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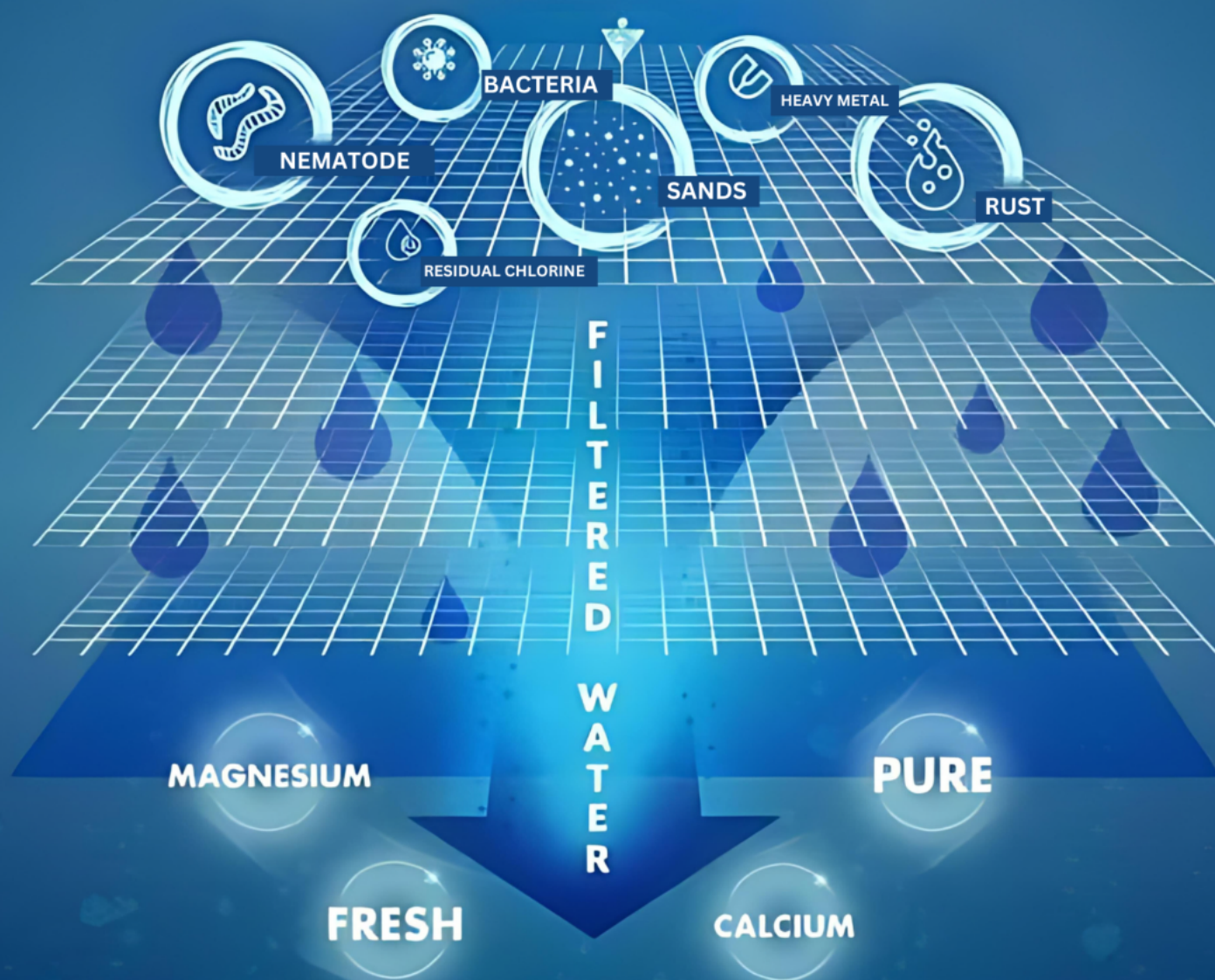


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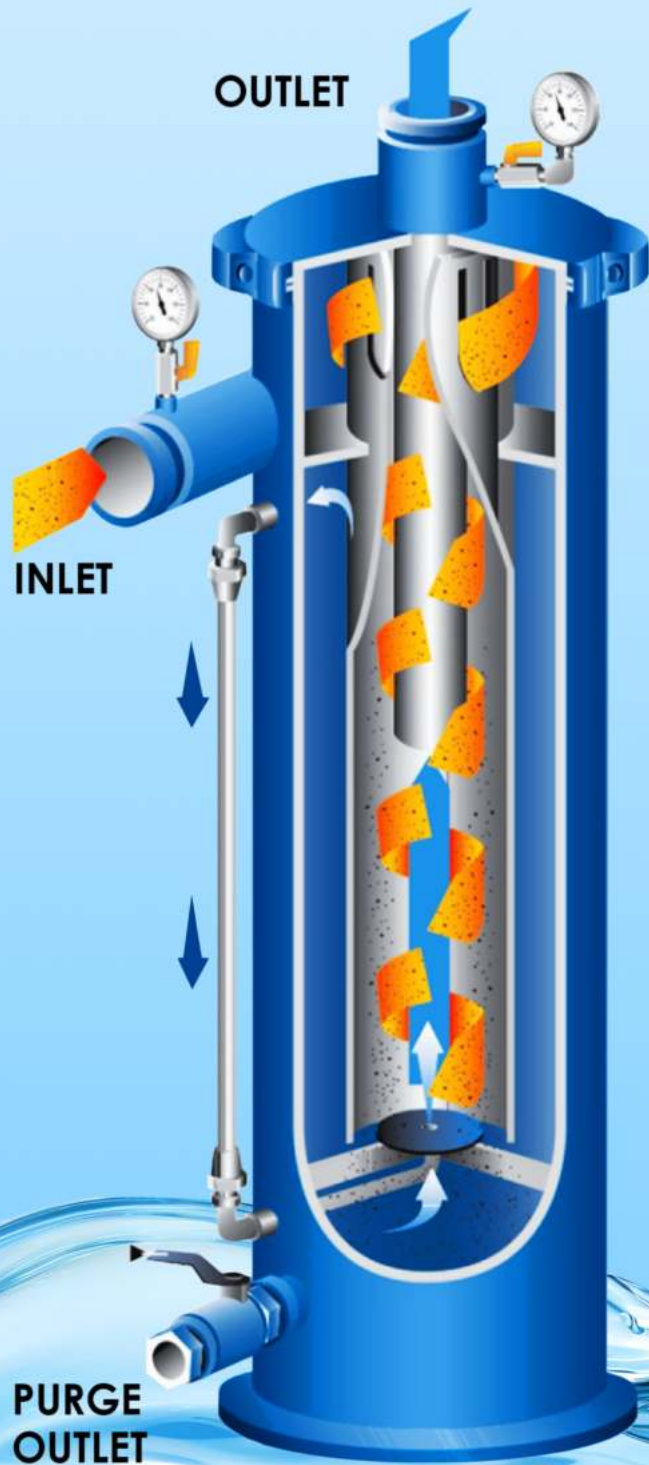




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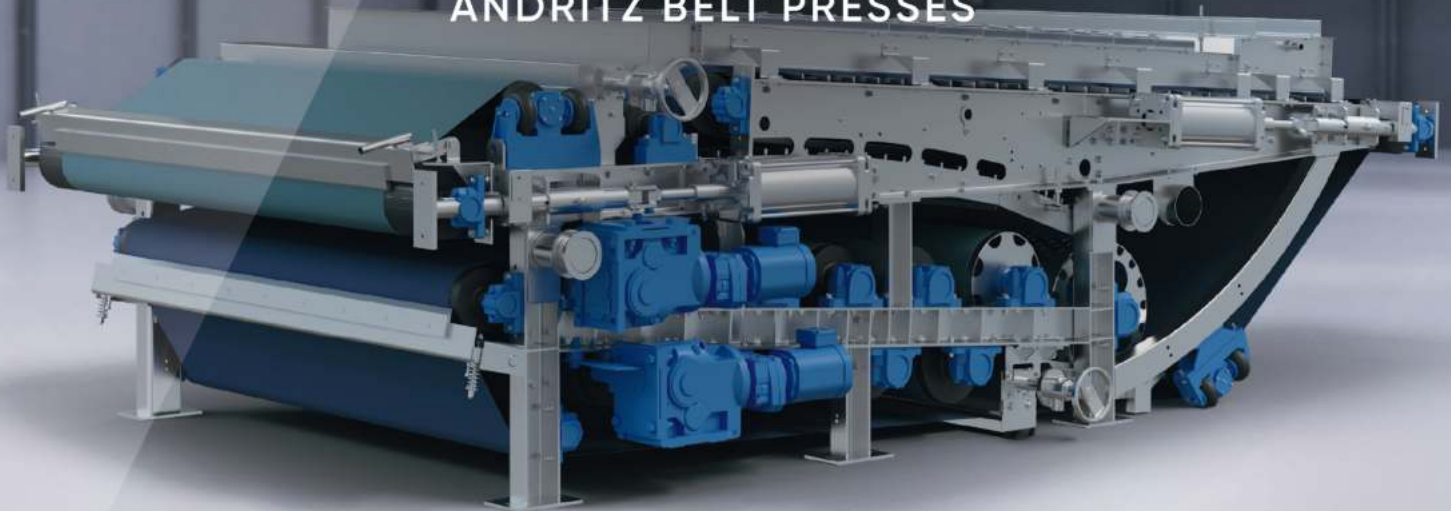


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JUNE 2024	24TH ANNIVERSARY ISSUE: IN CONVERSATION WITH THE INDUSTRY LEADERS
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PIONEERING THE FUTURE OF CLEAN WATER: INNOVATIONS IN WATER FILTRATION TECHNOLOGY

Dear Readers,

Welcome to the April edition of EverythingAboutWater Magazine, where we embark on an illuminating journey into the forefront of water filtration technology. As the global demand for clean and potable water continues to rise, the imperative to develop advanced filtration solutions has never been more pressing.

In this issue, we explore the cutting-edge innovations driving the evolution of water filtration systems. From nanotechnology-enabled membranes to novel filtration media, we uncover the transformative impact of these advancements on water purification processes. Through insightful articles and case studies, we delve into the intricate mechanisms behind next-generation filtration technologies, showcasing their efficacy in removing contaminants and improving water quality.

This issue serves as a compendium of knowledge, offering invaluable insights to researchers, engineers, policymakers, and stakeholders invested in the future of water sustainability. As you immerse yourself in the compelling narratives, envision a world where innovative filtration technologies empower communities to access clean and safe water, mitigating the risks posed by pollution and scarcity.

In summary, I extend my heartfelt gratitude for joining us on this exploration into “Innovations in Water Filtration Technology.” May the discoveries shared in these pages catalyze collaborative efforts towards ensuring equitable access to clean water for all.

Thank you for your steadfast dedication to the preservation of our most precious resource.

Thanks & Regards,

Simran Arora

Associate Editor

EverythingAboutWater Magazine

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NATIONAL W

DROPLETS

Sulzer introduces next generation XFP ContraBlock Evo hydraulics including high-head variants

Wastewater pumps operate in very challenging environments and Sulzer is constantly striving to improve the performance and reliability of its products. Submersible pumps in the sewage pumping station network, for example, are at the front line, forced to deal with increasing volumes of wipes and fibrous materials that can cause blockages. To help combat this, Sulzer's XFP range is now fitted with the ContraBlock Evo hydraulics, including impellers that can be retrofitted to legacy pumps. The portfolio has also been extended with two-pole, high-head variants for more challenging applications.

Pump design is a process of continuous evolution and Sulzer has been at the forefront of this market for decades. The XFP range is ideally suited to the wastewater sector, especially sewage pumping stations and Sulzer's latest additions help to reduce operating costs by improving efficiency and reliability.



Contaminated Drinking Water Supply Triggers Protest in Jammu Locality

Protests sparked on Sunday in one of the localities here due to supply of contaminated tap water amidst slogans against the Jal Shakti Department (formerly Public Health Engineering). Shouting slogans, the residents of New Company Bagh, Old University Campus Lane including women, staged the protest alleging contaminated water supply for the last one month in view of the ongoing repair and construction work of a drain (nallah) opposite the Indian Institute Management (IIM) Campus office lane.

Fearing the spread of water-borne diseases if no prompt action is taken, the protestors alleged that the water pipes have been damaged because of the ongoing repair work of the nallah, adding, "For the last more than one-month, contaminated water from the drain is being supplied to households of the locality but the Jal Shakti Department has turned a deaf ear to the several requisitions and appeals made by the residents. Are they (Jal Shakti Department) waiting for any tragedy to happen? We are forced to consume stinky drain water, which has unsafe levels of germs or chemicals and may lead to spread of waterborne diseases," they said.

The protestors have once again requested the concerned department to immediately resolve the matter before it is too late and also appealed to the Lieutenant Governor Manoj Sinha to issue directions from the chair for early redressal to the grievance. "Our lives are at risk and it is high time the Jal Shakti Department must take action to make clean water supply available to the residents at the earliest," they said.

Nainital Embraces Traditional Water Conservation

The water conservation initiative in Nainital, led by environmentalists Dr. Bikrant Tiwary and Supriya Patil, aims to revive traditional practices to harness rainwater effectively. With a strong women-centric focus, the initiative, which coincides with Earth Day, demonstrates the importance of preserving natural resources. Chals, large pits dug into hillsides, will be used to store rainwater, with a collective capacity of up to 1.5 million litres. Khals, smaller structures, will hold 6,25,000 litres of water, ensuring a stable supply during dry periods and preventing soil erosion.

ATER NEWS



With 80% of the workforce comprised of women, the initiative aims to empower them and enhance their role in community development. Beyond water conservation, it promotes holistic community development by replenishing underground springs and supporting biodiversity. What sets this project apart is its self-sustainability, as it does not rely on government funding.

Dr. Bikant Tiwary, known for his transition from the insurance and service sectors to philanthropy, advocates for a greener, sustainable future aligned with the United Nations' Sustainable Development Goals (SDGs). His vision includes nature conservation, preservation, and promoting tribal art and eco-friendly handicrafts, envisioning a future where indigenous tribes thrive in harmony with nature. Additionally, he spearheads a pioneering initiative to preserve over 15 million litres of rainwater annually under his Individual Social Responsibility, marking a significant step towards environmental sustainability.

Supriya Patil, a seasoned environmentalist, has led impactful initiatives, including planting 17 million trees in India and Africa. She emphasises merging sustainability with social impact and aims to plant millions more trees for carbon reduction and rural community empowerment. The focus is on expanding this initiative to states like Jharkhand, Odisha, West Bengal and Maharashtra. Dr. Bikant Tiwary's commitment to reviving traditional wisdom serves as a model for achieving water security and sustainable livelihoods in Nainital and beyond, highlighting the effectiveness of grassroots initiatives in addressing environmental challenges.

Vande Jalam Campaign Launched in Indore to Combat Water Crisis

Water resources minister Tulsiram Silawat here on Tuesday stated that Indore's prosperity hinges on effective water management. "This city needs to conserve every single drop of the water for a rainy day," he said, underscoring the critical role of public participation, drawing parallels to the success of the city's cleanliness drive, at the launch of 'Vande Jalam' campaign at Ravindra Natya Grah on Tuesday.

DROPLETS

Signal partners with gas analysis experts in Korea

Signal Group has announced the further expansion of its network of international distributors with the appointment of Y&J Eng in South Korea. "Asia is fast becoming one of our major markets, so it is important that we have a local partner in the Korean market," explains Signal MD James Clements. "We recently welcomed two members of Y&J Eng staff to our factory in Camberley for training, and were impressed by their levels of expertise and experience in emissions sampling, monitoring and analysis."

"Factory training is important for our distributors because it instils high levels of confidence when serving customers when they return home, and provides us with an ideal opportunity to learn more about their local markets."

"The appointment of Y&J Eng as our distributor is great news for customers in Korea because they will be able to rely on local support from factory trained experts with over 12 years' experience in environmental monitoring instrumentation."

The partnership between Y&J Eng and Signal began with a successful evaluation of the Signal 3010 MiniFID, and prompted the requirement for factory training in the UK. Initially, the Y&J Eng staff were mainly interested in portable VOC measurement instruments, but following the training, they are now able to offer and support the full range of Signal gas sampling, handling and analysis instruments.



In an initiative to tackle the looming water crisis in the city, the campaign was officially launched by organisations Sanghamitra and Vishwam. The event witnessed the presence of key figures including Silawat, mayor Pushyamitra Bhargav, river conservator of Bangalore Prasanna Prabhu, and saints and activists.

Highlighting Indore's ranking among cities facing underground water depletion, Bhargav emphasised the need for proactive measures to avert a crisis akin to Bangalore. He proposed widespread adoption of water storage facilities such as pits to maximise groundwater recharge. Echoing this sentiment, Niharika Shivhare, a water conservation expert, stressed the significance of individual actions in water conservation, advocating for simple yet effective measures such as limiting water usage and adopting traditional practices like Indian-style toilets.

Sandeep Narulkar, an advocate for integrated water management, highlighted the pressing need to conserve natural water bodies and recharge groundwater sources amidst urban expansion. He underscored the importance of community-driven initiatives to revive neglected water resources and promote sustainable practices.

Similarly, Sagar Chouksee emphasised the role of behavioural change in water conservation, calling for a collective effort to instil values of water conservation in future generations. Citizens shared innovative approaches to water conservation, including utilising vacant industrial spaces for rainwater collection and implementing decentralised purification systems. Dutta of Shalimar Palms showcased the success of community-led initiatives such as terrace gardening and indigenous plantations in replenishing groundwater levels and mitigating water scarcity.

Pramod Dafriya highlighted the corporation's past efforts in water conservation and reiterated the need for sustained action to combat rising salinity levels in industrial areas. As Indore embarks on this ambitious journey towards water sustainability, the 'Vande Jalam' campaign stands as a beacon of hope, uniting citizens, policymakers, and environmentalists in a collective endeavour to secure the city's water future. "With determination and concerted effort, Indore aims to emerge as a model for water conservation and resilience, setting a precedent for cities nationwide to follow suit in safeguarding this precious resource for generations to come," the mayor said.

Kerala Minister has a Message for IT Companies in Bengaluru Over Water 'Crisis'

Kerala Industries & Law minister P. Rajeeve is inviting IT companies in Bengaluru, Karnataka, to the state. The minister is wooing major IT companies from Bengaluru, facing a deepening water crisis. The state is highlighting its abundant water resources as a major advantage, contrasting it with Bengaluru's daily water shortage of 500 million litres. "After we read reports of the water crisis in Bengaluru, we wrote to the IT companies offering them all facilities as well as plenty of water," the minister told ET on Tuesday.

