakefront, Milwaukee, USA  
[mkeairwatershow.com](http://mkeairwatershow.com)

### Arizona Water Reuse Symposium

23 - 25 Jul 2023  
Flagstaff, USA  
<https://watereuse.org/sections/watereuse-arizona/2023-watereuse-arizona-symposium/>

## August 2023

### 18th EverythingAboutWater Expo 2023

Thu, 03 - Sat, 05 Aug 2023  
Pragati Maidan, New Delhi  
[www.eawaterexpo.com](http://www.eawaterexpo.com)



# CALENDAR

110

## Public Drinking Water Conference 2023

Tue, 8 – Wed 9 aug, 2023  
Austin, USA  
<https://www.tceq.texas.gov/drinkingwater/conference.html>

## Water Tech 2023

10-11 aug 2023  
New delhi, India  
<https://cam.mycii.in/OR/EventDetailOR.html?id=E000061989>

## The Water Expo

Wed, 23 - Thu, 24 Aug 2023  
Miami, USA  
[www.thewaterexpo.com/](http://www.thewaterexpo.com/)

## World Water Summit 2023

25- 26 Aug 2023  
New Delhi, India  
<http://worldwatersummit.in/who-can-exhibit.html>

## International Conference on Water Resource, Environmental Protection & Sustainable Development

25 - 26 Aug 2023  
Zhengzhou, China  
<https://10times.com/e13z-gh3s-fs30>

## September 2023

### Water Indonesia

Wed, 13 - Sat, 16 Sep 2023  
Jakarta, Indonesia  
[www.waterindonesiaexpo.com/](http://www.waterindonesiaexpo.com/)

### CamWater

14 - 16 Sep 2023  
Phnom Penh, Cambodia  
<https://www.camwaterexpo.com/>

### THAI WATER

Wed, 30 Aug - Fri, 01 Sep 2023  
Bangkok, Thailand  
[www.thai-water.com](http://www.thai-water.com)

### SR Onshore Wind Conference

Wed, 06 Sep 2023  
Glasgow, UK  
[www.scottishrenewables.com](http://www.scottishrenewables.com)

### Gat Wat

Wed, 06 - Thu, 07 Sep 2023  
Cologne, Germany  
[www.gat-wat.de](http://www.gat-wat.de)

## WasteEcoExpo

Tue, 12 Sep 2023  
Krasnogorsk, Russia  
[en.waste-tech.ru](http://en.waste-tech.ru)

## Contamination & Geotech Expo

13 - 14 Sep 2023  
Birmingham, UK  
<https://www.ess-expo.co.uk/four-shows/clr>

## Taiwan International Water Week

Wed, 20 - Fri, 22 Sep 2023  
Taipei, Taiwan  
[www.taiwanintlwaterweek.com](http://www.taiwanintlwaterweek.com)

## P3 Water + Energy Summit

21 - 22 Sep 2023  
San Diego, USA  
<https://www.p3electrified.com/>

## Water Expo – Hyderabad

Thurs, 21 – sat, 23 sept 2023  
Hyderabad, India  
<https://waterindia.net/>

## LANKAWATER

21 - 23 Sep 2023  
Colombo, Sri Lanka  
<https://lankawater.org/>

## WCW Conference & Exhibition

Mon, 25 - Thu, 28 Sep 2023  
Saskatoon, Canada  
[www.wcwwa.ca/page/AnnualConf](http://www.wcwwa.ca/page/AnnualConf)

## October 2023

### Wetex

Mon, 02 - Wed, 04 Oct 2023  
Dubai, UAE  
[www.wetex.ae](http://www.wetex.ae)

### AWT Convention and Exposition

Wed, 04 - Sat, 07 Oct 2023  
Grand Rapids, USA  
[www.awt.org/events/annual-convention](http://www.awt.org/events/annual-convention)

### Envitech

Tue, 10 - Fri, 13 Oct 2023  
Brno, Czech Republic  
<http://envitech.co.in>

### VietWater

Wed, 11 - Fri, 13 Oct 2023

Ho Chi Minh, Vietnam  
[www.vietwater.com/en](http://www.vietwater.com/en)

## Minnesota Water Resources Conference

17 - 18 Oct 2023  
Saint Paul, USA  
<https://wrc.umn.edu/events/conference-2023>

## IFAT India

Wed, 18 - Fri, 20 Oct 2023  
Mumbai, India  
[www.ifat-india.com](http://www.ifat-india.com)

## Pak Water & Energy Expo

Wed, 25 - Fri, 27 Oct 2023  
Lahore, Pakistan  
[pakwaterexpo.com](http://pakwaterexpo.com)

## Aqua Ukraine

17 - 19 Oct 2023  
Kiev, Ukraine  
<https://10times.com/aqua-ukraine>

## Water In Industry

Tue, 31 Oct 2023  
Moscow, Russia  
[www.aquatechtrade.com/news/industrial-water](http://www.aquatechtrade.com/news/industrial-water)

## NOVEMBER 2023

### Water Loss Forum

01 - 03 Nov 2023  
Lutfi Kirdar International Convention & Exhibition Center, Istanbul, Turkey  
[www.waterlossforum.org](http://www.waterlossforum.org)

### Bangladesh Water Expo 2023

02-04 Nov 2023  
Dhaka, Bangladesh  
<https://www.bangladeshwaterexpo.biz/>  
Aquatech Amsterdam  
06 - 09 Nov 2023  
RAI, Amsterdam, Netherlands  
[www.aquatechtrade.com/amsterdam/](http://www.aquatechtrade.com/amsterdam/)

### The International Water Conference

12 - 16 Nov 2023  
San Antonio Marriott Rivercenter, San Antonio, USA  
[iwconf.org](http://iwconf.org)

### Smart City Expo - Dubai

14 - 15 Nov 2023  
The Ritz-Carlton, Dubai, Dubai, UAE  
[10times.com/smart-cities-nh](http://10times.com/smart-cities-nh)

### **WETEX and Dubai Solar Show**

15 - 17 Nov 2023  
Dubai World Trade Centre, Dubai, UAE  
[www.wetex.ae](http://www.wetex.ae)

### **Myanmarwater**

16 - 18 Nov 2023  
Myanmar Expo, Yangon, Myanmar  
[myanmarwater.com](http://myanmarwater.com)

### **Sand Water Rv Expo**

17 - 18 Nov 2023  
Lake Havasu State Park, Lake Havasu, USA  
[sandandwaterexpo.com](http://sandandwaterexpo.com)

### **Cairo Water Week**

29 Oct - 02 Nov 2023  
Cairo, Egypt  
[www.cairowaterweek.org](http://www.cairowaterweek.org)

### **East Africa Water Summit**

29 Nov - 01 Dec 2023  
Nairobi, Ikoo, Kenya  
<https://www.eawaters.com/>

## **December 2023**

### **East Africa Water Summit 2023**

29 Nov - 01 Dec 2023  
Nairobi, Ikoo, Kenya  
<https://www.eawaters.com/>

### **Water Bangladesh International Expo**

07 - 09 Dec 2023  
International Convention City Bashundhara (ICCB),  
Dhaka, Bangladesh  
[www.water-exhibition.com](http://www.water-exhibition.com)

### **SRW India Water Expo 2023**

20 - 22 Dec 2023  
Chennai Trade Centre, Chennai, India  
<http://www.waterexpo.in/>

### **World Conference on Sustainability, Energy and Environment 2023**

08 - 09 Dec 2023  
City Hotel Berlin Mitte, Berlin, Germany  
<https://www.steconf.org/conference/world-conference-on-sustainability-energy-and-environment/>

### **Malaysian International Water Convention 2023**

05 - 07 Dec 2023  
Putra World Trade Centre, Kuala Lumpur, Malaysia  
<https://www.miwec.tech/home>

### **GoGreen Summit 2023**

29 - 30 Dec 2023  
Bali, Indonesia

<https://gogreen.bioleagues.com/>

## **January 2024**

### **Water India Expo**

17 - 19 Jan 2024  
Pragati Maidan, New Delhi, India

### **Water & Wastewater Equipment, Treatment & Transport**

24 - 27 Jan 2024  
Indiana Convention Center, Indianapolis, USA  
<https://www.wwettshow.com/en/home.html>

### **WWT Wastewater Conference and Exhibition**

25 - 26 Jan 2024  
The National Conference Centre, Solihull, UK  
<https://10times.com/wwt-wastewater>