"We have 44 rivers, big and small, in our state, so water is not an issue at all."

This move comes as Bengaluru, India's IT hub, grapples with water scarcity. Traditionally the go-to destination for IT companies in India, Bengaluru's woes are prompting other states to step up their game. Kerala is showcasing its infrastructure strengths, including existing tech parks in Kochi, Thiruvananthapuram, and Kozhikode, along with plans for smaller parks in developing corridors. The state boasts a well-connected network of airports, roads, railways, and ports, making it an attractive location.

Kerala's ambition: To become a Silicon Valley style hub.

While Rajeeve declined to name specific companies being targeted, he mentioned ongoing discussions and Kerala's ambition to become a "Silicon Valley" style hub. The state's existing talent pool of tech graduates is another advantage being highlighted. "We are in discussions with some of them," he said. "We want to develop our entire state on the lines of Silicon Valley. We have several advantages to host the tech sector, including a vast talent pool of technology graduates.

Kerala has a clear goal: to increase its IT workforce from 2,50,000 to 1 million within five years. The government plans to achieve this by building four IT corridors along National Highway 66.

This strategic move by Kerala highlights the growing competition among Indian states to attract the IT sector. With Bengaluru facing challenges, Kerala sees an opportunity to establish itself as a major player in the Indian IT landscape.





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Alarm as Pune's Water Sources Deplete Rapidly

Due to various factor such as the rapid urbanisation of Pune, water pollution and excessive extraction of groundwater, both surface and groundwater sources have been severely impacted. Additionally, untreated sewage is being directly discharged into rivers. There seems to be a lack of regard for water resources among the government, elected officials, and citizens alike. Non-governmental organisations (NGOs) working on water-related issues have sounded the alarm, warning that if water management practices do not improve, Pune may soon face a water crisis similar to that of Bangalore. In response to this urgent situation, concerned organisations have developed a water manifesto. Their goal is to incorporate this manifesto into the agendas of political parties and candidates. Notable NGOs involved in this effort include Gram Gaurav Pratishthan, Vanarai Organisation, and the Gokhale Institute of Politics and Economics.

This initiative was announced during a press conference held on Tuesday (23rd April). Key figures present at the event included water expert Pradeep Purandare, Trustee of Gram Gaurav Pratishthan Kalpana Salunkhe, Executive Trustee Dr. Sonali Shinde, Prasad Sevekari, and Forestry Coordinator Amit Wadekar. Water expert Purandare emphasised the importance of effective water planning, regulation, and the enforcement of water laws. He highlighted the neglect of maintenance and repairs of dams, stressing the need for regular upkeep to ensure their functionality. Furthermore, he underscored the importance of ensuring that water reaches every individual, emphasising the need for a more serious approach to addressing water issues. Salunkhe pointed out, "The water crisis has persisted due to neglect since 1972. There has been a failure to effectively manage the available water resources. Previously, policies were shaped through advocacy for water-related issues. However, today's representatives seem to overlook this crucial matter." Wadekar emphasised the need for elected representatives to prioritise discussions on water-related issues. He stressed the importance of managing water resources effectively and controlling their usage.

Water Treatment Plant Unit Gets Dedicated Power Substation in Gurugram, Delhi

The power department has connected the third unit of the Chandu-Budhera water treatment plant (WTP) with the 66kV power substation, which was specifically set up to provide uninterrupted power supply to the plant.

Two units of the WTP were already connected with this substation, but the third unit was getting power from the Farrukhnagar substation, which is 10km. away. As a result, even minor problems in power lines led to disruptions in power supply, affecting the functioning of the third unit.

Abhinav Verma, Executive Engineer (infrastructure), Gurugram Metropolitan Development Authority (GMDA), told The Tribune that the issue of power disruption had been resolved completely with the help of power department authorities.

There were some technical glitches in the cable network of the third unit of the WTP, due to which it could not be connected with the 66kV power substation. "Now, we have fixed new cables in the third unit and connected it with the 66kV power substation a couple of days ago," he said.



Meanwhile, the work on the construction of another unit is in progress to increase the capacity of the Chandu-Budhera water treatment plant by 100 MLD, which will help in meeting the increased demand for new sectors, particularly Sectors 81 to 115 in the metropolitan city.

The GMDA is increasing the availability of drinking water for residents, particularly in new sectors along the Dwarka Expressway and the Southern Peripheral Road (SPR). Presently, the Chandu-Budhera WTP has three units of 100 MLD capacity each. The fourth unit, which is likely to be completed in a few months, will enhance its capacity to 400 MLD, giving a much-needed boost to the potable water supply for local residents.

Chandigarh Municipal Corporation to Shut Down 17 Tubewells to Save Dipping Groundwater Level

In an effort to increase the groundwater level, the Chandigarh Municipal Corporation (MC) has decided to shut down 17 tubewells in

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different parts of the city, besides taking strict action against violators who illegally extract underground water for commercial purposes. Municipal commissioner Anindita Mitra accorded the approval to close 17 tubewells on Monday after a report was submitted by a team of expert engineers of MC.

While sharing more details about the decision, the commissioner said groundwater levels in some parts of the city were declining due to perpetual withdrawal, necessitated by increased demand for fresh water due to vagaries of rainfall, increased population, industrialisation, etc. She said a team of MC engineers surveyed and recommended shutting the tubewells, aiming to increase the groundwater table.

"This will not only maintain the groundwater table, but also save yearly electricity worth around ₹ Rs. 50 lakhs. MC has taken various steps with regard to sustainable groundwater management, including initiating suitable action for effective rainwater harvesting, increasing water use efficiency and taking strict action against violators," Mitra said.

Detailing other water conservation efforts, she said since April 15, MC had issued 89 challans and 425 notices for water wastage throughout the city. The daily drive will continue till June 30. Further, MC was replacing faulty or defective water meters of consumers who failed to replace them within the stipulated time, as per a decision of the MC General House. MC has replaced 1,051 defective meters on its own by charging meter cost, labour charges and testing fee through consumers' water bills.

Bengaluru Water Board Installs Five Lakh Aerators in Public Taps Amid Crisis:



Following the Bengaluru water board's directive mandating the installation of aerators in public taps, it announced the successful installation of approximately five lakh aerators across the city. These installations span various locations, including government offices and other public spaces, aimed at water conservation efforts, The Hindu reported.

The Bangalore Water Supply and Sewerage Board's (BWSSB) has set April 30 as the deadline for the installation of aerators across the city.

The civic agency's chairman, V. Ram Prasath Manohar spoke to reporters on the matter and said, "30 per cent of water can be saved everyday with installation of aerators. The board has levied fines on 450 persons in the city for using potable water for non-essential purposes. The BWSSB fines ₹ 5,000 for such violations."

"In the last 15 days, the board filled 15 lakes with treated water and have set a target to fill 200 lakes with treated water in a year's time. This will help improve groundwater levels in the areas around these lakes," He added, as quoted by the publication.

Simultaneously, the BWSSB also plans to recognise individuals participating in the Jalamitras program, a volunteer initiative in collaboration with the board to promote water conservation. Participants will receive "Bengaluru's proud citizen" certificates, the report said. Notably, within the past month, 9,000 volunteers have enlisted as Jalamitras, demonstrating a growing community engagement in water conservation endeavours.

Bengaluru, and several other parts of Karnataka, are grappling with severe water shortage due to low rainfall in the past monsoon season, resulting in as many as 6,900 borewells drying up across the city. The Karnataka capital received its first rainfall only two days ago, after a dry spell of nearly five months.

AI-based Groundwater Monitoring System to Revolutionise Water Management In City

To tackle water scarcity in the city, BWSSB has announced the adoption of an AI-based advanced groundwater monitoring system. Developed in collaboration with scientists from the Indian Institute of Science (IISc), the Central Ground Water Board (CGWB), and Karnataka Groundwater Authority, it promises to revolutionise the monitoring and management of groundwater levels in the city.

V. Ram Prasath Manohar, Chairman of BWSSB, highlighted the significance of this initiative. "Low groundwater levels are a major contributor to water scarcity in Bengaluru. Traditional monitoring systems have limitations in providing real-time, accurate data. The AI-based system will address these challenges effectively," he said. A key component of this initiative is the formation of a dedicated 'groundwater task force' within BWSSB, comprising experts from IISc, CGWB, and Karnataka Groundwater Authority.



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NATIONAL WATER NEWS

APRIL 2024

This task force will be responsible for continuously monitoring groundwater levels using advanced technology. The AI-based system will enable real-time data collection, analysis, and reporting, providing comprehensive insights into groundwater availability and trends. “The involvement of IISc scientists ensures we have access to state-of-the-art technology for accurate groundwater monitoring,” said Manohar. BWSSB aims to adopt a targeted approach to water management. Decision-making related to groundwater recharge systems and other water conservation measures will be driven by data, leading to more effective solutions. “We’ll be able to identify areas with rising groundwater levels and implement appropriate measures to mitigate water scarcity,” he added. This initiative will aid in planning and executing groundwater level-rise programmes, optimising resource allocation, and reducing costs. Moreover, it’ll provide insights into enhancing groundwater levels in lakes.

ADB Provides 71Mil USD for Climate-resilient Water Management in Bangladesh

The Asian Development Bank (ADB) and the government of Bangladesh signed a 71 million U.S. dollar loan agreement to improve flood control, irrigation, and water resources management in rural communities in Gopalganj and Madaripur districts to strengthen their preparedness and resilience to the effects of climate change.

Md. Shahriar Kader Siddiky, Secretary of the Economic Relations Division (ERD) under the Ministry of Finance, and Edimon Ginting, Country Director of ADB in Bangladesh, signed the loan agreement on behalf of Bangladesh and ADB, respectively, at a ceremony at ERD in Dhaka Saturday. “This project reflects ADB’s renewed commitment to help Bangladesh tackle climate change challenges through improved flood control, irrigation, and water resources management,” said Ginting.

“Building on our previous successful projects in this area, the new project will further boost economic growth and productivity, increase incomes and sustainable livelihoods, especially for women and vulnerable groups, and reduce poverty in rural areas of southwest Bangladesh,” Ginting added. The Climate-Resilient Integrated Southwest Project for Water Resources Management is expected to benefit more than 6,00,000 people, introduce climate-resilient flood control, drainage, and irrigation measures, and reduce saline intrusion.

The project will develop and enhance integrated water management plans, and construct training centers for water management

organisations and other community infrastructure. The project will promote participatory water resource management to foster local ownership and ensure sustainability. (UNI)

Traditional Water Conservation with 10,000+ Trenches in Palghar



JM Financial Foundation (JMFF) has been implementing the Integrated Village Development Project in a cluster of seven villages and 15 hamlets of Mokhada block in Palghar, Maharashtra. Over the years, the project has attempted to establish the non-necessity of relying on large, constructed water conservation structures, by promoting continuous Contour Trenches (CCTs) along hill slopes in some of the most water-scarce areas of the block. A total of 10,794 CCTs were dug and deepened year on year, leading to in-situ water conservation, and natural recharge of groundwater, while also preventing run-off of surface water in the abundant monsoons in this region. Besides, the project has promoted rainwater harvesting with the digging of 294 small farm ponds (jalkunds).

Commenting on the project, Puja Dave, Executive Director and Head CSR, JM Financial Group, said, “Our efforts in Mokhada block have been focusing consistently on structured grassroots interventions, reaping visible results over the years. A region known for water crises, but surviving on agriculture, like Mokhada, needed focused investments in sustainable modes of water conservation, that are easily understood and adapted at a scale. Every summer, from April to June, CCTs have been dug, and we aim at digging further in the coming year. The trenches dug to date, cover an area of 180 acres, and have provided farmers, especially those from the Katkari community with an opportunity to earn locally, and not migrate at the beginning of the year.” Complementing water conservation, the Foundation has also supported the plantation of 1,722 saplings of mango and cashew, which beyond safeguarding soil health, also yields economic benefits for the landowning farmers.

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Being a central component of JM Financial Foundation's intervention, water harvesting and conservation feed into the objective of enhancing farmers' livelihoods. Since its initiation in 2018, the project has worked on enhancing agricultural yield, encouraging multi-cropping and farming in two seasons. These efforts have entailed regular, scientific training, followed by advanced agri-inputs being provided to 1,100+ marginal and small farmers, handheld throughout.

Dovetailing initiatives in agriculture and water conservation are efforts made by the Foundation to link the community to public schemes and programmes designed for them. With the intervention of two helpdesks set up and run at Ase and Beriste Gram Panchayats, the Integrated Village Development Project has linked farmer families with benefits worth over INR 7 crores thus far.

BMC Commissioner Takes Stock Of Drinking Water Supply in Bhopal



BMC commissioner Harendra Narayan on Thursday took stock of the drinking water situation to ensure that the people do not face any hardship during the summers. While inspecting the water filter plants, the commissioner instructed officials to ensure proper supply in the city. Bhopal has 15 functioning water filter plants and of these 12 are on the bank of Upper Lake. Around 20 MLD water is drawn from Upper Lake and 10 MLD from Narmada water project for supply. Narmada water project contributes 33 per cent of total water supply in Bhopal.

The commissioner also inspected the sewage treatment plants. He directed the officials to ensure that the treated sewage water is used for watering plants in central, side verges, parks and for horticulture. Commissioner took the proper stock of chemicals. He instructed for starting the use of STPs installed at Suraj Nagar and Kaliyasot-Bhadbhada area and Kerwa dam road. In compliance with the order of the National Green Tribunal (NGT), the BMC is constructing two Sewage treatment plants (STPs) for conservation of Kaliyasot River.

The completion of construction will be by July this year. According to municipal administration, Suraj Nagar STP will have capacity of 0.2 MLD while the treatment plant at Barkhedikalan nullah, Kerwa Dam road will have capacity of 0.45 MLD.

Bengaluru 'Jalamitra' Project

Bangalore Water Supply and Sewerage Board (BWSSB) chairman Ram Prasat Manohar on Thursday said the 'Jalamitra' project has received a good response with more than 9,000 registrations within 30 days. He was speaking at a zonal workshop held as part of the Water Surplus Bengaluru campaign here.

"Registrations began on March 14 as part of the 'Save Water – Grow Bengaluru' campaign. More than 9,000 people responded by registering themselves as 'Jalamitras'. No government projects can be successful without people's participation," Manohar said and appealed to water ambassadors ('Jalamitras') to make Bengaluru a water surplus city by 2026. This campaign is aimed at raising awareness on the importance of water conservation and BWSSB's people-friendly programmes such as water and sewage management, rainwater harvesting, etc. "People must inform BWSSB about using treated water, water wastage, and drainage problems," the chairman said.

He said sector-wise workshops will be held for 9,000 'Jalamitras' across the city. The board will raise awareness on the need for pits to harvest rainwater. It has set a target of having 1,000 pits. About 650 recharge pits are ready. "Awareness should be created on the need to have pits to harvest rainwater," Manohar said.

The information given by BWSSB should be conveyed to people. Any problems related to water supply and drainage should be brought to the attention of the officials, he said. Around 500 'Jalamitras' and Bengaluru South Zone chief engineer Venkatesh were present.

New Sewage Treatment Plan for 13th-Century Reservoir in Delhi



Hauz-i-Shamsi, the 13th-century reservoir located in Mehrauli, might get a permanent solution to its long-standing problem of polluted water. Delhi Jal Board (DJB) plans to build a new sewage treatment plant (STP) in sector A of Vasant Kunj — 2.5 km away from Hauz-i-Shamsi — which will provide treated water directly to the water body, said a DJB official.

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For over a decade, the residents of wards 6 and 8 who live near Hauz-i-Shamsi have complained of polluted drinking water, breeding grounds for mosquitoes — all attributed to the stagnant water in the reservoir, made worse by sewage water entering the reservoir. Since 2015, at least three attempts have been made by the Archaeological Survey of India (ASI) to clean Hauz-i-Shamsi but none worked.

Protected by the ASI, the reservoir was built by Delhi Sultanate ruler Shamsuddin Iltutmish on account of a dream of the prophet who had led him to discover the water body, according to a 20th century listing by the ASI. In its exhaustive volumes on Delhi buildings, Indian National Trust for Art and Cultural Heritage (INTACH) lists that Hauz-i-Shamsi, also known as Shamsi talab, once covered over 100 hectares. But with time, the talab seems to have lost its past glory as it has shrunk to 7.05 acres, said an ASI official, who asked not to be named.

The first attempt to clean Shamsi Talab was made in 2015, after which Sustainable Environment and Ecological Development Society (SEEDS), under the supervision of ASI, cleaned it in 2023, and then again in February this year. A recent spot check by HT, however, showed that the water quality had started to deteriorate again and the water level had gone down significantly compared to February.

The proposal sent by DJB to National Water Mission on April 9 this year, as seen by HT, mentions “construction of a one million gallons per day sewage treatment plant (STP) along with other associated works in sector A Vasant Kunj to feed treated water to the Shamsi Talab in Mehrauli.” “There already exists a sewage treatment plant under DJB where the new treatment plant will be established. The old one has not been functional for over 10 years. The new one will treat sewage water coming from Vasant Kunj and send it to Hauz-i-Shamsi,” said a DJB official.

DJB has approached National Mission for Clean Ganga (NMCG) to carry out the installation of the new STP and to overlook the process of supplying treated water to Hauz-i-Shamsi. “Due process to gain approval started on Thursday. It will take some time but once it’s done, the Shamsi Talab problem will be solved for good,” said an official from NMCG, who asked not to be named. Merely two months after it was cleaned up by ASI and NGO SEEDS, sludge had started to accumulate on the water. Heaps of garbage, perhaps dumped by nearby residents, are back on the banks of the reservoir.

Lalit Gupta (44), a resident of ward 8 of Mehrauli and general secretary of the United Shamsi Talab Residents’ Welfare Association, said, “We have tried to increase awareness among residents here, and urged

them to stop dumping garbage here. We helped ASI add a fence around the water body to discourage people from throwing waste here but some people continue to do so. This has exacerbated the issue.”

Gupta said that occasional clean-up can’t fix the problem. “Regular supply of treated water is important for stagnant water. Hauz-i-Shamsi is a heritage structure and DJB’s plan will be an important step in conserving it,” he said

East County Recycled Water Treatment Facility Set to Go Online in 2026



Work has been underway on a recycled water treatment project in Santee for about two years. In another two years, some East County residents will get their drinking water from the East County Advanced Water Purification program. It’s a massive billion-dollar recycled water treatment plant north of Santee Lakes that, at its peak, has 250 construction workers working on it.

Kyle Swanson, the CEO and general manager at the Padre Dam Municipal Water District, says the project will meet about 30% of drinking water demands in East County alone. Right now, most East County residents get their water from Northern California and the Colorado River, according to Swanson.

“This is a needed project that would be an answer to the drought that regularly plagues San Diego County,” Swanson said.

When the project goes online by winter 2026, some customers in Padre Dam Municipal Water District and Helix, Lakeside and Otay water districts will receive some of the water that passes through here.

Swanson explains how it will work.

“There is wastewater generated in East County. That’s going to be sent up to a treatment plant for processing.

That'll produce recycled water," Swanson said. "It'll go through another advanced water purification project to produce purified water. That purified water will get pumped through Lake Jennings, which is a surface body reservoir in Lakeside."

Swanson says the water will sit in Lake Jennings for four to six months and then move to be treated at a drinking water treatment facility before it reaches homes. In addition to water supply, Swanson says it comes with other advantages too. Three megawatts of renewable energy will be generated from digester biogas and organic waste, which will supply up to 60% of part of the program's electricity.

"There's also a benefit of offloading wastewater that's currently being treated and dumped out to the Pacific Ocean, so there's a significant environmental impact," Swanson said.

In terms of the cost to customers, Swanson says they shouldn't expect an increase. "We don't anticipate it changing," Swanson said. "In fact, this project moving forward was cost competitive with importing water and delivering wastewater for treatment into the San Diego region."

With so much construction happening inside the future facility, Swanson reminds commuters of what they can see out on the roads. "There's also approximately 30 miles of pipeline being constructed," Swanson said. "Currently, the pipeline for the conveyance of the purified water is about 30% complete moving through the communities of Santee and Lakeside."

In Bid to Fight Water Woes, Gurugram to Link 2 Water Treatment Plants



In view of the rising water shortage problem, the Gurugram Metropolitan Development Authority (GMDA) is planning to connect the Basai and the Chandu Budhera water treatment plants. The decision was taken to fight the water woes prevailing in the city at the onset of the summer season. The GMDA will increase the efficiency of the two plants so it can meet the increasing demands of water in the city. Officials said that both plants have the capacity to work for 24 hours a day. However, their usage was limited to 20 hours so far.

With this mind, the officials decided to improve the management of the plants. Now, the authorities aim to increase the supply by five to ten per cent. "Though it will be an interim measure, it will be a help to us in dealing with the shortfall partially. By implementing these measures, the authority intends to supply 615 million liters per day (MLD) of water across Gurugram," said a GMDA official, reported Times of India. Apart from that, a dedicated substation has been set up for the Chandu Budhera plant. Meanwhile, work has begun for the 66 kV substation at Basai, which will address the issue of power supply disruption," he added.

The peak demand for the season is 675 MLD. Residents of Gurugram receive water from the two plants located in Chandu Budhera and Basai. While the Chandu Budhera plant delivers 300 MLD, the Basai plant provides 270 MLD of water. Last year, the Basai treatment plant was enhanced by upgrading two filtration units by 45 MLD. It increased its potential to filter up to 315 MLD of water. However, the plant could not reach its full capacity due to insufficient raw water supply.

The work for connecting the two plants has started already. According to the officials, at least 50 per cent of the work at the Basai plant has been done. Authorities expect to complete the work by early May this year. "We have already laid the pipeline towards the Basai side and will soon start laying the pipeline towards Chandu Budhera. We hope to finish the work by the first week of May," the official added.

Innovations in Traditional Methods Revolutionising Farming in Rajasthan's Parched Shekhawati

Faced with paucity of water, Mr. Maharia had to take up animal husbandry as an avocation. He also encouraged other villagers to rear sheep and goats.



"I am getting the services of a veterinarian to ensure proper growth of my animals, whose number has crossed 60," he added. The 'bakra mandi' (goat market) in Sikar is one of the biggest in the State, where the annual turnover is estimated at Rs. 600 crores. For this year, the Agriculture Department has announced a subsidy of up to Rs. 1.35 lakhs for construction of farm ponds, which may be used for collecting rainwater for irrigation.

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Mr. Maharia has led a group of farmers to raise the demand for bringing canal waters for irrigation in the parched fields. He said if a provision of 5,000 cusecs of canal water is made for the 50-lakh acre irrigable land in the region, it will solve the problem of water scarcity and also provide enough drinking water to the 85-lakh population in Sikar division. The Chaudhary Kumbharam Lift Canal, built under the Indira Gandhi Canal Project, supplies 1,500 cusecs of water to some areas. If the Indira Gandhi Canal is repaired on a war footing, the inflow of water may increase to 15,000 cusecs and a portion of the additional quantity may be allocated to Sikar.

If one cusec of water is allotted per 1,000 acres, the drinking water requirement may be met and fruit and vegetable production can be taken up in 50 lakh acres through drip irrigation. The rearing of sheep and goats will provide additional support, Mr. Maharia pointed out, while calling for the appointment of a panel of experts and framing of water allocation rules. These rules may be made on the lines of allocation coming to Sanchore in southwestern Rajasthan from Sardar Sarovar Dam in neighbouring Gujarat.

The Sikar Sambhag Nahar Lao Sangharsh Samiti has also pointed out some anomalies in a memorandum of understanding signed between the Haryana and the Rajasthan governments last month for ensuring the supply of the latter's entire share of water as per the 1994 Yamuna Water Agreement. Sangharsh Samiti chief Bhola Ram said the Rajasthan government should make an attempt to get its full share of water from Tajewala Head and arrange for its supply to Sikar division through pipelines.

In the midst of the demands for bringing water to Shekhawati, Sikar Collector Qummer-ul-Zaman Choudhary said he is encouraging farmers to adopt new cropping patterns. "The establishment of farmer-producer organisations, linkages with cooperatives, and ensuring market accessibility will enhance their income," Mr. Choudhary said.

Hyderabad Water Board Identifies 32,000 Consumers in IT Belt as Water Guzzlers

In response to the escalating water crisis in Hyderabad, the Hyderabad water board is embarking on a collaborative initiative with 18 NGOs to promote rainwater harvesting (RWH) across residential areas. The targeted demographic encompasses approximately 32,000 consumers identified as the highest users of water tankers, based on a recent survey conducted by the Hyderabad Metropolitan Water Supply & Sewerage Board (HMWSSB), a TOI report stated.

Hyderabad's Water Guzzlers

Predominantly situated in the city's western corridor, including Manikonda, Gachibowli, Kondapur, Madhapur, Kukatpally, Jubilee Hills, and Banjara Hills, these consumers predominantly reside in prime real estate hubs characterised by expansive homes and multi-storey buildings, with a significant portion currently under construction.

Dana Kishore, principal secretary of Municipal Administration and Urban Development, highlighted findings from the survey, stating, "Our survey report has found that 65% of consumers' borewells have dried up and 15% of consumers' borewells yield has reduced. Groundwater depletion began in the last week of February." Furthermore, regarding the pattern of tanker bookings, he noted, "As per the survey, 46% of bookings are from individual houses, 44% from multi-storeyed buildings, and remaining 6% from non-domestic (commercial) consumers in the western part of the city."

The initiative entails the mobilisation of NGOs to engage with these high-consuming consumers, advocating for the installation of RWH structures covering 300 square meters of space within housing societies. "These NGOs will conduct door-to-door checks. They will either ask consumers to build a new RWH if it is missing or ask them to repair their existing RWH in case it is defunct," explained the MA&UD official.

The timeline for implementation is crucial, with the objective to complete the process before the onset of the monsoon season. In instances where space limitations pose challenges, Dana Kishore suggested exploring rooftop RWH alternatives. Additionally, in anticipation of heightened water demand, the water board is procuring a new fleet of 365 tankers, slated for deployment from the third week of April. Dana Kishore outlined the logistical preparations, stating, "The MA&UD official instructed the road transport authorities to identify empty trucks to mount new shells (tankers) which are ready by the end of this month."

Moreover, proactive measures are underway to ensure water availability, including emergency pumping systems for the Krishna and Godavari rivers at take-off sources – Puttamgandi (Nagarjunasagar) and Yellampally (Godavari). Notably, the state government has allocated funds for the construction of a barge to extract raw water should the water levels at primary sources reach critical thresholds.



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PUMP ACADEMY SECURES INR 80 MILLION PROJECT FOR PUMPING SYSTEM OPTIMIZATION IN BENGALURU

[May 12, 2024]

Pump Academy Private Limited, a leading provider of pumping station monitoring and management solutions and services, has secured an important project by the Bengaluru Water Supply and Sewerage Board (BWSSB) for the optimization of pumping station monitoring and management. The project, valued @ INR 80 million (\$1 mn), aims to enhance the efficiency and reliability of BWSSB's water supply network, ensuring better service delivery to the citizens of Bengaluru.

The scope of the project includes a comprehensive assessment of BWSSB's existing pumping infrastructure, identification of inefficiencies, and gives recommendations and advice for implementation of tailored solutions to optimize energy consumption, reduce operational costs, and enhance overall system performance. It involves the implementation of Integrated Performance Management System (IPMS) in Stage 4 Phase-I water pumping stations at TK Halli, Harohalli and Tataguni, having the capacity of 300 MLD under the Cauvery Water Supply Scheme.

Pump Academy will utilize its proficiency for monitoring and management of pumping stations, monitoring energy efficiency, and data analytics to formulate and implement innovative strategies aimed at enhancing operational efficiency and maintaining performance sustainability. Through the integration of cutting-edge technologies and industry best practices, it aims to elevate the standard of service delivery for pumping stations. Its revolutionary digital solution, iPUMPNET, developed indigenously by Pump Academy, will play a pivotal role in this project. iPUMPNET harnesses advanced technologies such as Artificial Intelligence (AI), Machine Learning (ML), and the Industrial Internet of Things (IIoT) to optimize the efficiency, control, and monitoring of pump-set, thereby fostering a smarter and more sustainable approach to water management.

"We are honoured to have been approved as vendor for implementation of IPMS by BWSSB for this critical project," said Anil Sethi, Chairman, Pump Academy. "Our team of experts is committed to delivering sustainable and cost-effective solutions that will enhance the pumping system's energy efficiency, improve operational proficiency, reduce the life cycle cost (LCC), and extend the lifespan of pumping systems with more service reliability. This project aligns with our mission to contribute to the development of smart and resilient water infrastructure in urban areas. Pump Academy is already executing a similar project for this esteemed client, and we are confident that Pump Academy's expertise and innovative solutions will help in achieving our goal of enhancing the efficiency and sustainability of the water supply network, helping BWSSB to deliver better services while minimizing environmental impact."

The Bangalore Water Supply and Sewerage Board (BWSSB) is entrusted with providing water supply

services to 12.9 million residents of Bengaluru, delivering 1450 million litres per day (MLD) of drinking water through an extensive 8,746-kilometer pipeline network spread across the city. In pursuit of operational optimization and environmental sustainability, BWSSB has actively engaged in initiatives aimed at enhancing efficiency and reducing its ecological impact.

The collaboration between BWSSB and Pump Academy holds promising potential, anticipated to yield significant benefits. By leveraging Pump Academy's expertise, BWSSB aims to achieve reduced energy consumption, lower operational costs, and enhanced water supply services for the city's residents. Moreover, this partnership is expected to contribute to substantial reductions in carbon emissions from pumping stations, enabling BWSSB to earn valuable carbon credits and further promote environmental stewardship.



EIB GLOBAL'S WATER SECTOR FUND BACKING €10 MILLION FOR WATER INVESTMENT ACROSS AFRICA AND ASIA

The investment through the Water Access Acceleration Fund, a €70 million private equity fund. Investment to improve safe drinking water access in Africa, Asia and Latin America.

First fund investment by the Water Sector Fund, financed by the Netherlands and managed by the EIB. The Water Sector Fund managed by EIB Global will provide €10 million in the Water Access Acceleration Fund (W2AF), managed by Incofin, a prominent global impact investment manager. W2AF is a “water-focused” blended finance impact fund targeting sustainable and scalable solutions that improve access to safe, affordable drinking water for underserved populations, mainly in Sub-Saharan Africa and South and Southeast Asia. The new initiative will provide 20 billion litres of safe drinking water by 2030.

The €10 million anchor investment by EIB Global will secure other investments, attract more private investors to W2AF. Through the fund, EIB Global will support innovative water businesses.

Among the first partners to benefit from this equity support will be Rite Water Solutions, a company in India providing drinking water solutions and improving water quality in rural and urban areas of the country. More than 540 000 households are expected to benefit.

This support to W2AF represents the first fund investment by the Water Sector Fund, a trust fund established in partnership with the Dutch government and managed by EIB Global. With its donor financial resources, the Water Sector Fund develops drinking water projects in low- and lower-middle income countries and promotes the UN Sustainable Development Goals.

EIB Vice-President Robert de Groot remarked, “This investment showcases our joint commitment to enhancing access to safe, affordable drinking water for all. Innovative financial and technical solutions are needed. The W2AF is an excellent example, funnelling water investments to the regions that need it most and helping build the private water ecosystem in

emerging markets in Africa and Asia. I extend my gratitude to the Dutch government for their vital support, making this impactful endeavour possible.”

Incofin Chairman Loïc De Cannière stated, “We thank the EIB and the Dutch Water Sector Fund for joining W2AF, together with our diverse investors from Europe and the United States. W2AF is a pioneering, first-ever equity impact fund for the drinking water sector in the Global South. Incofin aspires to make the impact of this fund a success, and an example for other investors. By doing so, it will pave the way for more water funds, helping millions of people around the world access drinkable water, which is a key Sustainable Development Goal and a fundamental human right.”

Cees Bansema, Ambassador of the Kingdom of the Netherlands to Luxembourg, explained, “Access to safe drinking water is a human right and critical for social and economic development. This investment in W2AF shows how cooperation makes water projects more sustainable and inclusive. It is also a great example of how we can mobilise additional funding from other financiers or investors. It is a flagship operation of the Dutch-funded Water Sector Fund — combining the Netherlands’ continuous commitment to addressing global water challenges, the EIB’s extensive experience investing in water worldwide, and fund manager Incofin’s unique track record in impact investments.”

Background information

EIB Global is the EIB Group’s specialised arm devoted to increasing the impact of international partnerships and development finance outside the European Union. EIB Global is designed to foster strong, focused partnerships within Team Europe and as part of the EU Global Gateway strategy, alongside fellow development finance institutions and civil society. EIB Global brings the Group closer to local people, companies and institutions through our offices around the world.

The Water Sector Fund is an EIB-managed trust fund established in 2017 in partnership with the government of the Netherlands. It focuses on water sector projects in low- and lower-middle income countries, supporting universal access to water supply, sanitation and hygiene. The fund is open to contributions from other donors seeking to achieve UN Sustainable Development Goal 6: clean water and sanitation for all.

Incofin Investment Management is an impact investment fund management company for the Global South. It is headquartered in Belgium and has offices worldwide. It focuses on investments in financial inclusion, agri-food businesses, and safe water companies, with assets under management of €1.3 billion. Its investor base comprises development banks, institutional investors, family offices and private individuals.



GLOBAL W

DROPLETS

AVer and Biamp Bridge the Gap for Effortless Conversation Tracking

AVer Information Inc., an award-winning provider of education technology and Pro AV solutions, today announced a technology partnership with Biamp, a globally recognized innovator of extraordinary audiovisual experiences, unveiling a groundbreaking intelligent camera tracking solution. This collaboration uses data from Biamp Parlé conferencing microphones with Beamtracking™ technology to automatically trigger AVer cameras and focus on active participants, ensuring everyone feels engaged and seen.

Beamtracking Parlé microphones continuously identify active speakers anywhere in the room. This voice data, combined with the industry-leading features of Biamp Tesira digital signal processors, delivers a rich audio experience with crystal clear voice reproduction. AVer's camera tracking solution seamlessly integrates with this dynamic data stream, translating it into real-time camera actions.

"At AVer, we're thrilled to harness this innovative Biamp audio technology and take the conferencing experience up a level," said Stanley Cheng, Vice President at AVer. "By automatically keeping participants in frame and optimizing audio clarity, this integration fosters a more engaging and productive environment for remote teamwork."

"Biamp is on a mission to elevate the conferencing experience while making it simpler, from the end-user to the installer, and this collaboration with AVer is one more big step," said Zach Snook, director of product management at Biamp. "Meeting with colleagues should always be an easy process, and every participant should be seen and heard. These shared principals between Biamp and AVer form a great foundation for continued technology collaboration."

For versatile camera control, this system offers presenter tracking to automatically follow the presenter, zone tracking for pre-defined areas, and a hybrid mode for combining the two. This flexibility, along with support for a wide range of AVer cameras and Biamp Parlé conferencing microphones, allows integrators to design conferencing experiences tailored to each room's specific needs.



Dubai Flood is a Wake-up Call for Climate Action

The recent unprecedented rainfall in Dubai has sparked both awe and concern as the city experienced a deluge unlike anything seen in recent memory. In just 24 hours, Dubai received rainfall of more than 6 inches, equivalent to about two years' worth of rain, earning the moniker 'rain bomb'. Social media was awash with videos and images of luxury vehicles floating listlessly on flooded roads, and planes at Dubai International Airport powering their way through high waters. The primary factor behind the flooding was a sluggish and powerful zone of low atmospheric pressure, or a chilly pocket of air at higher altitudes, which triggered clusters of intense thunderstorms across the United Arab Emirates and neighbouring regions.

While many armchair meteorologists suggested excessive cloud seeding, which Dubai is known for, as the cause, there is no record of the technology having produced such severe, large-scale and long-lasting, thunderstorms. Furthermore, reports indicate the UAE was not conducting seeding operations on the day of the flood and also that model projections showed heavy rainfall without incorporating cloud seeding. All these factors strongly suggest seeding was not a major contributor. The fact is that such hydrological extremes, whether they are droughts or floods, are more strongly tied to climate change, which is drastically reshaping global weather patterns. While it may have been a rare occurrence for Dubai, globally such extremes are becoming more common as the sea and atmosphere warm. The event captured the imagination of the world and accentuates the growing unpredictability of weather patterns thanks to the changing climate.