### **Nevada Water Resources Association Annual Conference Week**

9 Jan - 01 Feb 2024  
Tuscany Suites & Casino, Las Vegas, USA  
<https://www.nwraa.org/2024-symposium>

### **Local Water Management Crossroads**

31 Jan - 01 Feb 2024  
Parc Expo Rennes, Rennes, France  
<https://10times.com/carrefour-des-gestions-locales-de-leau>

### **InterAqua**

31 Jan - 02 Feb 2024  
Tokyo Big Sight, Koto, Japan  
<https://www.interaqua.jp/eng/>

### **Smart Energy India Expo**

17 - 19 Jan 2024  
Pragati Maidan, New Delhi, India  
<https://www.smartenergyindiaexpo.com/>

### **Utah Green Conference & Trade Show**

22 - 24 Jan 2024  
Mountain America Expo Center, Sandy, USA  
<https://10times.com/utah-green-trade-show>

## **February 2024**

### **Annual Water Expo**

06 - 08 Feb 2024  
Delta Hotels by Marriott Fargo, Fargo, USA  
<https://10times.com/water-systems-expo-fargo>

### **Mountain States Ground Water Expo**

08 - 09 Feb 2024  
Aquarius Casino Resort, Laughlin, USA  
<https://mountainstatesgroundwater.com/>

### **AquaFarm**

14 - 15 Feb 2024  
Pordenone Fiere, Pordenone, Italy  
<https://www.aquafarm.show/en/aquafarm-program/>

### **World Water Tech Innovation Summit**

20 - 21 Feb 2024  
Hilton London Bankside, London, UK  
<https://worldwatertechinnovation.com/>

### **E-World Energy & Water Exhibition**

20 - 22 Feb 2024  
MESSE ESSEN GmbH, Essen, Germany  
<https://www.e-world-essen.com/en/>

### **Pacific Water Conference**

20 - 22 Feb 2024  
Hawaii Convention Center, Honolulu, USA  
<https://hiawwa.org/2024-pacific-water-conference>

### **UF Water Institute Symposium**

20 - 21 Feb 2024  
J. Wayne Reitz Union, Gainesville, USA  
<https://conference.ifas.ufl.edu/waterinstitute/>

### **WATER TODAY'S WATER EXPO**

28 Feb - 01 Mar 2024  
Chennai Trade Centre, Chennai, India  
<https://www.waterexpo.biz/>

### **Water Garden Expo**

28 Feb - 01 Mar 2024  
Grand Casino Hotel & Resort, Shawnee, USA  
<https://www.wgexpo.com/>

### **WAPTAG Water Expo**

29 Feb - 02 Mar 2024  
Mahatma Mandir Exhibition Hall, Gandhinagar, India  
<http://waptag.org/>

## **March 2024**

### **Roorkee Water Conclave**

03 - 06 Mar 2024  
Indian Institute of Technology Roorkee, Roorkee, India  
<https://www.iitr.ac.in/rwc/>

### **New England Water Well Expo**

07 - 09 Mar 2024  
Best Western Royal Plaza Hotel & Trade Center, Marlborough, USA  
<https://www.newwassociation.org/>

### **WaterReuse Research Conference**

10 - 13 Mar 2024  
Hilton Denver City Center, Denver, USA  
<https://watereuse.org/event/2024-watereuse-symposium/>

### **Water Policy Conference**

18 - 20 Mar 2024

Washington Hilton, Washington DC, USA

<https://10times.com/e1zk-rr53-h02x>

### **Rural Water Conference**

18 - 21 Mar 2024

Penn Stater Conference Center Hotel, State College, USA

<https://www.prwa.com/annual-conference>

### **Aqua Netherlands**

19 - 21 Mar 2024

Evenementenhal Gorinchem, Gorinchem, Netherlands

<https://www.aquanederland.nl/en/>

### **KRWA Conference & Exhibition**

26 - 28 Mar 2024

Century II Performing Arts & Convention Center, Wichita, USA

<https://krwa.net/TRAINING/Conference>

## **April 2024**

### **Florida Water Resource Conference**

02 - 05 Apr 2024

Gaylord Palms Resort & Convention Center, Kissimmee, USA

<https://www.fwrc.org/>

### **Texas Water**

09 - 12 Apr 2024

Fort Worth Convention Center, Fort Worth, USA

<https://www.twater.org/>

### **AZ Water Conference & Exhibition**

10 - 12 Apr 2024

Phoenix Convention Center, Phoenix, USA

<https://www.azwater.org/group/annualconference>

### **Water Expo & Forum**

16 - 18 Apr 2024

Abu Dhabi National Exhibition Centre - ADNEC, Abu Dhabi, UAE

<https://www.worldfutureenergysummit.com/en-gb/water.html#/>

### **IE Expo China**

18 - 20 Apr 2024

Shanghai New International Expo Centre(SNIEC), Shanghai, China

<https://www.ie-expo.com/>

### **ASIAWATER**

23 - 25 Apr 2024

Kuala Lumpur Convention Centre, Kuala Lumpur, Malaysia

<https://www.asiawater.org/>

### **SDARWS Rural Water Expo**

24 - 25 Apr 2024

Best Western Ramkota Hotel, Rapid City, USA

<https://www.sdarws.com/>

### **International Green Energy Expo**

24 - 26 Apr 2024

EXCO, Daegu, South Korea

<https://www.greenenergyexpo.co.kr/eng/>

### **Water Expo Bangladesh**

25 - 27 Apr 2024

International Convention City Bashundhara (ICCB), Dhaka, Bangladesh

<https://www.ilmraexpo.com/water/index.php>

### **Green Vision Summit & Expo**

30 Apr - 02 May 2024

MFCC - Malta Fairs & Conventions Centre, Malta

<https://10times.com/e15k-f3dd-4fx4>

## **May 2024**

### **Maryland Rural Water Association Conference**

06 - 09 May 2024

Roland E. Powell Convention Center, Ocean, USA

<https://10times.com/mrwa-ocean>

### **Power of Water Canada Technical Conference & Trade Show**

08 - 10 May 2024

Niagara-on-the-Lake, Canada

<https://www.owa.ca/conference/>

### **IFAT Munich**

13 - 17 May 2024

Exhibition Munich, Munich, Germany

<https://ifat.de/en/trade-fair/>

### **Renewable Energy Show**

16 - 18 May 2024

International Convention City Bashundhara (ICCB), Dhaka, Bangladesh

<https://10times.com/renewable-energy-show>

### **Water Management Show**

16 - 18 May 2024

International Convention City Bashundhara (ICCB), Dhaka, Bangladesh

<https://10times.com/water-management-show>

### **West Africa Water Expo**

21 - 23 May 2024

Landmark Centre, Lagos, Nigeria

<https://elanexpo.net/waweexpo/>

## **June 2024**

### **SIEE Pollutec**

02 - 05 Jun 2024 Add

Safex - Foire d'Alger, Mohammadia, Algeria

[https://siee-pollutec.com/?page\\_id=90&lang=en](https://siee-pollutec.com/?page_id=90&lang=en)