Many were quick to point out that this 'rain bomb' happened just months after the president of COP28, UAE's Dr. Sultan Al Jaber, claimed there is no science indicating that a phase-out of fossil fuels is needed to restrict global warming, at a press conference during the event. The disconnect between political rhetoric and the reality of climate-change related challenges has been starkly illuminated with the juxtaposition of these events. More importantly, it underscores the critical need for concerted global action and policy coherence to address the root causes of climate change and build resilience to its impacts, emphasising the importance of evidence-based decision-making and collaboration in navigating the climate crisis.

ATER NEWS

The sudden inundation highlighted the growing vulnerability of infrastructure and logistical systems in cities, emphasising the urgent need for action. While climate-resilient urban planning and adaptation measures may serve as adequate short-term measures, reversing climate change requires substantial, impactful steps so that this and other global climate-change induced phenomena occurring throughout the world slow down and eventually cease altogether.

Erratic weather patterns, rising temperatures, and sea level rise have become tangible manifestations of climate change. From scorching summers exacerbated by heat-waves to sporadic but intense rainfall events, the world is experiencing a heightened frequency and intensity of weather extremes. These changes have not only impacted the global infrastructure and economy but have also raised concerns about water scarcity, coastal erosion, and the sustainability of human civilisation as a whole.

This 'rain bomb' is yet another wake-up call, in a long line of wake-up calls for the world. As even 'developed' cities like Dubai confront the vulnerabilities of their infrastructure and logistical systems, it becomes increasingly clear that climate resilience measures are no longer just a matter of adaptation, but a call for bold, impactful steps to address the root causes of climate change.

We need to prioritise climate resilience and sustainability initiatives, investing in renewable energy, green infrastructure, and water conservation measures to mitigate the impacts of climate change. Only through evidence-based decision-making and collaborative efforts can we navigate the complexities of the climate crisis and safeguard the future of our planet.

New screens firmly in place as SPIRAC and MWH Treatment fight back the storms



At a crucial stage of a £43M upgrade, including a critical inlet screen and screen handling replacement, the last thing a contractor would want is for not one, not two, but three back-to-back storm events.

DROPLETS

**World Future Energy Summit to Spotlight
Regional Electronic Vehicle (EV)
Target Viability at New eMobility Forum**

In one of three major expansions of its robust knowledge-sharing programme, the World Future Energy Summit, hosted by Masdar, has announced the launch of a dedicated eMobility Forum to debut at the 2024 event, the 16th in the annual series, which runs at Abu Dhabi National Exhibition Centre (ADNEC) from April 16-18. With the Middle East and North Africa (MENA) EV market predicted to reach a US\$4.3 bn valuation by 2028, the first-ever eMobility Forum on April 18 will feature expert local and global speakers, including ministerial officials, climate change advocates, investors, mobility solutions planners and architects, logistics providers, civil and urban engineers, transport systems executives, and EV resellers.

Through a series of discussions, presentations, and fireside chats, the high-profile industry collective will scrutinise the viability of regional EV targets, how clean and autonomous transport will transform city design, ways to enhance stakeholder involvement, and the regulatory frameworks required to govern EV usage. The presentation of the report comes as Pakistan continues to foot a hefty fuel import bill, faces alarming pollution in major cities and has surplus power. "The theme of our report is to discuss the mobility landscape in Pakistan, our potential contribution in combating climate change, and the commercial opportunities it presents within the EV ecosystem. It comprises crucial guidelines for public and private stakeholders towards implementing Pakistan's National Electric Vehicle Policy and ways to fast-track the EV value chain throughout the country.

The 2024 agenda also debuts the Green Finance conference on April 17, where policymakers, asset managers, financiers, academics, environmentalists, and major energy corporates will gather to unpick crucial issues around one of the industry's hottest topics.



Yet for one leading solution provider to the water industry, it provided the ultimate test for new inlet screens at Hartshill Sewage Treatment Works (STW) near Nuneaton (pe 100,000) in Warwickshire, England.

Since July 2022 (through to November 2024), MWH Treatment are responsible for the design and integration of new inlet screens and screens handling, expansion of the current primary and secondary treatment, plus the addition of a new tertiary treatment and a sludge treatment system. This important STW is an all-flows-works; being upgraded as part of proactive capital maintenance, and in lieu of an additional 430 l/s which is to be pumped over from Hinckley (pe 50,000) in nearby Leicestershire, to create a total flow of 1560 l/s.

Working to reduce steel and concrete use where possible, Severn Trent Water and MWH Treatment wanted to reuse the existing inlet structure; removing the need for any new civils, or modifications to the existing assembly, which would have increased the programme of works substantially; adding to costs, environmental impact and health & safety risks. Using 3D digital models to increase on-site productivity, and with the benefit of SPIRAC's vertical, space-saving screens able to reach 2m down (rather than a restrictive 1m), the inlet was meticulously planned out in the virtual space. This has made it much easier and more economic to fine-tune a design, rather than have equipment arrive on site, only for it to be sent away again for modifications.

"From the start," said Vince Walker from MWH Treatment, SPIRAC assigned a dedicated team so that we had continuity and clear lines of communication. Leading up to the pressure of the switchovers from old to new equipment, we were regularly sharing our computer screens with SPIRAC's Projects & Technical team, so that the new temporary launder systems would keep us online and that the final screens would be spot on; pre-assembled, tested, ready to slot right in. In the meantime, SPIRAC removed all the redundant equipment; also supplying us with a new control philosophy for the new screens and compactors.

He added: "It seems easy to say now," he added, "especially with the foul weather after the commissioning works, but this is where planning and collaboration is so important. In a very carefully managed, phased approach, we had five separate stages of switching over, with SPIRAC removing the old screens, introducing a temporary launder system, whilst ensuring that flows were maintained, but with no loss of screening."

The like of which we'd not seen before

He continued: "The SPIRAC system has been integrated into the Hartshill treatment works system for the past 6 months, facing persistent heavy rain; the like of which we've not seen before. This has served to prove that the two new screens from SPIRAC could do their job. In the first few hours particularly, the screens took a real hammering, but they passed the test with flying colours. We've had no issues with them at all. Overall, the throughput has been increased by 200 l/s, but they are working fine, and with their self-cleaning design, only basic maintenance is required."

Improve local river quality

He concluded: "The upgrade for both Warwickshire and Leicestershire is a very positive one, which will improve local river quality. Inlet changeovers always try to be timed to avoid storm seasons. However, due to the ever-changing weather systems these days, it is becoming harder to find a good window to complete these necessary works. While I really enjoy working with the challenges of changing inlet screens, I hope we don't have to experience the same deluge again as when we were trying to keep everything online for the installation of the new SPIRAC screens, launder systems and compactors! Working closely together on site, and ***embracing our digital delivery toolbox, has really paid off.***"

INVENTHOR 6.2: Doppstadt presents future-proof shredding solution at IFAT Munich

- User-friendly loading with wheel loader and excavator
- Wide filling area, high hopper volume
- New "DoppBasket" basket system maximizes efficiency

Velbert, 8. April 2024 – Economical and future-proof: With the INVENTHOR 6.2, Doppstadt Umwelttechnik GmbH is presenting its latest model in the INVENTHOR series at IFAT from 13 to 17 May. The innovative solution builds on the success of the long-established INVENTHOR models 6 and 9 and promises even greater efficiency and user-friendliness.

First launched in 2018, the INVENTHOR series has since impressed customers around the world with its performance and flexibility. The launch of the INVENTHOR 6.2 marks further progress in this successful product line. Doppstadt presented the latest product variant for the first time at the company's own trade fair in the summer of 2023. The new machine was very well received and it soon became clear that the INVENTHOR 6.2 would be an integral part of the company's presence at IFAT Munich.



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The shredder is up to any current and future shredding task as a stand-alone machine, in combination with the SELECTOR 800.2 or with the new "DoppBasket" basket system. Equipped with an optimized hopper, the machine enables even more user-friendly loading by wheel loader or excavator. "We have extended the filling area from 2.2 to 3.3 meters, increasing the hopper volume from five to eight cubic meters," explains Dominik Niehaus, Product Manager at Doppstadt. "Operators can now even move a wide wheel loader bucket down to the shredding teeth. This allows the machine to be loaded optimally and, above all, easily."

Maximum efficiency with "DoppBasket" system and electrified drive. The newly developed "DoppBasket" basket system makes the INVENTHOR 6.2 even more versatile. With little investment, customers can shred their material to a defined target grain size in one single pass. "With our basket system, customers remain flexible," says Niehaus. "If their requirements change, they can quickly change to a different basket or simply continue working without a basket." Doppstadt will be presenting its INVENTHOR with electrified drive at IFAT. This is an enormous savings factor for customers, as the costs for electricity are lower than those for regular diesel. Electrification also makes a noticeable difference in terms of maintenance costs.

Live operation at IFAT

Visitors to the VDMA area will be able to experience the INVENTHOR 6.2 with basket system in the processing of waste wood. The 3D basket is used to reduce unwanted oversizes and maintain quality and throughput. Doppstadt will also be presenting other innovative processing solutions, including the AK, which is characterized by its wide and expandable range of applications. In addition to the presentation of the machines, Doppstadt will be focusing on a close exchange with its customers. The expert in processing solutions wants to find out more about their needs in a dedicated room. "Constructive discussions with our customers are important to us," says Niehaus. "Through close dialogue, we ensure that we know and understand the needs and requirements of the industry and offer solutions as quickly as possible."

AVer Launches The FONE700 Speakerphone System, Featuring Cutting-Edge 3D Audio Tracking

AVer Information Inc., an award-winning provider of video conferencing solutions, is pleased to announce the launch of our latest ceiling speakerphone system, the FONE700.



Suitable for rooms of any size, the FONE700's cutting-edge technology allows for seamless integration of our suite of audio-visual products. The state-of-the-art 3D Audio Tracking system allows for pinpoint audio-visual accuracy, ensuring optimal performance to meet your conferencing needs. The FONE700 offers unique 3D Audio Tracking technology, which pinpoints and tracks the exact location of each speaker and adjusts the camera for optimal view through the CAM550 Conference Camera. Setup takes only four easy steps, and once complete, no further input is required.

The FONE700 System includes a full duplex acoustic apparatus for the optimal meeting experience. A single daisy chain can connect up to four speakerphones for flexible installation and versatile connectivity. With no need to worry about sockets, users can enjoy a truly clutter-free configuration.

The FONE700 ceiling speakerphone boasts advanced features including Noise Suppression, Double-Talk Detection, and De-Reverberation, ensuring crystal-clear audio in any environment. With its state-of-the-art technology, it minimizes background noise, detects simultaneous speech, and reduces echo, providing unparalleled audio clarity. The FONE700 connectivity hub enables seamless integration of our full suite of audio-visual products, including external speakers and cameras, as well as external devices such as monitors and Bluetooth equipment. The system can be adjusted via your preferred web browser and with the PTZApp 2, AVer's innovative value-added free software for meeting collaboration.

EnBiorganic Technologies Begins Trial with City of Othello to Optimize Wastewater Treatment Processes

The City of Othello has partnered with EnBiorganic Technologies to implement the EBS-Di system in its wastewater treatment facility. The initiative aims to improve compliance with environmental regulations, reduce Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS) levels, and optimize overall wastewater management practices.

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The EBS-Di system, developed by EnBiorganic Technologies, introduces organic bacillus soil bacteria into the wastewater treatment process, providing a natural enhancement to bioaugmentation. Through a continuous and automated approach, the system is designed to address specific challenges faced by wastewater treatment facilities. The integration of the EBS-Di system in Othello is expected to improve the city's wastewater treatment efficiency and ensure continued adherence to environmental standards. The system addresses specific wastewater parameters that are tracked throughout the trial.

"Othello's facultative lagoon treatment system has had problems consistently meeting our BOD and TSS discharge permit requirements," said Shawn O'Brien, City Engineer for the City of Othello. "This trial gives us the opportunity to see what impact the EBS-Di system will have on our city's wastewater treatment process and hopefully improve our ability to meet the discharge requirements in all seasons."

"The adaptability of the EBS-Di technology allows us to tailor our solution to the unique needs of the City of Othello," said Anson Liski, Vice President of Market Development at EnBiorganic Technologies. "We are dedicated to delivering results that align with Othello's long-term wastewater treatment goals."

Eight UK water companies come together to showcase innovation at leading international conference in Toronto

Alongside sponsors including Atkins Realis, Arup, Capgemini, Morrison Construction, Ofwat Innovation Fund, RSE, Scottish Government and WRC, the water companies – Anglian Water, Northumbrian Water Group, Scottish Water, Severn Trent, South West Water, United Utilities, Wessex Water, Yorkshire Water and British Water – will be highlighting issues at the forefront of the water sector's agendas such as climate change adaptation, nature recovery and enabling resilient futures.

With thousands of leading water professionals and companies expected during the five day event, the water companies will be featuring keynote speeches, panel discussions, case study demos and hosting multiple networking events and receptions to showcase UK innovation, providing a stage and opportunity to learn from others.

Alex Plant, Chief Executive of Scottish Water, said:

"I am delighted to be representing Scottish Water at this year's World Water Congress in Toronto and we are excited to be picking up the

baton for the next Congress in Glasgow, 2026.

"Working together to address the twin challenges of climate change and the nature crisis, our sector can be at the forefront of innovation and collaborative approaches to steer us to a more resilient future, safeguarding the interests of customers and the environment now and in the future. I look forward to meeting you all there." With the UK water industry leading the way with commitments on climate change such as Net Zero carbon by 2030, Peter Simpson, CEO of Anglian Water said:

"Collectively we have a profound responsibility to move the dial on climate adaptation, nature recovery and water security. This is not just about mitigating our impact; it's about innovating and collaborating on a global scale to make sure we build a resilient and ecologically sound future, safeguarding the health, wellbeing and prosperity of generations to come.

"In Toronto, we have an opportunity to really move that dial – to continue the great work already happening through the IWA and on the back of COPs. There is no time to waste. We must grasp the nettle with both hands and use our time here to make a real difference."

Lila Thompson, Chief Executive of British Water, said:

"British Water is delighted to be supporting IWA World Water Congress & Exhibition. We see this as an opportunity to connect with international water practitioners, share knowledge and expertise on smart cities and showcase the latest technologies and solutions from the UK."

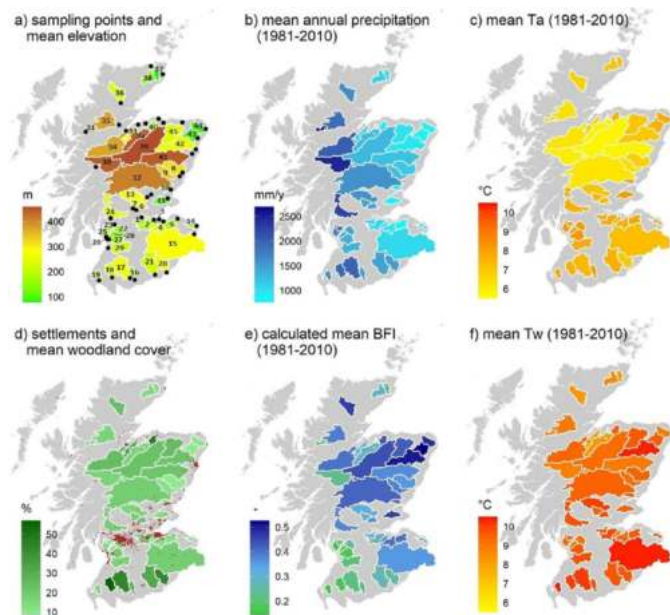
This year, the IWA event will focus on the theme 'Shaping the Water Future', presenting opportunities for innovation and action across a comprehensive range of important topics. Water professionals and wider stakeholders will be brought together to secure progress on water in a unique global forum, allowing participants to network and to share insights and experience on the latest trends in best practice, innovative technologies and management approaches.



Participants will analyse, discuss and highlight solutions at high-level summits and case study presentations, with a focus on implementation and co-operation towards shaping the water future in a positive way.

Study raises concerns over rising river temperatures in Scotland

The researchers found that while river temperatures across Scotland will rise, the historically cooler rivers in the west and northwest could be on a trajectory to undergo stronger warming compared to other rivers in the country. This could see them reaching levels similar to already warmer rivers in southern Scotland, with potentially detrimental implications for industry, water quality and wildlife.



“Scotland has more than 125,000 km of rivers and streams and these support huge ecosystems, as well as providing water to supporting industries like whisky production and salmon,” says Eva Loerke, who led the research alongside colleagues from the Hutton and the University of Aberdeen. “Rising stream and river temperatures have several implications. These include impacts on water quality, which has knock-on impacts on the life in our rivers. Several industries, including distillers, also rely on access to cool water for their operations.

“By having a better understanding of those rivers that are more at risk, we can do more now to protect them in the future. This could be by increasing tree and vegetation planting around river edges, to keep

them cooler, or by installing nature-based solutions, such as log jams, to create cooler refuges.” The study used historical monthly water temperature data from 45 catchments, covering 43% of Scotland, to create detailed daily water temperature models. These data, dating back to 1960, were then used alongside the latest climate projections to predict how temperature would change in the future out to 2080.

It showed that Scotland’s streams have generally been increasing in temperature by a maximum of 0.6°C per decade. It also suggested that temperature rises might be higher and earlier, at up to 4°C, by 2051-2080, for those Scottish rivers experiencing the highest warming, compared to previous studies, using earlier climate scenarios, which suggested mean annual UK river water temperature could rise between 1 °C to 3.6 °C by 2071–2100.

The modelling work by the team, published in the journal, *Science of The Total Environment*, could also be used to help model other rivers, down to smaller tributaries. This would mean more of Scotland’s waterways could be assessed for the risk of warming water and then measures taken, such as increasing vegetation on riverbanks that provide shade to help cool the waters.

Future work to further improve the models would be to look at the impact of changes in tree cover around rivers and potential reduction in snow cover, but also human interference like dams or water pumping.

SEEPEx and Severn Trent boost sewage plant reliability

After seeing SEEPEx’s success at Severn Trent’s Stoke Bardolph and Finham THP plants, the Minworth site decided to explore SEEPEx’s Maintain-in-Place (MIP) capabilities and digital solutions that included pump monitoring. SEEPEx provided an open hopper progressive cavity pump with MIP technology to replace original progressive cavity pumps without altering the physical footprint or the installed power. SEEPEx MIP technology includes Rotor Joint Access (RJA) and Drive Joint Access (DJA).

RJA enables the pump’s compression zone to be moved over the stator, allowing access to the rotor universal joint and giving the ability to remove debris without extensive maintenance work, for example, removing pipework and the pump’s stator. With DJA, the pump baseplate is split into three sections (rotor/stator, pump hopper and drive end) enabling maintenance tasks such as replacing a worn auger or a mechanical seal to be completed safely without needing to dismantle the whole pump.

SEEPEx Digital Solutions provide a comprehensive platform for pump performance monitoring, detecting potential issues with early warning notifications, and scheduling maintenance tasks. With the ability to track and analyse data on pump operation, tasks such as topping up mechanical seal quench pots are transformed from regular, time-consuming inspections into quick, planned interventions. Additionally, the monthly report provides a high-level overview of pump performance, including a simple RAG status to quickly identify any areas requiring further investigation..

Improved Pump Performance and Streamlined Maintenance

Over the course of over a year, SEEPEx reports that the pump has performed reliably and consistently, maintaining optimal performance levels as confirmed by advanced analytics. Thanks to SEEPEx innovative MIP technology, maintenance staff can easily access and dismantle the pump, streamlining maintenance and reducing downtime. Integrated SEEPEx Digital Solutions provide a comprehensive platform for tracking pump performance and scheduling maintenance tasks in a preventative capacity, avoiding costly reactive maintenance and maximising process throughput and biogas production.

Thames Water publishes PR24 business plan update

Since its submission last October, TWUL has discussed the content of its PR24 business plan extensively with its regulators and key stakeholders. As a result of this engagement, TWUL has announced that it has now submitted an update to its PR24 business plan showing a £1.1 billion increase in AMP8 total expenditure to £19.8 billion which will be directed to projects benefiting the environment.

TWUL states that as well as allowing the company to deliver more environmental projects, a rebalancing of operating and capital expenditures will mean there is no resulting increase in projected customer bills, which are estimated on average to be £608 by 2030.

TWUL has said it will continue to look for opportunities to deliver more investment in AMP8 and has proposed that a further £1.9 billion of potential investment is placed into a “Deliverability Assessment Mechanism”. This means if TWUL was to invest the full £1.9 billion in AMP8, then annual average customer bills would increase further by £19 over that period.

Chris Weston, CEO of Thames Water, said:

“Our business plan focuses on our customers’ priorities. As part of the usual ongoing discussions relating to PR24, we’ve now updated it to deliver more projects that will benefit the environment. We will continue to discuss this with our regulators and stakeholders.”

Responding to today’s news, Mike Keil, Chief Executive of the Consumer Council for Water (CCW), said:

“On the surface the proposal for more investment from Thames Water is a positive step for its customers that have endured some of the worst customer service in the sector. We should not lose sight of the fact that only 16% of its customers thought the company’s proposed bill rises in its five-year plan were affordable. This announcement appears to offer nothing to ease the fears of those already struggling to pay.”

National Drought Group confirms water resources are healthy in first meeting this year



The Environment Agency chaired its regular meeting of the group on Thursday 18 April, in which they discussed the ongoing challenge of managing future droughts as the climate changes.

The group – which includes the Met Office, government, water companies, farmers, and conservation experts – noted no area is in drought and reservoir storage for England as a whole was 95% at the end of March. Farmers are currently facing the problem of too much water, rather than too little, which the meeting heard could impact this year’s growing season. The current water resource outlook means there is a low-risk that hosepipe bans will be needed this summer. The EA has instructed water companies to keep preparing for all rainfall scenarios and continue their work on demand management and leakage reduction.

APRIL 2024

GLOBAL WATER NEWS

The public have also been urged to continue playing their part in protecting the environment by using water wisely.

Environment Agency Director of Water, Helen Wakeham, who chaired the meeting said:

“While it is positive that water supplies are currently in a favourable place, every drop we can save will help ensure our supplies are resilient into the future. Even following wet weather, we cannot be complacent with this precious resource.

“We all need to use water wisely, such as turning off taps when they are not needed or installing water butts in our gardens. At the same time, the Environment Agency will continue to work with the water, agriculture, and environment sectors, to prepare for droughts, which can come unexpectedly as we found in 2022.”

Water Minister Robbie Moore said:

“It was promising to hear that water supplies are currently healthy – however, we all have a role to ensure this remains the case. We have been clear to water companies that as well as going further and faster to tackle pollution, they need to do more to secure future water supplies.

“This includes reducing leakage by at least 50% by 2050, as well as encouraging efficiency through an increased use of smart water meters.

“We are securing significant investment to develop new infrastructure, which would include building more reservoirs, and it is vital water companies and regional groups deliver on these plans.

“We are also supporting farmers to store more water on their land with tens of millions of pounds delivered through the Water Management Grants to fund more on-farm reservoirs and works to improve irrigation.”

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SUN EMPOWERING WATER

Mohammed Naser Azeez, Managing Director, Aquality Intelligent Solutions Pvt. Ltd.

Across the world, between two and three billion people currently face water shortages, a number that is expected to rise in the future, particularly in urban areas. These shortages will further worsen in the coming decades, if international cooperation is not boosted in addressing this issue, warns the UN World Water Development Report.

In many parts of the world, access to clean drinking water remains a major challenge. There are a staggering 3.6 billion people, nearly half the world's population, do not have access to safely managed sanitation. Contaminated water sources can spread diseases and lead to serious health issues, especially for vulnerable populations. While traditional water treatment methods are effective, they often rely on electricity or fossil fuels, which can be costly and environmentally damaging. However, an innovative solution is gaining traction – solar powered water treatment systems.

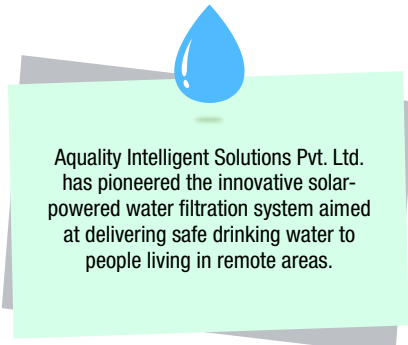
Access to clean drinking water is a fundamental necessity for all, but securing it remains a big challenge in India. The country's massive 1439 million population now the world's largest, faces a severe water crisis with almost half of the population facing the challenge.

For India's armed forces deployed in remote wilderness areas, clean water access is crucial yet extremely difficult. Natural sources like rivers and wells are often contaminated, posing health risks without proper purification. Security personnel stationed in remote, densely forested, and uninhabited regions grapple with daunting task to obtain safe drinking water.

Another vulnerable segment is the tribal population residing in forested and hilly regions with dwindling water sources. They are largely dependent on contaminated water from wells or borewells, lacking proper water infrastructure or other alternatives.

The water scarcity crisis in India is rapidly

intensifying. Nearly 80% of surface water is polluted, and 70% of wastewater is discharged untreated into water bodies. Per capita water availability could reduce by 36% in 2025 and a staggering 60% by 2050 if current practices continue, warns the Jal Shakti Ministry.



Aquality Intelligent Solutions Pvt. Ltd. has pioneered the innovative solar-powered water filtration system aimed at delivering safe drinking water to people living in remote areas.

Total water demand is projected to surge over 70% by 2025, widening the demand-supply gap. Rapid urbanization, economic growth, and lifestyle changes are aggravating clean water needs while generating more sewage. Industrial sectors like power, steel, textiles, and refineries will see their water-intensive requirements multiply.

An alarming 600 million people across Indian districts already face severe water stress, with numbers rising. Ignoring this crisis endangers public health as well as India's economic development goals and also results in crisis situation.

Sustainable solutions are desperately needed to increase access to safe water and sanitation for India's vast population, including its armed forces and tribal communities. Investing in solar-powered water treatment offers a renewable, decentralized approach to tackle this monumental challenge more holistically.

LEVERAGING SOLAR ENERGY FOR WATER TREATMENT

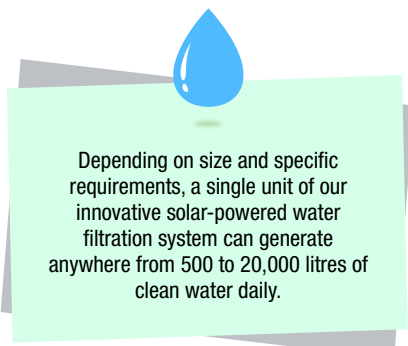
Utilizing the abundant energy of the sun, solar-powered water treatment systems employ



photovoltaic (PV) panels to generate electricity, powering the purification process. This process typically encompasses various stages, starting with pre-filtration to eliminate larger particles, followed by advanced techniques like ultraviolet (UV) disinfection, reverse osmosis, or nanofiltration to eradicate harmful microorganisms, chemicals, and dissolved solids.

A key advantage of solar-powered water treatment systems lies in their sustainability. By tapping into renewable energy, they reduce the carbon footprint associated with water purification. These systems can be deployed in remote areas where grid electricity is not available, offering a dependable and economical solution for security establishments and communities in need.

An exemplary example of successful solar-powered



Depending on size and specific requirements, a single unit of our innovative solar-powered water filtration system can generate anywhere from 500 to 20,000 litres of clean water daily.

water treatment systems' implementation is the Nanosource project in Mexico. This initiative has installed over 200 solar-powered ultrafiltration systems in rural communities, supplying clean drinking water to thousands of people. Engineered for minimal upkeep and user-friendly operation, these systems empower local communities to manage their water security effectively.



AQUALITY LEADING THE WAY

Aquality Intelligent Solutions Pvt. Ltd., formerly known as Aquality Water Solutions, has spearheaded efforts to provide clean drinking water to security forces and various establishments, including human settlements in countries grappling with challenges. The concept of a Solar Powered Water Filtration System was born in 2015 when the company presented a prototype to the Ministry of Water & Sanitation.

This groundbreaking solar water filter features a high-speed water filtration unit capable of purifying water from virtually any source, including hand pumps, swamps, wells, floods, rivers, and even wastewater. Employing advanced purification techniques, the technology ensures water is thoroughly cleaned, leaving impurities behind and producing high-quality water fit for drinking without the need for electricity.

Compact in size, roughly equivalent to a large box, the purification device has low power requirements and lacks removable parts necessitating maintenance or replacement, such as carbon filters or reverse osmosis membranes. The system can recycle used water for toilet flushing in all Swachh Bharat Mission toilets, addressing the challenge of unused toilets due to water scarcity.

This innovation not only mitigates the logistical hurdles associated with transporting bottled water

but also diminishes the risk of waterborne diseases impeding mission success. It guarantees a continuous supply of clean water to remote areas where security forces are stationed or in villages struggling with water scarcity due to the absence of electricity.



SALIENT FEATURES

- Completely mobile, can be installed anywhere
- Rapidly deployable during emergencies/disasters
- Available in various sizes - small to commercial/community scale
- Stand-alone, user-friendly system to purify and disinfect water
- Solar energy-based alternative to current water treatment technologies
- Enables armed forces to access clean water in the field regardless of source quality
- Reduces logistical burden of transporting water tankers/bottled water convoys
- Highly scalable - single unit can produce 500 to 20,000 litres of clean water per day
- Promotes sustainability by reducing electricity and bottled water demand
- Reduces carbon footprint, electrical use, bottled water transportation/disposal
- Portable, modular unit for safe drinking water for humanitarian missions

- Can be mounted on vehicles to provide clean water at different locations daily
- Solar-powered water purification - a potential solution for safe, clean drinking water provision

Harnessing solar energy, these solar-powered water treatment systems present a sustainable and adaptable solution to the global water crisis, with the potential to positively impact lives and communities by facilitating access to clean water.

WAY FORWARD

In areas grappling with water scarcity, solar-powered water treatment systems can significantly contribute to water recycling and reuse efforts. These systems have the capability to purify wastewater or brackish water sources, yielding high-quality water suitable for diverse applications including irrigation and industrial processes, in addition to providing clean drinking water.

India's extensive population, encompassing both armed forces and tribal communities, urgently requires sustainable solutions to enhance access to safe water and sanitation. Embracing solar-powered water treatment presents a renewable, decentralized strategy to confront this significant challenge.

Aquality Intelligent Solutions Pvt. Ltd. is at the forefront of this endeavour, offering a compact system adaptable for deployment in any setting. With a steadfast dedication to quality and innovation, the company is prioritizing the expansion of the system to meet the demand for widespread implementation, thereby advancing renewable and sustainable solutions for clean and safe drinking water.

About the Author



Mohammed Naser Azeez
Managing Director,
Aquality Intelligent Solutions Pvt. Ltd.

Mohammed Naser Azeez serves as the Managing Director of the renowned Aquality Intelligent Solutions Pvt. Ltd., an ISO 9001:2015 company, specializing in technologically advanced water treatment solutions to ensure clean and usable water. He has made significant contributions to improving people's lives by providing clean drinking water facilities, demonstrating a strong commitment to technological innovation and maintaining a standard of quality excellence.



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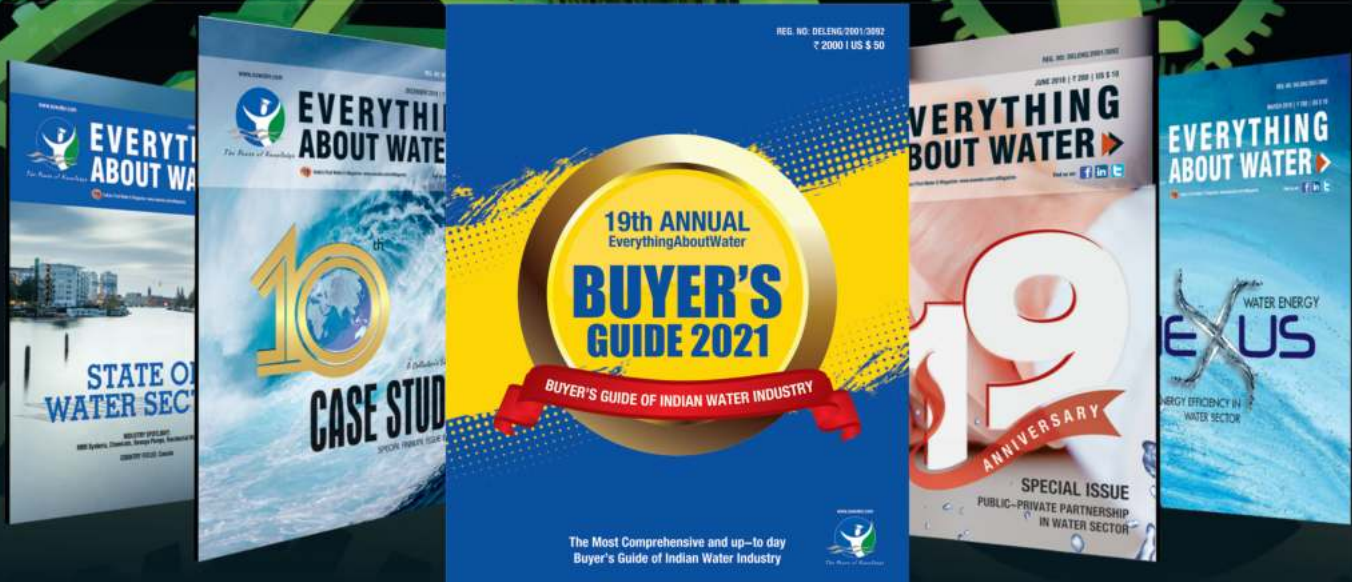
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THE POWER OF SENSOR INTEGRATION, WATER FILTRATION AND REAL-TIME MONITORING

Gaurav Garg, CIMCON

THE IMPORTANCE OF URBAN WATER MANAGEMENT

Urban water management is a critical aspect of sustainable development in modern cities. The growing urban population and increasing demand for water resources have put immense pressure on existing water infrastructure. The effective management of water resources in urban areas is essential for ensuring a continuous and reliable water supply for residents, businesses, and industries. Additionally, efficient water management is crucial for environmental sustainability and public health. With the rising challenges posed by climate change and population growth, the need for innovative and effective urban water management solutions has become more pressing than ever.



One of the key challenges in urban water management is the aging infrastructure of water systems in many cities. The deterioration of pipelines and water treatment facilities can lead to water losses, leakages, and contamination. Moreover, the uneven distribution of water resources and the lack of adequate storage and distribution facilities further exacerbate the challenges faced in managing urban water supply. These issues not only contribute to water wastage but also pose significant risks to public health and safety. Therefore, there is an urgent need to address these challenges through innovative technologies and strategies that can revolutionize urban water management.

The integration of advanced sensors and real-time monitoring systems in urban water management has the potential to transform the way water resources are managed in cities. By leveraging sensor technologies, water utilities can gain valuable insights into the condition and performance of their water infrastructure. Real-time data collection and analysis enable proactive maintenance and early detection of leaks, reducing water losses and ensuring the efficient operation of water networks. Furthermore, the integration of sensor data with advanced analytics and modelling tools can facilitate predictive maintenance and optimal resource allocation, leading to improved resilience and sustainability of urban water systems.

REVOLUTIONIZING WATER MANAGEMENT WITH SENSOR INTEGRATION

The integration of sensor technologies in urban water management represents a paradigm shift in the way water resources are monitored and managed. Traditional methods of manual inspection and periodic assessments are often time-consuming and resource-intensive, making it challenging to identify and address issues in a timely manner. In contrast, sensor integration enables continuous, real-time monitoring of various parameters such as water flow, pressure, quality, and temperature. This real-time data empowers water utilities to detect anomalies and potential failures promptly, allowing for proactive interventions and preventive maintenance.

Sensors deployed in water distribution networks and treatment facilities can provide valuable information on the performance and condition of critical infrastructure components. For instance, pressure sensors can detect changes in water pressure levels, indicating potential leaks or bursts in pipelines. Additionally, water quality sensors can monitor the presence of contaminants and ensure compliance with regulatory standards. The use of advanced sensor technologies, such as acoustic and electromagnetic sensors, further enhances the capability to detect leaks and assess the structural integrity of pipelines, reducing the risk of water loss and infrastructure failures.

Components of IoT (Internet of Things), SCADA in Water Industry



The integration of sensor data with geographic information systems (GIS) and asset management platforms enables water utilities to visualize and analyze the operational status of their water networks comprehensively. By utilizing real-time data and spatial analytics, utilities can prioritize maintenance activities, optimize resource allocation, and improve the overall resilience of water infrastructure. Furthermore, the implementation of sensor integration can support the development of smart water networks, facilitating the efficient management of water resources and enhancing the responsiveness of utilities to dynamic operational conditions.