### **International Exhibition on Environmental Technology & Green Energy**

03 - 05 Jun 2024

COEX Convention Center, Seoul, South Korea

<https://www.envex.or.kr/eng/main/index.asp>

### **Watertech Africa**

05 - 07 Jun 2024

Kenyatta International Convention Centre, Nairobi, Kenya

<https://www.expogr.com/watertech/>

### **GreenTech Amsterdam**

11 - 13 Jun 2024

RAI Amsterdam, Amsterdam, Netherlands

<https://www.greentech.nl/>

### **China (Guangzhou) International High-end Drinking Water Industry Expo**

14 - 16 Jun 2024

China Import and Export Fair(Canton Fair Complex), Guangzhou, China

<http://www.ihe-china.com/cn/Invitation/40.IWE/>

### **Singapore International Water Week**

16 - 20 Jun 2024

Singapore

<https://www.siww.com.sg/>

### **Egypt Infrastructure & Water Expo**

25 - 27 Jun 2024

Egypt International Exhibition Center, Cairo, Egypt

<https://www.egyptinfrastructureexpo.com/>

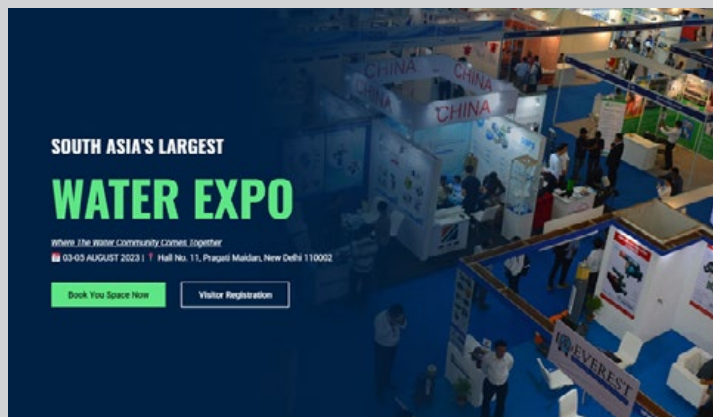
## **July 2024**

### **Water and Aqueous Solutions Gordon Research Conference**

20 - 21 Jul 2024

Holderness School, Holderness, USA

<https://www.grc.org/water-and-aqueous-solutions-conference/2024/>



18th EverythingAboutWater Expo 2023 is one of the most unique & comprehensive annual events in India showcasing the latest technologies & solutions in the water sector. It is a perfect gateway for stakeholders from across the globe to penetrate into the vast & dynamic ecosystem of the Indian Water management industry to share business opportunities, network & explore innovative water solutions.

With increasing consumption of water in agriculture and potable areas, India is expected to be severe water stressed by 2025. Rapid industrialization and growing population have widened the water demand-supply gap for which both the Central and State governments are deeply concerned. Under this umbrella, the 18th Everything About Water Expo 2023 will offer unparalleled business opportunities to both national as well as international players from the water industry to learn, explore the future trends in the Indian water market.

**Date: 03-05 Aug 2023**

**Venue: Pragati Maidan, New Delhi**

**Website: [www.eawaterexpo.com](http://www.eawaterexpo.com)**

PT Pamerindo Indonesia is the leading trade fair organiser in Indonesia, established with the sole purpose of organising specialised trade exhibitions for the Indonesian market. The company has grown considerably and now regularly organises over 20 trade exhibitions in the following sectors: Beauty, Building & Construction, Electric & Power, Food & Hotel, Laboratory, Manufacturing, Mining, Plastics & Rubber, Oil & Gas sectors. Since its inception PT Pamerindo Indonesia has organised over 200 international trade exhibitions in Jakarta, Surabaya, and Bali.

PT Pamerindo Indonesia is part of Informa Markets, a division of Informa plc. Informa Markets creates platforms for industries and specialist markets to trade, innovate and grow. Our portfolio is comprised of more than 550 international B2B events and brands in markets including Healthcare & Pharmaceuticals, Infrastructure, Construction & Real Estate, Fashion & Apparel, Hospitality, Food & Beverage, and Health & Nutrition, among others. We provide customers and partners around the globe with opportunities to engage, experience and do business through face-to-face exhibitions,



specialist digital content and actionable data solutions. As the world's leading exhibitions organiser, we bring a diverse range of specialist markets to life, unlocking opportunities and helping them to thrive 365 days of the year.



**Date -Wed, 13 - Sat, 16 Sep 2023**

**Venue - Jakarta, Indonesia**

**Website - [www.waterindonesiaexpo.com/](http://www.waterindonesiaexpo.com/)**

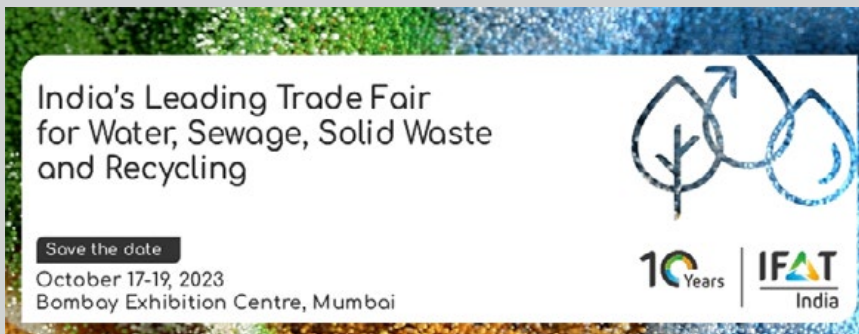
IFAT India is a leading trade fair for environmental technologies and sustainable solutions in India. It brings together professionals from various sectors such as water, sewage, waste, and recycling to showcase their innovative products and services. The event provides a platform for knowledge exchange, business networking, and collaboration between industry players, policymakers, and environmental experts. The fair features exhibitors from across the globe, highlighting their latest technologies and solutions to address environmental challenges faced by the region.

IFAT India also includes a comprehensive conference program, where industry experts share their insights and experiences on current environmental issues and trends. The event provides an opportunity to network with key industry stakeholders, innovators, and business partners around the world. Addressing



sewage systems, adequate waste-water treatment, sustainable ways for water supply, holistic solid waste management and recycling, amongst others, - IFAT India showcases solutions to resolve the environmental concerns of the hour.

IFAT India translates the passion of India's game changers and leading environmentalists to bring holistic sustainable solutions for environmental issues towards making a cleaner, greener and more sustainable country.



**Date - Wed, 18 - Fri, 20 Oct 2023**  
**Venue- Mumbai, India**  
**Website - [www.ifat-india.com](http://www.ifat-india.com)**



The Water Expo is produced by SHOW WINNERS CORPORATION, a leading events promoter company located in Miami, Florida. With over 20 years of experience, S.W.C. and its executives have produced and managed over 40 top level Conventions, Fairs and Expos on a continental scale, serving industries of Construction, Health, Real Estate, Sustainability, Solar Energy and Water, among others. Some of these events have been classified in a top ranking level in the United States for several years.

SWC has developed a crafting expertise in connecting manufacturers and distributors from North America with the Latin American and Caribbean major markets comprised by dozens of countries with key differences among them. SWC has

a fully bilingual staff and uses Miami, Capital of the Americas, as the proper commercial and multicultural hub to make this connection happen in an effective and successful way.

SWC trade shows produced in Miami also allow to highlight and serve the increasing market opportunities associated with current strong developments of major areas in the State of Florida and in particular in the ever-evolving and booming South Florida region.

**Date: 22-24 Aug 2023**  
**Venue: Miami Airport Convention Center, Miami, USA**  
**Website: [www.thewaterexpo.com](http://www.thewaterexpo.com)**



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# LETTER FROM THE *Vice President*

Earth Water Foundation



## **“JOIN US AS WE BRING THE WATER INDUSTRY TOGETHER”**

Dear Readers,

On behalf of the entire team at EverythingAboutWater, I extend a warm welcome to all the participants to the 18th edition of the EverythingAboutWater 2023. I hope it would indeed be a rich and enriching experience for all stakeholders, in the water sector, to interact with each other at common platform.

At this 18th Edition of the event, the country of Norway is our country partner. The Expo is supported among others by the Ministry of Jal Shakti, Government of India. The event is successfully repeating its history and there will be close to 100 exhibitors and participating companies, from the water sector. International participation at the Expo, will be in the form of 25 international companies. This will be in addition to over 200 delegates at the conclave there will be close to 50 experts, from the water sector, who would be attending the event.

We hope that those who visit the Expo, between 3rd to 5th August, will gain from the rich experience that will be in abundance, at the Expo, in person.

An important part of the Expo, will be the conclave, that would have, intellectually stimulating sessions. While one will gain intellectually by interacting, with experts, at the event, listening to the experts, from Norway, United Kingdom and India, who will share their views, at the conclave on important aspects concerning the water sector. We certainly hope that will be food for thought for many. It has generally been seen that exhibitions and events serve as a common platform, for likeminded individuals to interact and network.

The 18th edition of the EverythingAboutWater Expo will provide room for this and much more. In addition to this there will be over 100 products, from the water sector, on display, which you can see for yourself. You could take home an assured gift from the Expo, in addition to happy memories.

I once again take this opportunity to extend warm wishes to all the participants, sponsors, exhibitors and visitors and thank them for being part of this event. We look forward to your suggestions, so that we can improve on them, in the next edition of the Expo. Welcome to the event and hope to see you there.