REAL-TIME MONITORING IN WATER MANAGEMENT

Real-time monitoring systems play a pivotal role in enhancing the efficiency and reliability of urban water management. By continuously collecting and analyzing data from various sensors and monitoring devices, water utilities can gain actionable insights into the performance of their water infrastructure. Real-time monitoring not only enables the early detection of abnormalities and potential failures but also supports the optimization of operational processes and resource management. With the advent of Internet of Things (IoT) technologies, real-time monitoring solutions have become more accessible and scalable, offering unprecedented visibility and control over water systems.

The deployment of real-time monitoring solutions in water management encompasses a wide range of applications, including remote sensing, telemetry, and supervisory control and data acquisition (SCADA)

systems. These technologies enable the seamless transmission of data from sensors and monitoring devices to centralized control centers, allowing for instantaneous analysis and decision-making. Furthermore, the integration of real-time data with advanced analytics and machine learning algorithms can facilitate the development of predictive maintenance models, enabling water utilities to anticipate and mitigate potential issues before they escalate into critical failures.

Real-time monitoring also empowers water utilities to respond swiftly to changes in water demand, supply, and quality. By leveraging real-time data, utilities can optimize the operation of water treatment plants, distribution networks, and storage facilities to meet fluctuating demand and ensure water quality compliance. Additionally, real-time monitoring supports the implementation of demand-driven management strategies, enabling utilities to

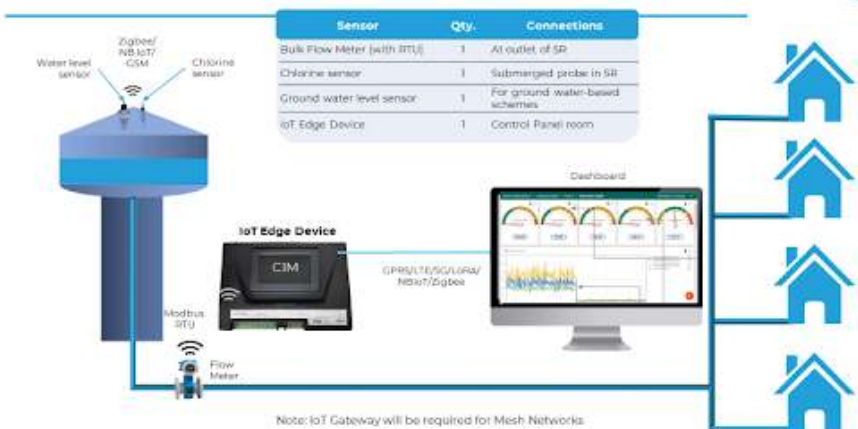
proactively address water distribution challenges and minimize the risk of service disruptions. The ability to monitor water systems in real time provides utilities with the agility and adaptability needed to navigate complex operational scenarios and deliver reliable water services to urban communities.

BENEFITS OF WATER INFORMATION MANAGEMENT SOLUTIONS

Water information management solutions encompass a suite of technologies and tools designed to capture, analyze, and leverage water-related data for informed decision-making and operational optimization. These solutions offer a comprehensive approach to managing water resources, infrastructure, and services, enabling water utilities to enhance their efficiency, resilience, and sustainability. By integrating advanced data management and analytics capabilities, water information management solutions provide a holistic view of water systems, empowering utilities to address challenges and capitalize on opportunities for improvement.

One of the primary benefits of water information management solutions is the ability to centralize and integrate disparate data sources, including sensor data, operational records, customer information, and environmental data. By consolidating and harmonizing diverse data sets, utilities can gain a unified understanding of their water systems and performance metrics, facilitating evidence-based decision-making and strategic planning. Moreover, the integration of data management solutions with geographic information systems (GIS) and enterprise asset management (EAM) platforms enables utilities to visualize and analyze spatial and operational data

Basic Solution for Jal Jeevan Mission



supporting efficient resource allocation and infrastructure management.

The application of advanced analytics and modelling tools within water information management solutions enables utilities to derive actionable insights from complex data sets. By leveraging predictive analytics, machine learning, and optimization algorithms, utilities can forecast water demand, identify potential risks, and optimize asset performance. Furthermore, the implementation of real-time data processing and visualization capabilities facilitates the monitoring of key performance indicators (KPIs) and the identification of trends and patterns, enabling utilities to proactively address operational challenges and drive continuous improvement in their water management practices.

Water information management solutions also play a crucial role in enhancing transparency and accountability in water management. By providing stakeholders with access to comprehensive and up-to-date information on water systems and services, utilities can foster greater public trust and engagement. Additionally, the integration of customer relationship management (CRM) functionalities within water information management solutions enables utilities to better understand and respond to customer needs, ultimately improving the overall quality of service delivery.



IMPLEMENTING WATER NETWORK ASSET MANAGEMENT SOLUTIONS

Water network asset management solutions are instrumental in enabling utilities to optimize the performance and lifespan of their infrastructure assets. These solutions encompass a range of technologies and methodologies aimed at enhancing asset reliability, resilience, and cost-effectiveness. By adopting a proactive approach to asset management, water utilities can minimize the risk of asset failures, optimize maintenance activities, and maximize the value of their investments in water infrastructure. The

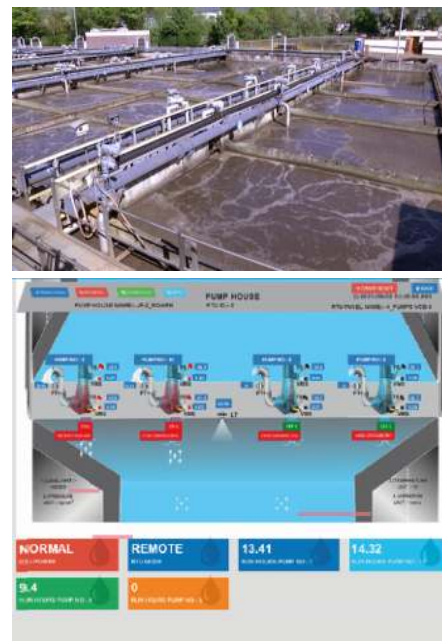
implementation of asset management solutions is essential for ensuring the long-term sustainability and operability of urban water networks.

One of the key components of water network asset management solutions is the utilization of asset performance monitoring and condition assessment technologies. These tools enable utilities to monitor the health and operational status of critical infrastructure components, such as pipelines, pumps, valves, and treatment facilities. By deploying sensors and monitoring devices, utilities can gather real-time data on asset performance, allowing for early detection of deterioration, defects, and potential failures. This proactive approach to asset condition assessment supports informed decision-making and prioritization of maintenance and rehabilitation efforts.

The integration of asset management solutions with risk assessment and investment planning methodologies enables utilities to develop comprehensive strategies for optimizing their asset portfolios. By conducting risk assessments and life cycle cost analyses, utilities can identify critical assets, evaluate potential vulnerabilities, and prioritize investment and maintenance activities. Furthermore, the implementation of asset performance modeling and predictive analytics supports the development of long-term asset management plans, facilitating the optimization of capital expenditures and the allocation of resources to maximize the reliability and resilience of water infrastructure.

Water network asset management solutions also facilitate compliance with regulatory requirements and industry standards, ensuring that utilities adhere to best practices in asset management and performance optimization. By leveraging asset management software and decision support tools, utilities can streamline regulatory reporting, track asset performance against established benchmarks, and demonstrate accountability in asset stewardship. Additionally, the integration of asset management solutions with enterprise resource planning (ERP) and work order management systems enables utilities to optimize their maintenance workflows and resource utilization, further enhancing the efficiency and effectiveness of asset management practices.

FUTURE TRENDS IN URBAN WATER MANAGEMENT



One of the key future trends in urban water management is the widespread adoption of Internet of Things (IoT) and sensor technologies to create interconnected and intelligent water networks. The deployment of IoT-enabled sensors throughout water infrastructure will enable utilities to gather real-time data on water flow, pressure, quality, and asset performance, empowering proactive maintenance and resource optimization. These interconnected systems will facilitate the development of smart water networks, capable of adapting to dynamic operational conditions and enhancing the overall reliability and efficiency of urban water supply and distribution.

Another prominent trend in urban water management is the integration of advanced analytics and artificial intelligence (AI) to derive actionable insights from vast volumes of water-related data. By harnessing the power of predictive analytics, machine learning, and optimization algorithms, water utilities can forecast demand patterns, identify potential risks, and optimize asset performance. The use of AI-driven decision support systems will enable utilities to make data-driven and evidence-based decisions, leading to more efficient resource allocation, improved operational resilience, and enhanced service delivery to urban communities.

THE ROLE OF TECHNOLOGY IN SUSTAINABLE WATER MANAGEMENT

One of the fundamental contributions of technology to

sustainable water management is the ability to optimize water use and distribution through data-driven insights and operational efficiencies. By leveraging sensor integration and real-time monitoring, utilities can detect leaks, reduce water losses, and ensure the efficient operation of water networks. Additionally, the application of advanced analytics and modelling tools enables utilities to forecast water demand, optimize treatment processes, and proactively address operational challenges. These capabilities support the conservation of water resources and the promotion of sustainable water use practices in urban environments.

In addition, technology plays a critical role in promoting public awareness, engagement, and participation in sustainable water management initiatives. By leveraging digital communication platforms and smart metering technologies, utilities can provide consumers with real-time information on their water usage, encourage conservation practices, and foster a culture of responsible water stewardship. Furthermore, the integration of technology with community outreach and education programs enables utilities to empower residents with the knowledge and tools needed to contribute to sustainable water management efforts, ultimately creating a more informed and environmentally conscious society.

CONCLUSION

In conclusion, CIMCON Software India PVT. LTD plays a crucial role in advancing the transformative journey of urban water management through its cutting-edge solutions. With a commitment to innovation and collaboration, CIMCON contributes significantly to the integration of advanced sensor technologies and data-driven solutions. By leveraging their expertise, cities can harness the power of real-time monitoring, proactive leak detection, and comprehensive asset management.

CIMCON's role in providing water management solutions and water network asset management tools aligns with the broader technological shift towards sustainable water practices. As cities optimize their water infrastructure, minimize wastage, and make informed decisions, CIMCON's contributions become integral to achieving the efficiency, resilience, and sustainability goals of urban water systems.

The partnership between technology and urban water management, exemplified by CIMCON, signifies a paradigm shift that empowers cities to overcome challenges and embrace a more sustainable and resilient future. Through this collaboration, CIMCON is instrumental in navigating the complexities of modern water management, paving the way for a future where water resources are managed with confidence and foresight. As cities continue to evolve in their approach, CIMCON's role remains pivotal in shaping a world where technology and innovation harmonize for the benefit of urban water systems and the communities they serve.

About the Author



Gaurav Garg
CIMCON

An astute Sales professional & strategist having a proven track record of overachievement with over 14+ years in the domain of Automation and SCADA solutions on IoT Platform, SaaS & cloud based smart solution for water and Industry 4.0, handling key accounts in Government, PSUs, Smart Cities, ULBs, Industries.

He joined CIMCON, where he has been working for over 5 years. During his time at CIMCON, he played a pivotal role in successfully completing various Water and SCADA projects across India under the various Central and State Govt. scheme. Currently, he is actively involved in working on projects related to the Jal Jeevan Mission in different states of India.

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WATER TREATMENT: INNOVATIVE TECHNOLOGY

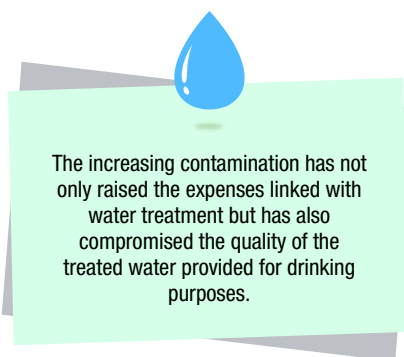
Abdul Rahman Mohammed, CEO, Sahara Industry

Water is an essential resource for all life forms and industries, yet several regions around the globe are grappling with the pressing issue of water scarcity. With escalating populations and expanding urbanization, the thirst for water intensifies, exerting immense pressure on existing freshwater sources. To address this challenge, there is pressing necessity to explore and develop sustainable methodologies for treating unconventional water sources, including seawater, industrial, and municipal wastewater.

Because of the inherent connection between water and energy usage, known as the water-energy nexus, the expansion of water resources should not entail excessive energy consumption. As such, the high energy efficiency and often superior efficacy of membrane-based technologies have gained widespread implementation in various water treatment processes. Membranes allow passage of water, but largely reject salt and most other solutes, play a critical role in the majority of these processes. These types of membranes lie at the heart of traditional reverse osmosis (RO) processes.



Surface water sources, such as rivers, lakes, and reservoirs, play a crucial role in meeting the global demand for drinking water. However, the quality of these water bodies has been steadily declining due to various human activities, including agricultural runoff, industrial discharges, and the disposal of untreated wastewater. As a consequence, surface water has become increasingly contaminated with microorganisms, organic matter, particles, and dissolved solids.



This escalating contamination of surface water has led to significant challenges in water treatment processes. The presence of higher concentrations of contaminants has not only increased the costs associated with water treatment but has also compromised the quality of the treated water supplied for drinking purposes. According to the World Health Organization (WHO), poor drinking water quality is responsible for a shocking 5 million deaths worldwide each year, underscoring the severity of this issue.

These pressing challenges necessitated the emergence of novel water treatment techniques to effectively address the rising levels of contamination. Developing innovative and efficient methods to remove a wide range of contaminants from surface water sources is vital to ensuring the provision of safe, high-quality drinking water and safeguarding public health globally.

INNOVATIVE WATER TREATMENT TECHNOLOGY

There is latest innovation in water treatment technology and researchers have been diligently working on developing a solution that not only addresses current challenges but also sets new standards for efficiency and sustainability in water treatment.

ULTRASOUND TECHNOLOGY

Ultrasound technology has emerged as a promising and innovative approach for water treatment, offering a range of benefits and applications. This technology utilizes high-frequency ranges between 16 kHz and 500 MHz sound waves beyond the audible range of human hearing to achieve various treatment goals. Ultrasound waves are generated by transducers that convert electrical energy into mechanical vibrations. These vibrations create alternating high and low-pressure waves, leading to the formation of microscopic bubbles in the liquid medium. When these bubbles collapse, they release intense energy in the form of heat, pressure, and shockwaves, a phenomenon known as cavitation.

Ultrasound technology offers versatility in its applications, spanning from disinfection and pollutant degradation to emulsification and particle removal in various water treatment processes. Its non-invasive nature, environment friendly attributes, and ability to operate without the need for chemical additives make it an increasingly favourable choice in modern water treatment strategies.



APPLICATIONS OF ULTRASOUND TECHNOLOGY

Disinfection: The cavitation process generated by ultrasound waves can effectively inactivate and destroy harmful microorganisms, such as bacteria, viruses, and protozoa, by disrupting their cell walls and membranes. This makes ultrasound technology a promising alternative to traditional chemical

disinfection methods.

Oxidation of Contaminants: The high temperatures and pressures created during cavitation can promote the formation of reactive oxygen species such as hydroxyl radicals. These highly reactive radicals can oxidize and break down various organic and inorganic contaminants, including pesticides, pharmaceuticals, and industrial pollutants.

Investing in innovative water treatment technologies is essential for ensuring water security, protecting public health, and advancing global environmental stewardship.

Particle Removal: Ultrasound waves can enhance the coagulation and flocculation processes, improving the removal of suspended particles, colloids, and turbidity from water. This is achieved through the formation of acoustic streaming and micro-streaming, which promote particle aggregation and sedimentation.

Membrane Cleaning: Ultrasound can be used to clean and unclog membrane surfaces in water treatment processes, such as reverse osmosis and ultrafiltration. The cavitation bubbles and shockwaves dislodge and remove fouling materials, improving membrane performance and extending their lifespan.

BENEFITS OF ULTRASOUND TECHNOLOGY

- Chemical-free and environment friendly
- Effective disinfection without generating harmful by-products
- Capable of treating a wide range of contaminants
- Can be combined with other treatment processes for enhanced efficacy
- Potential for energy and cost savings compared to conventional methods

SCALING ULTRASOUND TECHNOLOGY FOR DRINKING WATER TREATMENT

Scaling up ultrasound technology for drinking water treatment requires a multidisciplinary approach, drawing upon expertise from various fields, including chemistry, electrical engineering, chemical engineering, and material sciences. One critical step towards achieving scalability is the implementation of an accurate energy characterization technique.

The accurate characterization of energy consumption is crucial, as the use of an inappropriate or inaccurate method could lead to discouraging energy figures. Such misleading data would act as a deterrent for industries considering the adoption of ultrasound technology for water treatment purposes. Overestimating energy requirements could potentially misrepresent the technology's economic viability and energy efficiency, hindering its widespread implementation.

To facilitate the successful scaling and commercialization of ultrasound technology in the

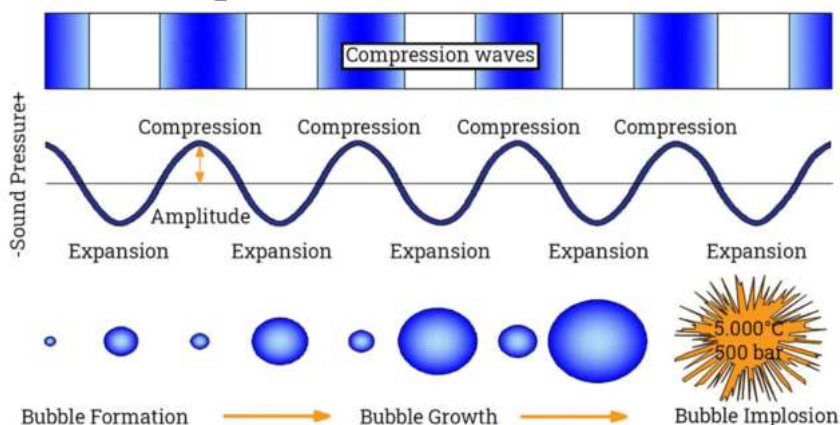
water treatment sector, it is essential to employ robust and reliable energy characterization methodologies. These methodologies should accurately quantify the energy demands of the ultrasound systems, taking into account factors such as the efficiency of transducers, power supply losses, and the influence of operating parameters on energy consumption.

By providing precise and realistic energy consumption data, accurate energy characterization techniques can help to overcome potential barriers and alleviate concerns regarding the economic feasibility of ultrasound technology. This, in turn, can encourage industries to explore and invest in this promising technology, ultimately contributing to the development of more sustainable and efficient water treatment solutions.