Nisha Aggarwal  
Vice President  
Earth Water Foundation

# LETTER FROM THE *Editor*

Earth Water Foundation



## HOPE YOU ENJOYED GOING THROUGH OUR ANNIVERSARY ISSUE.

In this issue we have tried to bring the whole of water and waste water industry together. We bring to you 21 interviews of the who's who of the water industry. The thought-provoking interviews give us detailed insights of the water industry, market trends and hopeful years to come by.

The Indian water sector is characterized by a paradoxical situation. While the country is endowed with abundant water resources, uneven distribution, erratic rainfall patterns, and inadequate infrastructure lead to water scarcity in many regions. Furthermore, the lack of proper management and the absence of a comprehensive regulatory framework contribute to the inefficient use of water resources.

The wastewater sector faces equally pressing challenges. A significant portion of wastewater is discharged untreated into rivers, lakes, and groundwater, leading to contamination of water sources and posing a severe threat to public health and the environment. Inadequate treatment facilities and limited awareness about wastewater management perpetuate this problem.

The Indian water and wastewater sector faces multifaceted challenges that require urgent attention and action. By adopting a holistic and sustainable approach, involving all stakeholders, and making strategic investments, India can secure its water resources for future generations, achieve water security, and safeguard public health and the environment. It is crucial for the government, private sector, and civil society to collaborate actively to address the water crisis and create a sustainable future for the nation.

With this thought in mind, we welcome you all to the 18th EverythingAboutWater Expo and Conclave which is from 3rd to 5th August at Pragati Maidan, New Delhi. At the international conclave, the think tanks of the industry will discuss the challenges and present the opportunities in this sector.

The Expo is supported by Ministry of Jal Shakti, Government of India and the country partner is the Norway. On behalf of the entire team at EverythingAboutWater I would like to take this opportunity to extend a warm welcome to all participants, exhibitors and visitors at the Expo. Apart from providing a common platform, to network, there will be a conclave, at the Expo, where experts from India, Norway and the UK, will share their views on issues concerning the water sector. We hope to see you all the Expo.

Thanks and Regards  
Deepak Chaudhary  
Senior Manager – Content and Business Development  
Earth Water Foundation

# LIST OF PARTICIPANTS

| Sr. No. | Participants Name                             |
|---------|-----------------------------------------------|
| 1       | 99 Business Media                             |
| 2       | A1 Blowers India Pvt. Ltd.                    |
| 3       | A3S Enviro Pvt. Ltd.                          |
| 4       | Aarko Manufacturing Company                   |
| 5       | Agastya Invention Pvt Ltd                     |
| 6       | Agni Carbon                                   |
| 7       | Akash Blowers Pvt Ltd                         |
| 8       | Amalgam Engineering                           |
| 9       | Aman Engineering Works                        |
| 10      | Amikon Blowers & Systems Pvt. Ltd.            |
| 11      | Anchrom Enterprises (I) Pvt. Ltd.             |
| 12      | Aqwise India Pvt Ltd                          |
| 13      | Astral Ltd.                                   |
| 14      | Atlas Water Management Pvt. Ltd.              |
| 15      | Axis Solutions Pvt Ltd                        |
| 16      | Borouge India Pvt. Ltd.                       |
| 17      | Brihanmumbai Municipal Corporation            |
| 18      | Cambi Thermal Hydrolysis Process              |
| 19      | Cri Pump                                      |
| 20      | Danaher Corporation                           |
| 21      | Darling Pumps                                 |
| 22      | Delhi Jal Board                               |
| 23      | Devidescourse                                 |
| 24      | Doshion Ltd.                                  |
| 25      | Dtplenviro Techsolutions (Opc) Pvt Ltd        |
| 26      | Ecotrade                                      |
| 27      | Embassy Of Norway                             |
| 28      | Enbio Green Solutions Pvt. Ltd                |
| 29      | Energy Bots Pvt. Ltd.                         |
| 30      | Envirozone Instruments & Equipments Pvt. Ltd. |
| 31      | Eureka Forbes Ltd.                            |
| 32      | Forbes Marshall                               |
| 33      | Fortunexis Automation Pvt. Ltd.               |
| 34      | G Centriforce Engineering Pvt. Ltd.           |
| 35      | Global Water Intelligence                     |
| 36      | Hach Dhr India Pvt. Ltd.                      |
| 37      | Hanna Equipments India Pvt. Ltd.              |
| 38      | Har Ghar Jal Jeevan Mission                   |
| 39      | In Awe                                        |
| 40      | Integro Engineers Pvt. Ltd.                   |
| 41      | Ion Exchange India Pvt Ltd                    |

|    |                                                               |
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| 42 | I-Tech Media                                                  |
| 43 | Jalconserve Technologies Pvt. Ltd. (Jal Sewak)                |
| 44 | Js Water Energy Life Co. Pvt. Ltd.                            |
| 45 | Keratech                                                      |
| 46 | Khodiyar                                                      |
| 47 | Kymik Industries                                              |
| 48 | Macsun Technologies Pvt. Ltd.                                 |
| 49 | Mini Dose Solution Pumps                                      |
| 50 | Ministry Of Jal Shakti                                        |
| 51 | Mmp Filtration Pvt. Ltd.                                      |
| 52 | Mts Engineers Pvt. Ltd.                                       |
| 53 | Namami Gane                                                   |
| 54 | Neeravi Aqua & Fire Solutions                                 |
| 55 | Neerway Projects Pvt Ltd                                      |
| 56 | Ott Hydromet                                                  |
| 57 | Pacific Consolidated Industries (Pci)<br>Gases India Pvt. Ltd |
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| 59 | Pipeco Tanks                                                  |
| 60 | Pp Aquatech Pvt. Ltd.                                         |
| 61 | Ppi Pumps Pvt. Ltd.                                           |
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| 63 | Qua Water Technologies Private Limited                        |
| 64 | Ren Jetting Systems Llp                                       |
| 65 | Rodex Engineering                                             |
| 66 | Roth Specialities India Pvt. Ltd.                             |
| 67 | Shaakti Import And Export Co                                  |
| 68 | Shah Brothers                                                 |
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| 70 | Shruti Enterprises                                            |
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| 72 | Spicos                                                        |
| 73 | Superweld Eco-Solutions                                       |
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| 77 | Ti Anode Fabricators Pvt. Ltd.                                |
| 78 | Toshniwal Instruments Mfg. Pvt. Ltd.                          |
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| 80 | Vasu Pharmatech                                               |
| 81 | Watergas                                                      |
| 82 | Yaha Water Systems                                            |



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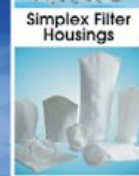
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[marketing@invotekfilters.com](mailto:marketing@invotekfilters.com)

Visit: [www.invotekfilters.com](http://www.invotekfilters.com)

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## 99 BUSINESS MEDIA

### Company Profile

99 Business Media is a group of Business Newspapers, established in 1987, publishing Eight Business Newspapers. They are - 99 Machinery For You, 99 Auto Flash, 99 E-Vehicle, 99 Electrical World, 99 Electronics World, 99 Lighting World, 99 Food Mantra and 99 Plast Print Pack. The company has Pan-India Presence with Head Office in Delhi and Corporate Office in Mumbai and has 10+ Branches across the country.

### Booth No M3

**Contact Person:** Ms. Parveen Mehta

**Designation:** Sr. Manager

**Address:** 1201, 12th Floor, Gopal Heights, Netaji Subhash Place, Pitampura Delhi -110034 India

**Telephone:** 011-49537992 49938346

**Mobile:** 8595663158

**Mail:** exhibitions@99businessmedia.com, media@99businessmedia.com

**Website:** www.99business.com

## AARKO MANUFACTURING

### Company Profile

Aarko Manufacturing Company, is a well established business firm which proudly offers customers a wide range of Valves, Fittings, Pipes and several other products. We are a company which was established more than four decades ago and with our immense efforts and continuous enhancement of abilities we are able to serve a large number of customers and earned growth accordingly

### Booth No D15

**Contact Person:** Mr.Kamal Kohli

**Designation:** Managing Director

**Address:** Plot No.74-75, Behind Sharp Chucks, Near Industrial Estate, Jalandhar - 144012, Punjab, India

**Mobile:** 09463502625

**Mail:** info@aarkovalves.in, enquiry@aarkovalves.in

**Website:** www.aarkovalves.com

## AGNI CARBON

### Company Profile

Agni Carbon, was founded in 2004 & Located in Prithla Industrial Area, Dhatir Road, Faridabad, Haryana. Our company is professionally engaged in Operation, Research, Development & Service of Activated Carbons. Agni Carbon is professionally

managed by a team who have wide & rich experience in the field of Activated Carbons & serving their customer base with the utmost care.