While ultrasound technology holds promise for water treatment, further research and optimization are needed to address challenges such as energy consumption, scalability, and integration with existing treatment systems.

Sahara Industry leads the water treatment sector with a commitment to innovation and overcoming challenges in scaling cutting-edge water treatment technologies.

Principle of Ultrasonic Cavitation



SAHARA INDUSTRY: DRIVING INNOVATION IN WATER TREATMENT

Recognizing the need for sustainable and technologically advanced water treatment solutions, Sahara industry, a leading player in the field, is making significant investments to enhance the development of new systems and processes. As a frontrunner in the water treatment sector, Sahara Industry is dedicated to driving innovation and overcoming the challenges associated with implementing cutting-edge

technologies for water treatment on a larger scale.

Sahara Industry's business strategy emphasizes fostering collaborations with industry and technology partners to address the complexities of water treatment. Drawing on the knowledge and expertise gained through the implementation of numerous water treatment projects over the years, the company aims to develop comprehensive and holistic approaches to meet the demand for clean water for the people and industries.

Through its substantial investments and commitment, Sahara industry is paving the way for the innovation in water treatment facilities. By addressing the challenges of quality and energy efficiency, the company is positioning itself as a pioneer in delivering sustainable and technologically advanced solutions to address the water crisis.

CONCLUSION

The growing water scarcity and deteriorating quality demands the development and implementation of innovative water treatment technologies. The challenges posed by escalating contamination levels, rising energy costs, and the need for sustainable solutions require a determined effort from researchers, industries, and policymakers alike.

Emerging technologies such as ultrasound treatment, membrane filtration, and advanced oxidation processes offer promising avenues for addressing these challenges. By leveraging the unique properties of these technologies, we can achieve effective contaminant removal, disinfection, and water purification while minimizing environmental impact and energy consumption.

As we navigate the complexities of water treatment in the 21st century, a commitment to continuous innovation, sustainability, and cross-sector collaboration will be important. By embracing cutting-edge technologies and fostering an environment conducive to research and development, we can pave the way for a future where clean, safe, and accessible water is a reality for all.



About the Author



Abdul Rahman Mohammed
CEO, Sahara Industry

Abdul Rahman Mohammed, the dynamic CEO of the Sahara Industry, is a young entrepreneur propelling the company's growth as a leading manufacturer of high-quality water and wastewater treatment solutions in India. Armed with a degree in marketing and finance, he has skillfully steered Sahara Industry through contemporary business strategies, technological innovations, and dynamic leadership.

Under his guidance, the company has witnessed efficient growth, with a group turnover exceeding INR 1200 million. His visionary approach, coupled with a commitment to delivering cutting-edge products and services, has solidified Sahara Industry's position as a prominent player in the water treatment sector.




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QUA group has been making headlines recently with the Inauguration of a new state-of-the-art membrane manufacturing centre in Pune, India.

QUA is a pioneer in advanced membrane technologies for challenging water treatment applications. The new facility marks a significant milestone in QUA's ongoing expansion and reinforces its commitment to solving water scarcity and complexity.

EA Water Magazine caught up with Sugata Das, Director of Manufacturing & Operations., to understand more on QUA's innovation and manufacturing journey and to hear his thoughts on the membrane technology market..

Q: Tell us about yourself, your company and products.

A: My name is Sugata Das. I have over 35 years of experience in process control and troubleshooting for the water and wastewater treatment industries. I've been with QUA for over 25 years as a Director of Manufacturing & Operations, with multidisciplinary experience in membrane product research, development, manufacturing, and promotion.

QUA is a pioneer in advanced membrane technologies for challenging water treatment applications. It is headquartered in the United States and has an office in Pune, India. QUA is committed to continuous innovation, drawing on extensive research and development as well as the expertise of a highly experienced international team.

We offer a diverse product portfolio, including FEDI® Fractional Electrodionization, Q-SEP® Hollow Fiber Ultrafiltration Membranes, CeraQ™ Ceramic Membranes, and EnviQ® Flat Sheet and Hollow Fiber Submerged Ultrafiltration Membranes. As a company dedicated to customer satisfaction, QUA specializes in membrane

product manufacturing, working closely with system designers and project executors to deliver innovative solutions.

"Our work in water is helping India and the world move closer to meeting nationally determined contributions and sustainable development goals (SDGs), which gives me a great sense of fulfillment."

Our Q-SEP® inside-out membranes with polyether sulfone (PES) chemistry are designed for feed water with a moderate total suspended solids (TSS)/turbidity load. For example, potable water systems and pre-treatment for desalination systems. Outside-in membranes with polyvinylidene fluoride (PVDF) chemistry are suitable for tertiary treatment systems with high solid loading and organic pollutants. However, membrane selection can sometimes be determined by the end user's choice and preferences.

We also offer the EnviQ® series of reinforced flat and hollow fiber membranes with PVDF chemistry, which are widely used in wastewater and municipal biological treatment systems utilizing submerged membranes. Our advanced electrodeionization stacks from the FEDI® series are used in the power generation, semiconductor, and pharmaceutical sectors to produce ultrapure water (UPW). We also have the CeraQ® series of ceramic ultrafiltration membranes, which are designed to handle highly aggressive feed water conditions such as high pH, temperature, heavy organic loading, the presence of oil and grease, etc.

Q: Could you please elaborate on the new QUA product manufacturing facility set up recently in Pune, India and how does new product manufacturing facility support your Vision?

A: The expansion increases our production capacity by

four times and is a strategic move that can drive significant business growth. It allows us to meet increased customer demand, improve our efficiencies, achieve economies of scale, diversify our offerings, create jobs, and also support QUA's rapidly increasing presence in the international market.

Our new facility leverages upgraded equipment, new technologies, and optimized processes. These improvements will significantly enhance efficiency and productivity. With modern machinery and streamlined workflows, QUA can produce more in less time, and our advanced machinery helps pave the way for diversifying the product portfolio through technology innovation programs.

Q: Can you discuss the importance of innovation and research in the membrane industry? How does your organisation foster a culture of innovation?/ Could you elaborate on the key features that set QUA's products apart from others in the membrane industry?

A: Water is an important resource in many industries, including power generation, food and beverage, semiconductor, and pharmaceutical manufacturing, among others. However, the quality of water required for these processes is frequently far superior to what is typically available from natural resources. This is where membranes come in. It is essential for purifying water and making it suitable for various industrial uses.

The membrane industry is expanding and facing various challenges in terms of application areas and technological competitiveness. End-users are constantly looking for ways to save energy, reduce their carbon footprint, improve product quality, and be more environmentally friendly, all while having more flexible system design options. One must continuously add value to existing offerings and develop next-generation products.

Ongoing research and development (R&D) is the heart of the company's growth plan and continuous development of sustainable water solutions. The R&D team has been working on the development of membranes and related products for over 25 years. As a result, QUA has grown into a strong and competent manufacturing entity where technology innovation and continuous improvement practices are deeply ingrained in our innovation culture.

All of our products are the result of extensive research and



rigorous practical trials. We have been able to create value-added products with differentiators. For example, FEDI® technology disrupted the traditional technology of single-stage deionization and introduced dual voltage operation, optimizing power consumption and ensuring product quality sustainability.

FEDI® GIGA® is the most recent product to provide a significant differentiator in the form of minimum port connections for system integration. The FEDI® GIGA® stacks can be installed one on top of another, significantly reducing the skid cost and footprint. For larger installations, these features significantly impact capex investment.

With the unique cloud point precipitation technique in the PES inside-out membrane-making process, we achieved uniform porosity that helps in performance sustainability. Similarly, in PVDF outside-in membranes, the double wall concept adds mechanical strength to the fibres, which is essential in pressurized operations for tertiary filtration systems.

Our recently launched EnviQ-RF® modules feature a unique dual aeration system that significantly improves membrane fouling protection for submerged operations with high solid exposure.

In 2013, QUA received the prestigious Frost & Sullivan award for the value-added features of our FEDI® and Q-SEP® products, which increase customer acquisition and overall market penetration potential

Q: Product development is a continuous process. What R&D efforts are you taking in this regard?

A: As I previously stated, keeping up with market trends and encouraging technological innovation are inherent in our culture. We follow a structured and elaborate approach to product development, beginning with market research and data collection and progressing to basic research and concept development. We have a highly efficient R&D team of experienced scientists and engineers.

Synthetic membranes, electrochemistry, ceramics, and other segments are each assigned a separate sub-group. The R&D subgroups work with sales, marketing, application, production, and quality teams at various stages of development to gather feedback and value inputs. From concept to prototype, the product undergoes extensive and rigorous laboratory testing. Before launch, the final marketable product is always deployed in an onsite pilot system with real-life feed water conditions. This approach has paid off handsomely, allowing us to offer a diverse range of products in the water treatment and recycling industries over the last decade and a half.

Q: In what ways has QUA embraced sustainability in its manufacturing processes and product offerings?

A: Sustainability is of the utmost importance to QUA. We remain committed to our safety, hygiene, and environmental responsibilities. In our new facility, we have installed a high-tech zero discharge system based on advanced vacuum membrane distillation to manage and recycle the generated effluent from the manufacturing process, reducing overall water consumption. We are currently working on ISO 14001, which is expected to be completed shortly.

None of our products pose an environmental, health, and safety (EHS) threat throughout their lifecycle. No harsh chemicals are required during operation or maintenance. As we all know, electrodisinfection (EDI) is regarded as a greener alternative to conventional disinfection systems. Ultrafiltration systems use water and air-assisted cleaning procedures, as well as CIP on occasion, with little use of generic chemicals.

Q: How does QUA ensure quality control and adherence to industry standards in its manufacturing processes?

A: We have always taken great care to ensure our quality standards are consistent with global best practices. We have a comprehensive quality control policy for raw materials, work-in-process, and finished products, as well as advanced analyzers and test rigs.

The laboratory's experienced chemists and engineers maintain data in a centralized SAP system to ensure 100% product quality. Our Q-SEP in-out product has undergone stringent NSF ANSI 61 and PDWEP certification processes, recognizing our membranes' toxicity control and bacteria/virus removal efficiencies. FEDI stacks are CE and UR compliant. Our new facility is equipped with advanced process monitoring instruments and alarms, with remote monitoring systems accessible 24x7. Responsible managers and department heads keep an eye on the process parameters all the time. This has definitely enhanced the sustainability of product quality.

Q: Looking forward, what emerging trends do you anticipate in the membrane industry, and how is QUA preparing for them?

A: I believe the membrane market is rapidly evolving alongside the complexity of feed characters in every segment of the water industry. With environmental regulatory norms tightening by the day and recycling costs remaining as high as ever, water treatment companies face stiff challenges in providing end-to-end economic solutions to the industry.

As a result, both system integrators and end users seek a diverse membrane product portfolio with value-added features that provide a broad range of solutions. Any membrane developer must constantly monitor treatment challenges and develop new products.

We monitor the market closely and evaluate every query and feedback before forwarding them to the R&D team. They conduct a survey, commission benchmarking studies, and design a product that will stand out and perform.

Q: Can you share insights into the challenges and opportunities that the membrane industry is currently facing, and how QUA is navigating them?

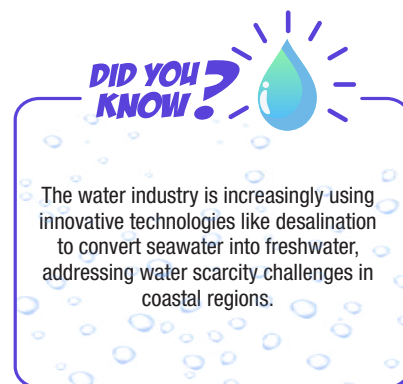
A: Opportunities are plentiful. Population growth, economic development, and changing consumption patterns all contribute to increased water demand, which cannot exceed water supply. Pollution patterns are also changing, resulting in complex water characteristics that are difficult to treat. As a result, there is ample opportunity for membrane players to capitalize on unprecedented innovations and continue to focus on developing new membrane products to meet key industry demands. However, the fast-growing membrane industry presents challenges due to intense competition.

We have made great strides in establishing our brand of

products across 30 countries and created numerous successful references. QUA's commitment to ongoing innovation, leveraging its deep roots in R&D and zero tolerance to quality standards always pave the way to navigate through the challenges and opportunities of the membrane industry.

Q: With technological advancements, how is QUA staying ahead in incorporating cutting-edge innovations in its products?

A: We have consistently used our R&D resources to upgrade and launch new products. Each membrane product comes in a variety of configurations to meet the specific needs of a particular application. We have been able to release upgraded products and introduce new products regularly. Continuous adherence to technological innovation allows QUA to remain technically competent and offer various options in the crowded water industry.



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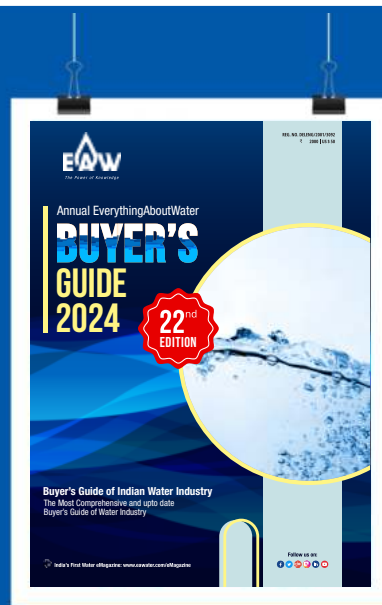
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POWERCHINA HUBEI USES DIGITAL TWINS TO BUILD SOLAR POWER PLANT IN A HILLY REGION

Richard Irwin Senior Product Marketer, AssetWise Operational Analytics

TRANSITIONING CHINA TO CLEAN ENERGY

China has been a world leader in renewable energy growth, accounting for 40% of the world's renewable energy development from 2015 to 2020. The country works to shift away from fossil fuels by instituting corporate mandates and directing the People's Bank of China to provide low-cost funding to lenders that contribute to green projects. The objective is to generate a combined 1,200 gigawatts of wind and solar energy by 2030. China wants to transition a full 80% of its energy mix to renewables by 2060. To help meet the country's goals, POWERCHINA Hubei Electric Engineering undertook the design and construction of an 80-megawatt ground-based photovoltaic power station near Guangshui in the Hubei province.

The design team soon ran into several challenges while developing in the region, which is dominated by hills, pine woods, and fishponds. They had to carefully choose a location that could accommodate 14,080 solar panels while minimizing the impact on the environment and local wildlife. Once the site was selected, they would then have to optimize the design of the photovoltaic array, booster station, access road, and transmission line to suit the widely varying topography of the area. Specifically, the design would need to shorten the length of the road, reduce the size of the booster station, and maximize the daily amount of electricity generated by each component. Even with the demands of the project, POWERCHINA Hubei still had to carefully control costs.

STRUGGLING WITH INADEQUATE SOFTWARE

POWERCHINA Hubei determined that digital design would help them select the optimal location for the power station, then place all components around the environment. They initially selected third-party design software for the job. Within a short time, they learned that the complexities of the project overwhelmed their software. All potential sites for the station were covered in low hills and steep slopes, often with gullies and hollows between them. As a result, they needed to modify supports for every one of the thousands of components for them to fit in the irregular terrain. Every solar panel needed a different angle and spatial position based on the ground elevation and the potential shading. The considerable size of the facility, and the large number of solar panels, added up to a massive number of individual

adjustments that were difficult to make in their previous software.

Adding to the problems, the design showed that the engineering quality of the cabling, from the individual panels to the booster station to the transmission line, was difficult to control. They opted to bury the cabling to protect them from regular wear and to lessen the ongoing impact to the environment. Yet the undulating environment also made the cabling process difficult, and their original software was not able to help them ensure a suitable layout. Though the team initially attempted to create the design of the entire power station in the initial software, it could not easily handle the large number of complex tasks and significantly slowed the process. To avoid falling behind the project's strict 10-month deadline, the team decided they needed to switch to a series of applications that would support their goals rather than get in their way.



AUTOMATING SOLAR PANEL PLACEMENT ON COMPLEX TERRAIN

After a brief search, POWERCHINA Hubei determined Bentley's applications would allow them to fully model the fine details of the complex project while meeting their deadline. They began by using ProjectWise to create a connected data environment, enabling all contributors to collaborate on the design with the confidence that all information was up to date. Next, they imported a reality mesh of the project environment into MicroStation and OpenBuildings, then performed a full terrain analysis to determine how to design and adjust individual components. Using the applications, the team developed specific software that could help them quickly design solar fields in mountains. Once they created base 3D models of the solar array, they used the software to automate the placement and angle of each of the 14,080 solar panels in and around the hills, keeping total shading on the project at any given time below 2% and guarantee maximum exposure to sunlight.

With the solar panels in place, POWERCHINA Hubei then used OpenBuildings Designer to design the booster station and OpenUtilities Substation to determine the cabling layout and design the transmission line. With the help of OpenUtilities, they determined how to effectively bury the cables under the hills while minimizing the disruption to the area. Lastly, with a completed digital twin of the entire development, they used SYNCHRO 4D to determine the most efficient construction schedule possible, which helped them improve construction management.

IMPROVING CONSTRUCTION WITH CLEAR INTENT AND SCHEDULING

With the help of a digital twin created with Bentley applications, POWERCHINA Hubei optimized both the design and construction of the power station. Integrating all elements into a federated model helped them discover how to shrink the footprint of the booster station to just 1,181 square meters and reduce the length of the access road by four kilometers. Since the design team could automatically generate and place models within their digital twin, they saved CNY 1 million, compared to manually creating the elements. Their custom software for automating the placement and angle of solar panels kept panel shading below 2%, which maximizes daily electrical production. Working within



the single digital twin allowed the team to detect and resolve clashes that would have resulted in 40 instances of rework, which saved 20 days of construction and CNY 800,000. They also reduced the amount of cabling needed due to careful planning within the digital model, which saved an additional CNY 600,000.

Throughout the development process, the digital model reduced design errors and the need for manual verification, resulting in a more efficient design. POWERCHINA Hubei then put the digital twin to work during construction with SYNCHRO 4D. Planning every step of the process, using the 3D models to clearly communicate the design intent with contractors, and incorporating augmented reality technology accelerated construction by 30 days while avoiding any accidental panel shading. "The project was an innovative application of mountainous photovoltaic projects in the new energy sector," said Zhu Hanwei, secretary general of the Information Technology Working Committee, Exploration and Design Association of Hubei Province. "It provided an excellent design scheme using complete solutions, and supported procurement and construction management using digital twin models, providing high-quality construction management."