### Booth No D1

Contact Person RAJESH GOEL

**Designation:** Proprietor

**Address:** 1.6km,prithla industrial area, palwal Haryana-121102

**Telephone:** 01275298100

**Mobile:** 09899999403

**Mail:** sales.agnicarbon

**Website:** agnicarbon.in

## AMALGAM BIOTECH. PUNE

### Company Profile

Amalgam Biotech. Pune is professionally engaged in manufacturing and supplying high quality Bio-culture for wastewater treatment and odor control solutions. We have been manufacturing specially formulated blend of natural and safe bioculture for ETP, STP and WWTP along with biotoilets and septic tanks.

### Booth No D - 34

**Contact Person:** Shlok Salvi

**Designation:** Technical Sales

**Address:** A-201, Vastushilp, Veerbhadra Nagar, S.No- 90/4/1/2, Near Vasant Vihar,

Baner, Pune-411045, Maharashtra, India.

**Mobile:** +91 7058651849

**E-Mail:** sales1@amalgambiotech.com

**Website:** www.amalgambiotech.com

## DARLING PUMPS PVT. LTD.

### Company Profile:

DARLING PUMPS is a leading manufacturer of submersible pumps in India, an ISO-9001:2015 company, founded in 1982 under the leadership of Late Shri Avinash B Ranade.

Now, with Shri Sandeep P Naolekar at the helm, we are committed for Value innovation. We continuously try to create & re-create value proposition to meet dynamic needs of our clients through our Products, Services & Business Process.

Today, Darling Pumps is recognized for its undisputed capabilities of – “Designing SMART Pumping Solutions” - SMART - S – Simple, M – Maintainable, A – Affordable, R – Reliable, T- Trustworthy Over last three decades Darling Pumps has grown richer in experience, from Clear water pumping to Slurry Handling & from Sea water

pumping to pumping hot temperature liquids, our expertise lies in providing solutions for all kind of water processes.

With our unmatched range of products, today we are catering to entire spectrum of applications in arena of Construction, Industrial, Marine, Municipal, Agricultural and Domestic water management.

## Booth No A-14

**Contact Person:** Joel Joy

**Designation:** Marketing Lead

**Address:** B1/B2, 701, 7th Floor, Marathon Innova Marathon NextGen, Off Ganpatrao Kadam Marg Lower

Parel, Mumbai - 400 013

**Mobile:** 8652746016

**E-Mail:** joel.joy@eurekaforbes.com

**Website:** <https://www.eurekaforbes.com/>

## EUREKA FORBES LIMITED

### Company Profile

Eureka Forbes Limited is India's leading health and hygiene brand. With over four decades of existence, it is today a multi-product and an omni-channel organization. Eureka Forbes' product portfolio encompasses water purification, vacuum cleaning & air purification. It has direct, retail, e-commerce and institutional sales channels, an inventive business partner network and one of the most expansive service networks across India.

### Product Description

Water Purifiers, Drinking water plants, storage and inline water coolers with inbuilt water purification systems

## Booth No A10

**Contact Person:** Mayank Chaturvedi

**Designation:** Regional Manager

**Address:** 340/2, Tigaria Badshah, Nr. Agarbatti Complex, Sanwer Road Industrial Area, Indore (M.P.) - 452015

**Telephone:** +91 9918992833

**Mobile:** 9575441886

**E-Mail:** myk@darlingpumps.in / info@darlingpumps.in

**Website:** [www.darlingpumps.in](http://www.darlingpumps.in)

## FENTON TECHNOLOGIES PVT. LTD.

### Company Profile

Fenton Technologies Pvt. Ltd. is a distinguished science and

technology enterprise specializing in the manufacturing of professional engineering equipment and conducting environmental research and development. With a focus on water treatment equipment and services, the company has been committed to providing systematic solutions for various industries. Since its inception, Fenton Technologies has upheld the spirit of craftsmanship, dedicating itself to delivering high-quality products and services to its clientele. The company operates in three main verticals, catering to different sectors with their specialized offerings. Firstly, they undertake Sewage Water Projects, working on developing effective solutions for sewage treatment. Secondly, their expertise lies in Wastewater Products, where they provide a wide range of equipment such as MBR Membrane, Oil Skimmer, Screw Press, MBR STP Plant, Bar Screen, and Dissolved Air Flotation (DAF), among many others.

These products play a vital role in treating and managing wastewater efficiently. Lastly, Fenton Technologies offers Swimming Pool Products & filtration contributing to the maintenance and cleanliness of swimming pool water. To stay at the forefront of the industry, Fenton Technologies collaborates with overseas partners, fostering international cooperation and adopting the latest advancements in water treatment technologies. The company highly values innovation and is keen on associating with developers who can bring advanced ideas and technologies to the market. Fenton Technologies takes pride in prioritizing customer satisfaction and continuously strives to enhance product quality. Emphasising a "customer-first" philosophy, they are dedicated to meeting their clients' needs effectively. The company's core business principles revolve around quality, innovation, and service, which serve as the foundation for their success. For quality assurance, Fenton Technologies has established an international standard management system. This system ensures that their products meet the highest quality benchmarks, providing customers with reliable and efficient water treatment solutions. In conclusion, Fenton Technologies Pvt. Ltd. has emerged as a leading player in the water treatment equipment industry. Their commitment to innovation, customer satisfaction, and international collaboration has propelled them to the forefront of the market. With a diverse range of products and services, the company continues to contribute significantly to the advancement of environmental science and engineering solutions.

## Booth No A-3

**Contact Person:** Mr. Amit Kaushik

**Designation:** Director

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**Mobile:** 7300020200

**E-Mail:** info@fentonwater.com  
**Website:** www.fentonwater.com

## FORBES MARSHALL

**Booth No.** A9  
**Contact Person** Shoaib Shaikh  
**Designation:** Head - OEM and EPC and Water Business  
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**Mobile:** +91 9822757424 6.  
**E-Mail:** sshaikh@forbesmarshall.com  
**Website:** www.forbesmarshall.com

## FORTUNEXIS AUTOMATION PVT. LTD.

### Company Profile

WE ARE OEM & SOLUTION PROVIDER FOR COMPLETE ENVIROMENTAL SOLUTIONS IN REFERENCE TO ONLINE AIR & WATER MONITORING SYSTEMS, WASTE WATER TREATMENT SYSTEMS, DATA CONNECTIVITY.

**Product Description**  
 ONLINE AIR & WATER MONOTORING SYSTEM, WASTE WATER TREATMENT SYSTEMS.  
**Booth No** D3; D4

**Contact Person:** DHARMENDER VERMA  
**Designation:** DIRECTOR  
**Address:** 704, TOWER 7, PANCHSHEEL PRIMROSE, GOVINDPURAM, GHAZIABAD 201013  
**Telephone:**  
**Mobile:** +91 8076751198  
**E-Mail:** d.verma2004@gmail.com

## G-CENTRI-FORCE ENGINEERING PVT. LTD

### Company Profile

G Centri Force Engineering is a leading manufacturer and supplier of Decanter Centrifuge in two phase as well as three phase application. GCF is the only Indian brand which is manufactured in INDIA with CE & ISO certification with first Indian granted patent. We are second in the world having sedimenter machine. GCF is a proven technology brand in the separation division.  
**Booth No** C4

**Contact Person:** Mrs. Sonali Shilwant  
**Designation:** Head of Sales & Mktg.  
**Address:** G-Centri-Force Engineering Pvt. Ltd. Plot - 45, Block -

F-II, MIDC, Pimpri, Pune 411018 India.  
**Telephone:** +91 20 46782220  
**Mobile:** +91 8956216799  
**E-Mail:** sales@gcentriforce.com  
**Website:** http://www.gcentriforce.com

## HANNA EQUIPMENTS (INDIA) PVT. LTD.

### Company Profile

HANNA Instruments is a world leader in the manufacturing of analytical instruments. Headquartered in USA, HANNA has a global presence with 60 offices in 47 countries, Hanna strives to be a worldwide leader in service and selection, offering more than 3,500 products to a wide range of industries. Our products include pH meters, Checkers, Refractometers, ORP meters, Titrators, Photometers, COD Meters and many more. These products are useful in all the major industries like agriculture, aquaculture, Food & Dairy, Water Treatment etc. Perpetual Innovation. HANNA's research and development teams continuously challenge themselves to improve existing technologies and invent new testing techniques. These efforts have led to HANNA revolutionizing the world of testing.

- World's first tablet size multiparameter for pH/EC/DO analysis
- World's first pH electrode HALO with Bluetooth Technology
- World's first single parameter line of auto titrators.

Hanna Equipments (India) Pvt. Ltd. is the local face of Hanna Instruments in INDIA. It operates from its Navi Mumbai headquarters to foster better relationships with its Indian customers and offer expert local support. HANNA Equipment's' mission is to supply its customers with practical, affordable solutions for their testing needs.

### Booth No C41

**Contact Person:** Mr. Eknath Shinde  
**Designation:** Asst. Business Manager  
**Address:** Office No. 3/4/5/6, First Floor, Aum Sai Building, Sector 7, Kharghar, Navi Mumbai - 410 210  
**Telephone:** 022-2774 6554/55/56  
**Mobile:** 7045792171  
**E-Mail:** eknath.shinde@hannainst.in  
**Website:** www.hannainst.in

## I-TECH MEDIA PVT LTD / B2B PURCHASE

### Company Profile

India's most promising and young trade publication group, ITM Group Media, with its head office in Mumbai, India. It also promotes

and publishes premium monthly magazines like ACE Update, Design Sense, B2B Purchase, EPR (Electrical & Power Review), OEM Update, and Thermal Control Business Update (TCBU).

## Product Description

B2B Purchase, the voice of the project procurement community – gives project procurement professionals worldwide profound insight into the construction and infrastructure market. It is a platform presenting the thoughts of key industry leaders and executives on the industry's latest initiatives, innovations, technologies and trends.

B2B Purchase aim to enhance the media landscape of construction and infrastructure and generate open dialogue with readers, for enhanced and efficient project procurement.

B2B Purchase provides valuable information on new products and technology available for sectors such as Road building, Construction, Mining, Material Handling, Earthmoving, Structures, Chemicals & Coatings, Welding & Cutting, Safety & Security, Water treatment etc. There are also stories on innovations in technology, manufacturing and process industry. The guide is just the right kind of source for project professionals to keep abreast of relevant products and technology across the world.

## Booth No M5

**Contact Person:** Vaibhav Koli

**Designation:** Manager

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**Telephone:** 22 2501 8612

**Mobile:** 9930900016

**E-Mail:** itmbarter@gmail.com

**Website:** <https://b2bpurchase.com/>

## JALCONSERVE TECHNOLOGIES PRIVATE LIMITED

### Company Profile

JalSevak Solutions (जलसेवक) aims to address an important and often overlooked problem faced by Indian cities and towns: Absence of wastewater recycling. We have developed India's first compact, on-site, and affordable greywater recycling solution for residential and commercial facilities. Our engineered systems are convenient, scalable, and sustainable. The treated greywater can be used for activities such as toilet flushing, gardening/landscaping, and floor cleaning.

With over 20 small and large greywater recycling systems installed across the country, we continue to provide low-cost and low-maintenance solutions for households and businesses exploring water conservation.

## Booth No C42

**Contact Person:** K Shri Harsh

**Designation:** Product Design Engineer

**Address:** Industrial Area, Survey no 44/ 32, Lane number 3, Village, Narhe, Pune, Maharashtra 411041

**Telephone:** -

**Mobile:** +91 9753773485

**E-Mail:** [enquiry@jalsevak.in](mailto:enquiry@jalsevak.in)

**Website:** <https://jalsevak.in/>

## JALCONSERVE TECHNOLOGIES PVT. LTD. (JAL SEWAK)

### Company Profile

JalSevak Solutions (जलसेवक) aims to address an important and often overlooked problem faced by Indian cities and towns: Absence of wastewater recycling. We have developed India's first compact, on-site, and affordable greywater recycling solution for residential and commercial facilities. Our engineered systems are convenient, scalable, and sustainable. The treated greywater can be used for activities such as toilet flushing, gardening/landscaping, and floor cleaning. With over 20 small and large greywater recycling systems installed across the country, we continue to provide low-cost and low-maintenance solutions for households and businesses exploring water conservation.

## Booth No C2

**Contact Person:** K Shri Harsh

**Designation:** Product Design Engineer

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**Mobile:** +91 9753773485

**Mail:** [enquiry@jalsevak.in](mailto:enquiry@jalsevak.in)

**Website:** <https://jalsevak.in/>

## MACSUN TECHNOLOGIES PVT. LTD.

### Company Profile

Founded in 2021, MACSUN company is continuously building the trust by providing the best solution with the help of the best

equipments in WATER & WASTE WATER TREATMENT, SOLID WASTE sector . The formula for its continued success within a short period of time is an unwavering commitment to quality and service, and as a result, never ending customer relationships. The company was founded on the philosophy that customers demand quality equipment engineered to specification and provided at a competitive price. MACSUN has never compromised on this principle, and is continuously gaining new heights by leaps and bounds. We believe in solving the most difficult waste water problems including solid waste and drinking water problems encountered by customers through recent decade as well as continuously improving equipment performance to a level unmatched by any comparable manufacturer worldwide.

**Booth No C45**

**Contact Person:** Mr. Sunder Lal

**Designation:** Director

**Address:** Gurgaon

**Mobile:** 9871012770 6

**E-Mail:** mkt.macsun@gmail.com

**Website:** www.themacsun.com

MINI DOSE SOLUTION PUMPS

#### Company Profile

With nearly two decades of experience, Our dosing pumps has emerged as a trusted manufacturer, exporter and supplier of impeccable quality range of chemical dosing pumps. We are the first manufacturer of dosing pumps in Delhi. All of the major products manufactured by the company include electronic dosing pumps, plunger pumps, screw pumps and several more. These pumps are manufactured using high grade stainless steel, mild Steel ,brass and copper sourced from reliable vendors in the market. Our company is based in Delhi, which is a large hub of hardware and plumbing materials. The total operation based on certified quality systems and test procedure is based on the global standard API 675 & hydraulic institute standard requirement assures guaranteed performance for design safety. We have all materials traceability record. We deliver all orders with necessary documents (Test certificate and warranty card).

**Booth No C43**

**Contact Person:** Ashok Kumar Vishwakarma

**Designation:** Businessman

**Address:** I-188, Sector-5 DSIIDC Bawana Industrial Area, Delhi-110039

**Telephone:** 011-46535656

**Mobile:** 9312815051

**E-Mail:** minidosesolutionpumps@gmail.com

**Website:** minidosesolutionpumps.com

## PHARMATECH FILTRATION

#### Company Profile'

PHARMATECH FILTRATION (Estb. in 1994) is a leading name in the field of manufacturing products and equipment's for Water & Waste Water Treatment Plants with over 28 years of experience. Based in Delhi, the company has complete manufacturing setup with state of the art machines using latest technology to deliver quality products for best results. The products which have been developed are not only at par with their Indian & Imported counterparts but are also more economical in comparison.

#### Product Description

**FILTER PRESS :** The Filter Press is a solid liquid separating equipment working on the principle of pressure feeding. It has been used successfully in almost every industrial filter application over its 150 years of history. It consists of a series of PP filter plates and cast iron or mild steel structure. The filter medium i.e filter cloth is provided in between the plates to separate solids from the liquids. A filter pump is required to feed the mother liquor through feeding nozzle to the chambers formed between the plates and filter medium, leaving the solid trapped inside and the liquid drained out.

**Booth No B1**

**Contact Person:** Nimit Chhabra

**Designation:** DIRECTOR

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**Mobile:** 9311138359

**E-Mail:** PHARMATECH\_FILTRATION@YAHOO.COM

**Website:** WWW.PHARMATECHFILTRATION.COM

## MMP FILTRATION PVT. LTD

#### Company Profile

MMP Filtration Pvt Ltd. is a part of the corporate group "The house of Todi" incepted in the year 1952 under its flagship firm, M/s Manoharlal Mahabirprasad. The filtration division of this group is operational since 1996. MMP head office in Kolkata and has branch offices in Ahmadabad, Mumbai and Chennai. MMP product are being exported to the UAE, Oman, Saudi Arabia, Iran Kuwat, USA etc..... MMP is one of the largest manufacturer of liquid filtration component which includes Micron Cartridge Filter, PP Yarn, PP Core, Wound Winding Machine etc.....

#### Product Description

# For Procurement

Pumps  
Water Jalshakti  
Effluent Treatment Plant  
Environment Wastewater  
**Sewage Treatment Plant**  
Sustainable Particular filtration  
Reverse Osmosis Agriculture  
Waste Management Systems  
Digitalisation Ecosystem  
Chlorination



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For the latest update logon to [www.b2bpurchase.com](http://www.b2bpurchase.com)  
For [subscribe@b2bpurchase.com](mailto:subscribe@b2bpurchase.com)

Manufacturer of liquid filtration component which includes Micron Cartridge Filter, Pleated Cartridge, PP Yarn, PP Core, Wound Winding Machine, Liquid Filter Bag, PP Cartridge Housing

**Booth No C1**

**Designation:** Marketing Head

**Address:** C3/602, Anushruti Towers, Thaltej, Ahmedabad - 380059

**Mobile:** 9830566648 / 7043745709

**E-Mail:** vikas@mmpfilter.in / ahmd-admin@mmpfilter.in

**Website:** www.mmpfilter.com

## MTS ENGINEERS PVT. LTD.

### Company Profile

Founded in year 2002 by two first generation young technocrats with a thought 'MTS' i.e. "Managing Technology & Services" operating from 2500 sq.ft head Office in Ahmedabad city, a hub of Gujarat the biggest industrial state of India. More than 30 + qualified Employees working in Sales, Marketing, Admin & Service departments altogether. Gaining respect in Industries domain & Gujarat State's Leading Process & Analytical Instrumentation Solutions provider. Sales team across Pan-India. Practically "PROVEN FLOW MEASUREMENT EXPERTS" in Process & Analytical Industries.

**Booth No D43**

**Contact Person:** Manish Patel

**Designation:** Director

**Address:** B- 408 Wall Street -2, Ellis bridge, Ahmedabad

**Telephone:** 792640 0063

**Mobile:** 9879592954

**E-Mail:** marketing@mtsengineers.com

**Website:** www.mtsengineers.com

## NEERAVI AQUA & FIRE SOLUTIONS

### Company Profile

Neeravi Aqua & Fire Solutions is a leader in providing innovative products and technology used in the field of Water Treatment and Waste Water Treatment. Located in Delhi, India, we are the biggest name in the market for offering a vast range of quality product like Coarse Bubble Diffusers, Fine Bubble Diffusers, Tube Settler Media, Bio Pac Media, Rota-Meters online/panel mounted, Adaptor, Plastic Filter Nozzle and Fire Alarm System, Our team of experts is committed to delivering high quality products using improved top of the line technology backed with dedicated services. The product are easy to install and tested to keep quality control as required and are known to be cost-effective and durable. Our hardwork and

competitiveness ensure complete customer satisfaction as a one-stop solution to all water treatments.

**Booth No. D45**

**Contact Person:** Neeravi Aqua & Fire Solutions

**Designation:** Proprietor

**Address:** 331-South Extention, Plaza-II, 209, Masjid Moth, Leelaram Market, New Delhi- 49

**Telephone:** 011-26262632

**Mobile:** 91-9212251632

rslodha@neeravi.com

www.neeravi.com

## RESPONDENT PRECISION ENGINEERING PRIVATE LIMITED

### Company Profile.

Respondent Precision Engineering Private Limited is an ISO 9001:2015 certified manufacturing company based in Ghaziabad, Uttar Pradesh, specializing in the production of high-quality industrial equipment. With our commitment to precision engineering and innovative solutions, we have established ourselves as a trusted provider of Twin/Tri Lobe Roots Air Blowers, Mechanical Vacuum Boosters, Sludge Dewatering Screw Presses, Acoustic Enclosures, Roots Blowers accessories & spare Parts and various STP/ETP/WTP equipment.

We have a manufacturing of roots blowers having capacity ranges from 10m<sup>3</sup>/hr to 8,000m<sup>3</sup>/hr and a differential pressure of upto 1kg/cm<sup>2</sup> which are available in both air cooled and water cooled design and can be used for both pressure & vacuum duty applications across various industry segments.

As far as our machinery & testing facilities are concerned we are equipped with state of the art VMC,CNC machines,Cylindrical Grinding Machine,Dynamic Balancing Machine,Lathe Machines,Milling Machine etc. We at RPE uses various measuring & testing tools at every stage of production to ensure each and every material meets the strict quality standards set by us. We have in house testing facility as per BS 1571 Part-II standard and ensure every machine tests for several hours at extreme conditions to check its performance parameters before dispatch.

Since our inception in 2020, Respondent Precision Engineering has been dedicated to meeting the diverse needs of industries such as wastewater treatment, environmental engineering, and process industries. Our state-of-the-art manufacturing facility is equipped with cutting-edge machinery and staffed by a team of highly skilled engineers and technicians. We leverage advanced technology



# PHARMATECH FILTRATION LLP

(Formerly PHARMATECH FILTRATION "SINCE 1994")



## SLUDGE DEWATERING SCREW PRESS MACHINE

### DESCRIPTION

Sludge Dewatering Screw Press Machine is A Kind Of Economic & Environmental Friendly Sludge Dewatering Equipment. It is A New Type Of Sludge Extrusion Dewatering Equipment By Using The Principle Of Screw Extrusion, Through The Strong Squeezing Force Generated By The Change Of Screw Diameter And Screw Pitch, And The Tiny Gap Between The Floating Ring And The Fixed Ring, To Realize Solid-liquid Separation.



## FILTER PRESS

### DESCRIPTION

The Filter Press is a solid liquid separating equipment working on the principle of pressure feeding. It has been used successfully in almost every industrial filter application over its 150 years of history. It consists of a series of PP filter plates and cast iron or mild steel structure. The filter medium i.e. filter cloth is provided in between the plates to separate solids from the liquids. A filter pump is required to feed the mother liquor through feeding nozzle to the chambers formed between the plates and filter medium, leaving the solid trapped inside and the liquid drained out.



## CLARIFIER AND CLARIFLOCCULATOR

### APPLICATION AREA OF CLARIFIER AND CLARIFLOCCULATOR

- Municipal Water Treatment
- Primary Treatment in ETP
- Sludge Thickener

### MATERIAL OF CONSTRUCTION

As per requirement : Mild steel, MS+FRR, Stainless Steel (SS304, SS316)



## DISSOLVED AIR FLOTATION (DAF) SYSTEM

### DESCRIPTION

Dissolved air flotation (DAF) is a waste water treatment technology that clarifies waste water by the removal of suspended matter such as oil or solids. The removal is achieved by dissolving air in the waste water under pressure and then releasing the pressure at in a flotation tank. The released air forms tiny bubbles which adhere to the suspended matter causing the suspended matter to float to the surface of the water where it may then be removed by a skimming device



Contact: 9311138359, 9811161338, 9811138349.

Email : [info@pharmatechfiltration.com](mailto:info@pharmatechfiltration.com)

[Marketing@pharmatechfiltration.com](mailto:Marketing@pharmatechfiltration.com)

Factory : B-212, Ground Floor sector-1, Bawana industrial Area,  
Delhi -110039 . Corporate Office : D-12, Rama Enclave, Shahbad  
Dairy, Delhi-110042

Website : [www.tdcpharmatech.com](http://www.tdcpharmatech.com)

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

and industry best practices to design, develop, and manufacture products that surpass industry standards.

#### Booth No. D38

Contact Person KULDIP KUMAR

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**Mobile:** 91-9891779650

info@rpepumps.com

www.rpepumps.com

### ANCHROM ENTERPRISES (I) PVT. LTD.

#### Company Profile

Established 45 years ago, Anchrom has evolved into a leading company with a focus on water analysis automation, driven by a steadfast commitment to facilitating and upholding high standards of water quality in India. With a deep understanding of the critical importance of clean and safe water, Anchrom has dedicated its expertise to provide cutting-edge solutions for water analysis. By launching state-of-the-art automation systems, the company aims to streamline and optimize the process of water quality assessment, enabling accurate and efficient analysis to ensure compliance with stringent standards in India.

#### Booth No. D7, D8

**Contact Person:** Mr. Krishna Sarki

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mktg@anchrom.in

### PHARMATECH FILTRATION

#### Company Profile

PHARMATECH FILTRATION (Estb. in 1994) is a leading name in the field of manufacturing products and equipment's for Water & Waste Water Treatment Plants with over 28 years of experience. Based in Delhi, the company has complete manufacturing setup with state of the art machines using latest technology to deliver quality products for best results. The products which have been developed are not only at par with their Indian & Imported counterparts but are also more economical in comparison.

#### Booth No A1

**Contact Person:** Nimit Chhabra

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**Website:** WWW.PHARMATECHFILTRATION.COM

### PIPECO TANKS MALAYSIA SDN.

#### Company Profile

PIPECO was formed in 1984 as an engineering hardware company and ventured into sectional panel water tank business in 1989. To date, we have 39 years of experience in manufacturing water tanks. PIPECO has provided water storage solutions to many companies in world, supplying both pressed steel and GRP (Glass Reinforced Plastic) sectional water tanks. PIPECO is a global company, which already has partnerships in various countries, including: Malaysia, Singapore, south East Asia, Middle East countries such as U.A.E, Qatar, Saudi Arabia, Oman, and European countries such as France, Belgium and Australia. The production facilities are housed in Port Klang, Malaysia, with an area of 20,000m<sup>2</sup>. Our facilities have the capacities to annually produce 300,000 GRP tank panels and 50,000 pressed steel tank panels. This allows PIPECO to fulfill customer's expectations with competitive pricing, prompt delivery and consistent, high quality products. PIPECO strives to provide the best quality product to the customer.

We have a well established quality management system. Since 2003, PIPECO has been accredited the ISO 9001:2000 standard. This ensures that the tank panel and accessories are produced under the most stringent quality audit and meet the required structural and durability performance. By using advanced automated production facilities and employing a team of highly skilled production staff, PIPECO is able to ensure that the tank panel and accessories produced conforms to a consistent high quality standard. In addition, PIPECO values customer satisfaction and expectations. Therefore, PIPECO communicates with the clients throughout all stages of the tank provision; from the design, supply, installation and the final commissioning stage. This ensures that the specific requirements of the customers are met.

#### Booth No C 48, 49

**Contact Person:** ABID UMMEIR KHAN

**Designation:** MANAGING DIRECTOR

**Address:** #10 JOHAR COMPLEX 3RD FLOOR, MOSQUE ROAD,

# ONLINE WATER ANALYZER

## SWAS SYSTEM

AXIS



Steam & Water Analysis Systems

BRIX

## ANALYZER & CONTROLLER



COD, BOD, pH & TSS Analyzer

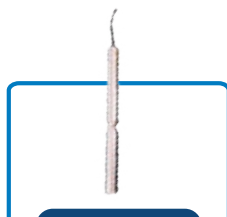


Turbidity / Chlorine Analyzer



Smart Controller

## SENSORS



COD, BOD & TSS Sensor



Ammonium Sensor



Turbidity Sensor



Chlorine Sensor



Multiparameter Controller

Knick



pH Sensors



Conductivity Sensors



Oxygen Sensors



Portable Analyzer



Transmitter

Thermo  
SCIENTIFIC

## ANALYZERS



Silica Analyzer



Sodium Analyzer



Ammonia Analyzer



Hardness Analyzer

AXIS AXIS SOLUTIONS PVT. LTD.

Plot No. 324, Road No.5, G.I.D.C., Kathwada, Ahmedabad-382 430, Gujarat, India.  
Tel. : +91792290 0860/61 | Fct. : 9925001633 / 9909906354  
info@axisindia.in | www.axisindia.in

BASAVANAGUDI – B'LORE 560004

**Telephone:** +91 80359 11686

**Mobile:** +91 98455 26313 6. Fax:

**Mail:** abidumairkhan@gmail.com

**Website:** www.ehtwatertanks.com

## PP AQUATECH PVT. LTD.

### Company Profile

Since its inception in the 2015 PP AQUATECH PVT. LTD. Remain an ethics driven company. We are professionally organized and remain committed towards our clients to provide world class technologies and services at very responsible cost in the field of water and waste water treatment industry.

### Booth No C-40

Contact Person Mr. Jai Prakash

Designation Director

Address HR-29/B-1, 60 FEET ROAD, LAL BUILDING, PUL PRAHLADPUR, NEW DELHI-110044

Mobile +91-98105 77236, +91-85059 15452

E-Mail ppaquatechpltd@gmail.com

Website www.ppaquatech.net

## QUA WATER TECHNOLOGIES PVT LTD.

### Company Profile'

QUA is a leading-edge developer and manufacturer of advanced membrane products. These innovative technologies are used to treat challenging waters. Qua's diverse product portfolio includes FEDI® (fractional electrodeionization), Q-SEP® (hollow fiber ultrafiltration membranes), CeraQ™ (Ceramic Filters), and EnviQ® (flat sheet submerged ultrafiltration membranes).

QUA is leveraging its roots in Research & Development, the expertise of staff that is highly experienced in water treatment technologies, and its significant financial resources to become a global technology leader in the development of products for water and wastewater treatment applications.

QUA's goal is to create long-term, value-added relationships with customers and strategic partners around the world. QUA focuses on consistently delivering its core values of exceptional product performance and continuous product improvement to meet the needs of the dynamic global water treatment market. These products are sold and serviced through a global network of qualified equipment manufacturers.

### Booth No A1

**Contact Person:** Ashish Verma

**Designation:** Assistant Manager Sales

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**Mobile:** 95401 10203

**E-Mail:** vermaa@quagroup.com

**Website:** https://quagroup.com/

## SMTECHCO LTD

### Company Profile

SM TECH is a specialized company in the filed water hammer . Provie total solution for waterhammer , Surge analysis, Fabrication, Installation, Commissioning and Traning

### Product Description'

Our main product is waterhammer prevention system that protect pipe lines from water shock caused by pressure change inside the pipeline.

### Booth No C10

Contact Person Daniel

**Designation:** General Manager

**Address:** 201-1204, 18, Bucheon-ro 198beon-gil, Wonmi-gu, Bucheon-si, Gyeonggi-do, 14557 (Chunui Technopark 2nd)

**Telephone:** 82326230091

**Mobile:** 821020775804

Fax: 82322325804

**Mail:** antisurge@hanmail.net

**Website:** www.waterhammer.kr

## ENBIO GREEN SOLUTIONS PVT. LTD.

### Company Profile

Enbio Green Solutions Private Limited was formed in 2018 as a Water treatment, Waste Water and Organic Waste Treatment Company. We have prioritized the sustainability and restoration of the earth's former glory over the harmful and toxic wastewater treatment plants and techniques. We aim to provide quick and non-hazardous solutions for the treatment of solid and liquid waste discharge that is tainting the integrity of our homeland. In order to achieve this, we will be implementing the modern and advanced technologies of desalination and recycling, solid waste treatment solutions, wastewater treatment solutions and zero liquid discharge treatment. Recently we've been awarded ISO 9001:2015 certification. This clearly shows our commitment to quality and innovation. All our solutions are eco-friendly, low



Kymik Industries Pvt. Ltd. is an ISO 9001 certified company engaged in Design, Manufacturing & Installation of Bolted Panel Tanks.

1. Zinc-Aluminium Tank ( 3 KL - 500 KL )
2. FM 4020 Compliant Fire Water Tank
3. Wastewater - ETP, STP, WWTP Tank
4. Industrial Water Storage Tank

#### OUR OTHER INSTALLATIONS



For Complete Storage Solution, Connect to us

**Kymik Industries Pvt. Ltd.**

Off: 632, Somdutt Chamber 2, Bhikaji Cama Place, New Delhi - 110066

Fac: 1552, Domohani, City Asansol, Paschim Bardhaman, West Bengal - 713334

[sales@kymik.com](mailto:sales@kymik.com)

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

+91 9910045892

#### Zinc Aluminium Tank

**Tank Type: Zn-AL/GalAlume**  
**Standard: AS 2304**

\*Corrugated Sheets are fused & panels are bolted on site.



#### Galvanized Tank

**Tank Type: GI Bolted Panel**  
**Standard: FM 4020 & NFPA 22 compliant**

\*Galvanised steel flat panels are bolted on site



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**Booth No D21**

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**Booth No C M6**

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**Mobile:** 91-93232-22080

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**Booth No D-16**

**Contact Person:** SAMEER KURGUND

**Designation:** BUSINESS HEAD

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