The power station is now operational and delivering renewable energy to Hubei. POWERCHINA Hubei subsequently worked with Bentley experts to establish the China Power Engineering Software Research and Development Center, which expands upon the techniques used in the Guangshui project and enhances the organization's ability to offer

integrated digital solutions across the lifecycles of future solar power stations.

PROJECT SUMMARY

Organization

POWERCHINA Hubei Electric Engineering Co., Ltd.

Solution

Utilities and Communications

Location

Guangshui, Hubei, China

Project Objectives

To develop an 80-megawatt solar power station in hills of Hubei.

To design around undulating terrain while keeping shading below 2%.

Products Used: iTwin.js, MicroStation, OpenBuildings, OpenRoads Designer, OpenUtilities Substation, SYNCHRO 4D

Fast Facts

POWERCHINA Hubei needed to install 14,080 solar panels and associated components in land dominated by hills, woods, and fishponds.

Their initial software was inefficient and became overwhelmed by the complex project.

The design team determined they could optimize the design of the facility by creating a digital twin.

ROI

Combining the Bentley digital twin model with

POWERCHINA Hubei's custom software kept panel shading below 2%, which maximizes daily electrical production.

The digital twin helped detect and resolve clashes that would have resulted in 40 instances of rework, saving 20 construction days and CNY 800,000.

Planning every construction step and using the 3D models to clearly communicate design intent accelerated construction by 30 days.

Quote: "The project was an innovative application of mountainous photovoltaic projects in the new energy sector. It provided an excellent design scheme using complete solutions, and supported procurement and construction management using digital twin models, providing high-quality construction management." – Zhu Hanwei, Secretary General of the Information Technology Working Committee, Exploration and Design Association of Hubei Province

About the Author



Richard Irwin
Senior Product Marketer,
AssetWise Operational Analytics

Richard is a Senior Solutions Marketer for Bentley System's Asset and Network Performance group, with over 15 years' experience in working within the industrial analytics space. In his role, Richard works with the sales and industry teams to coordinate marketing opportunities across a wide variety of industries applicable to AssetWise, OpenComms, and PlantSight. Based in the United Kingdom, Richard holds a master's degree in Sociology from Aberdeen University and a Masters in IT from Heriot Watt, Edinburgh.



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A PRIMER ON CHLORINE GAS DISINFECTION

Eric Laurin, P.E.

The disinfection of water using chlorine gas has been practiced in the United States for over a century. It is one of the most effective and reliable disinfection agents and although its use has decreased in recent years owing to safety concerns and regulatory constraints, it remains a widely used disinfection technique. This article summarizes the principal issues to be considered in the selection of chlorine gas disinfection.

WHAT IS IT?

The element Chlorine was first isolated by Carl W. Scheele a Swedish chemist in 1774. The greenish tint of the gas caused Sir Humphry Davy in 1810 to name it chlorine from “chloros” meaning “pale green” in Greek. German physician Robert Koch in 1881 demonstrated that bacterial cultures were destroyed by hypochlorites, an aqueous form of chlorine, thereby proving the effectiveness of chlorine as a disinfectant.

Chlorine has an atomic number of 17 and a molecular weight of 71. It is in the halogen group of elements. It exists as a gas at standard temperatures and pressures with a specific gravity of 2.486. It is heavier than air and will pool in low lying areas.

It is a strong oxidizer and personal protection is mandated for exposure to concentrations above 0.5 ppm.

HISTORICAL PRACTICE IN THE WATER INDUSTRY

Its first use as a disinfection agent dates from 1897 when the water supply of Maidstone, England was disinfected by the addition of a concentrated solution of chloride of lime. Chlorine gas for disinfection was first demonstrated in the United States in 1910, it was followed by the invention of the Chlorinator by Charles Wallace in 1913 at the Belmont filter plant in

Philadelphia, Pennsylvania. The Chlorinator has been in production by Wallace & Tiernan since that time.

WHY DOES IT WORK SO WELL?

As a strong oxidizing agent, chlorine reacts with a wide range of organic (alive or dead) and inorganic material. It is able to kill microorganisms by disintegrating the lipids that form the cell walls and react with enzymes and proteins found within the cell.

When dissolved in water, chlorine forms hypochlorous acid (HOCL), hypochlorite ion (OCL-) and elemental chlorine (Cl₂). The distribution of these three chlorine compounds is highly dependent on the pH of water. For a pH from 6.5 to 8.5, typical values for drinking water, HOCL and OCL- are the prevailing species and their concentration in water is called free available chlorine. It is these compounds that provide the disinfection action on organic material. For a more complete description of the chemistry of chlorine disinfection see WATER TREATMENT PLANT DESIGN, 5th Edition, published jointly by the American Water Works Association (AWWA) and the American Society of Civil Engineers, for example.

CURRENT PRACTICE IN US

The best snapshot of Chlorine disinfectant use in the US is found in the AWWA's 4th survey of drinking water utility disinfection practices issued in October 2008¹). The AWWA Report summarizes responses to a survey received from 312 water providers ranging in size from <10,000 population served to >500,000 served. The results of the survey are instructive, and the findings summarized below:

- 98% reported providing disinfection of some kind.
- Chlorine gas was used by 63%, bulk liquid

hypochlorite use was 31%, on-site generated chlorine/hypochlorite was used by 8%, and 8% used some dry forms of hypochlorite. The percentages total more than 100% because some systems used multiple forms of chlorine as a disinfection agent.

- Replacement of chlorine gas with bulk liquid hypochlorite was the most frequently reported disinfection related change since the previous survey of drinking water utility disinfection practices performed by AWWA in 1998, safety being the main reason for converting away from gas chlorination.
- However, chlorine gas remains the preferred disinfection technique by far for the following reasons given in survey responses:
 - * Reliability
 - * Cost effectiveness
 - * Ease of operation
 - * Provides a “residual disinfection” in the distribution system that prevents the regrowth of microbes

THE CALIFORNIA EXPERIENCE

The Cities of Benicia and Huntington Beach currently operate gas chlorine disinfection systems at their respective Water Treatment Plants (WTPs). Each houses the active chlorine cylinders in a containment vessel. Some particulars from the Benicia plant:

- 12-MGD rated Water Treatment Plant
- Dosing rate of 0.6 mg/L for pre-chlorination and 1.5 to 1.8 mg/L for post-chlorination
- A 1-ton cylinder is emptied every 3 weeks, on average. Yearly usage is approximately 18 1-ton cylinders
- Cylinders are stored in a separate room that is adjacent to the Operations Building
- Switch over from an empty cylinder to a full,

spare cylinder is done manually, demonstrating full operator control

Both WTPs are required to prepare a Risk Management Plan (RMP) – see discussion below – that is approved by the local Certified Uniform Program Administrator (CUPA), usually the County environmental health department, and reviewed by the US Environmental Protection Agency (EPA). Although this effort was qualified as time consuming, the consensus was that the effort was manageable.

Huntington Beach notes that it would not operate a gas chlorine system without containment vessels as these offer significant public and operator safety protection as well as additional security from tampering or vandalism.

Finally, the operating staff at both plants would recommend the use of gas chlorine as a disinfectant because it is:

- Efficient
- Easiest to use and handle
- Cost Effective; it provides the most disinfection for the least cost

WHAT ARE THE SAFETY ISSUES?

Chlorine has been designated as an Extremely Hazardous Substance (EHS) in 40 CFR 355 and, as such, is highly regulated by federal, state and local agencies. Leaks are of great concern and rules have been promulgated by the US Environmental Protection Agency (USEPA) and OSHA, among others requiring the preparation of emergency planning activities known as Risk Management Plans (RMP) when chlorine is stored above a certain threshold quantity (TQ). Additionally, the method of storing chlorine will influence the scope and extent of the emergency plan preparation that is required by the RMP regulations. It is recommended that state and local regulations be reviewed when preparing emergency plan preparations for additional requirements.

HOW TO CONTROL LEAKS

The water treatment industry uses two techniques for the control of chlorine leaks. These are scrubbing or containment.

- Scrubbing is a treatment system that

neutralizes the accidental release of chlorine gas by drawing contaminated air through a chemical absorption system. The treated air is discharged to the atmosphere.

- Containment systems employ a self-contained vessel within which the chlorine gas cylinder is housed. Accidental leaks of chlorine are kept within the containment vessel, an ASME rated pressure tank, for recycling to the injection system at a normal flow rate. No atmospheric venting is generated because the leaked gas is kept within the containment vessel. TGO Technologies, Inc., of Santa Rosa, California, has developed secondary containment vessels for both 150-pound and 1-ton cylinders that perform this function and provides for total containment that keeps our communities safe. See photo.

RISK MANAGEMENT PLANS (RMP) ARE REQUIRED

Both scrubbing and containment technologies for chlorine gas are subject to the requirement of an RMP, as stipulated in Section 112 (r) of the Clean Air Act and Article 80 of the Uniform Fire Code. In Section 112 ©, the USEPA developed a list of 77 toxic and 63 flammable substances for which TQs were established. The TQ for chlorine is 2,500 pounds.²⁾ Facilities storing chlorine gas in quantities that equal, or exceed 2,500 pounds are required by statute to prepare an RMP in accordance with 40 CFR Part 68, Subpart G.

It is important for Plant Managers to accurately inventory the quantities of stored chlorine gas cylinders at the plant site. Stored quantities of less than 2,500 pounds do not trigger the preparation of a Federal RMP, an activity that requires significant administrative time and effort which diverts scarce resources from plant operation and system monitoring.

We have been discussing the specific TQ amounts that trigger the preparation of a Federal RMP as presented in Section 112 (r) of the Clean Air Act. The use and storage of gaseous chlorine triggers other safety and reporting requirements as mandated by the Emergency Planning and Community Right to Know Act (EPCRA), the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and others such as OSHA's Section 1910.1193) that must be prepared by the facility. We also note that

state RMP TQs may be more stringent than the federal regulation identified in Section 112 ©; for example, California's TQ for chlorine is only 100 pounds. It is strongly recommended that your state's TQ requirements for chlorine be checked when assessing the need to perform an RMP.

WHAT DOES THE FUTURE HOLD FOR GAS CHLORINATION?

A cost comparison study of the use of gas chlorine versus on site sodium hypochlorite disinfection was presented in an OPFLOW article⁵⁾. The authors calculated the expected costs of installation, operation and maintenance of each process for a 20-MGD system including chemical costs. The present value of the cost of implementing and operating a gas chlorine system was found to be approximately one-third that of a commercially available Sodium Hypochlorite system. Note that local conditions and regulatory requirements must be factored into any comparative analysis of any disinfection technology.

SUMMARY

This article has provided a short summary of the chemical characteristics of chlorine, its implementation history and use in the United States. Because of the safety concerns of using gaseous chlorine as a disinfectant, the benefits of secondary containment for leak control when compared with the use of scrubbers was discussed. It was noted that passive secondary containment can successfully address the safety and regulatory concerns by providing a reliable, secure and cost-effective leak protection technology to keep our communities safe. The article also outlined the requirements for the preparation of a Federal RMP as is necessary for any facility storing gaseous chlorine.



Antarctica holds about 60% of the world's fresh water in the form of ice. If all the ice were to melt, global sea levels would rise significantly.



About the Author

Mr. Laurin has almost 40 years of consulting engineering experience in the design of water infrastructure systems for private and municipal water providers in 8 states and American Samoa.



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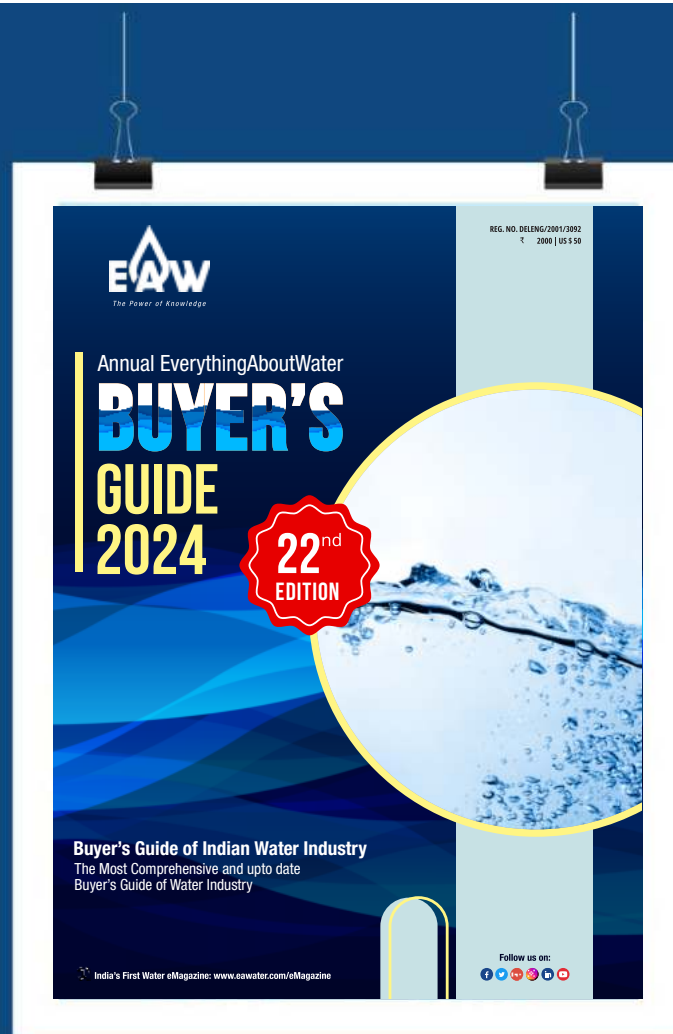
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INTERVIEW WITH Nilesh Todi

Executive Director
MMP filtration pvt ltd

Q: What recent advancements in water filtration technology has your company been involved in or observed?

A: Recent developments in water filtration technology within our company have been centered around sustainability. We've implemented a strategy that involves incorporating recycled fiber processing alongside virgin fibers in our production processes. Additionally, our technical textile and yarn production division has made significant strides by introducing cotton yarn with activated carbon cores. This innovation allows us to utilize more natural fibers while integrating a substance that effectively removes odors, smells, and color from water. Our ongoing efforts include exploring the manufacturing of technical textile yarns for filtration purposes using biodegradable, man-made fibers. We're currently sourcing samples globally and conducting trials to assess the viability of utilizing biodegradable polymers, which aligns with our commitment to environmental stewardship.

Q: How do these advancements compare to traditional water filtration methods in terms of efficiency, effectiveness, and environmental impact?

A: Compared to traditional water filtration methods, our recent advancements offer several key benefits in terms of efficiency, effectiveness, and environmental impact. Firstly, by incorporating recycled fiber processing alongside virgin fibers, we are not only reducing waste but also contributing to resource conservation. This approach enhances the sustainability of our filtration processes by minimizing the environmental footprint associated with raw material acquisition. Secondly, the introduction of cotton yarn with activated carbon cores represents a

significant leap in filtration effectiveness. Traditional methods often rely on chemical additives or multiple stages of filtration to achieve similar results.

By integrating activated carbon directly into the yarn, we streamline the filtration process, effectively removing odors, smells, and color from water in a single step. Moreover, our ongoing exploration of biodegradable, man-made fibers for filtration purposes underscores our commitment to environmental stewardship. Unlike traditional synthetic fibers, which can persist in the environment for centuries, biodegradable polymers offer a more sustainable alternative. By sourcing samples globally and conducting rigorous trials, we aim to develop filtration solutions that not only meet but exceed industry standards for efficiency and effectiveness while minimizing environmental impact.

Q: Can you discuss any innovative materials or designs being utilised in these new water filtration technologies?

A: Our company, MMP Filtration, has always been at the forefront of innovation in the filtration industry. Established in 1993, we have consistently introduced new technologies and materials to meet evolving market demands. One significant development is our investment in technical textile production. This expansion allows us to manufacture a wide range of yarns specifically designed for filtration purposes. By integrating technical textile production with filtration, we have been able to address the growing demand for specialized filtration materials. One notable innovation is our zero foaming polypropylene yarn, a unique material that sets us apart from conventional yarns available in the industry. This advanced yarn offers superior performance and durability, making it ideal for various filtration applications.

In addition to our zero foaming polypropylene yarn, we have also made advancements in ply yarns. By utilizing a single yarn and twisting it to increase surface area, we have enhanced the longevity and efficiency of our filtration products. Furthermore, we are committed to sustainability in our manufacturing processes. We incorporate recycled fibers and biodegradable man-made polymer-based fibers into our products, reducing our environmental footprint. Additionally, our integration of cotton with activated carbon demonstrates our dedication to sustainability and innovation in filtration technology.

Q: What role does sustainability play in the development and implementation of these advanced water filtration technologies?

A: Our commitment to sustainability plays a crucial role in addressing these challenges. By incorporating recycled fibers and biodegradable man-made polymer-based fibers into our filtration products, we not only reduce environmental impact but also contribute to the removal of microplastics from water sources through innovative material choices. Overall, our focus on innovation, quality, and sustainability allows us to tackle challenges such as removing microplastics and other emerging contaminants from water sources effectively. As a leader in the filtration industry, we remain committed to continually improving our products to meet and exceed customer expectations while safeguarding the environment.

Q: Are there any specific industries or regions where these advanced water filtration technologies are particularly beneficial or in high demand?

A: Our advanced water filtration technologies find particular utility and high demand in several specific industries and regions. Primarily, desalination plants, petrochemical industries, and wastewater recycling facilities are major consumers of our filtration products. These sectors rely heavily on efficient filtration systems to maintain operational efficiency and environmental compliance. In terms of regional demand, the Middle East emerges as the largest market for our filtration products, followed closely by India and the USA.

The arid climate and rapid industrialization in the Middle East necessitate robust filtration solutions for water treatment and resource management. By

leveraging filters manufactured from natural fibers and biodegradable or recycled polymers, these regions stand to benefit significantly. Not only do these advanced filtration technologies enhance water quality and resource utilization, but they also contribute to sustainability and environmental conservation efforts.

Q: What regulatory considerations or standards do these new filtration technologies need to meet in order to be implemented on a larger scale?

A: To implement our new filtration technologies on a larger scale, it's essential to consider regulatory requirements and standards governing water treatment and filtration systems. In particular, regulatory bodies such as the Environmental Protection Agency (EPA) in the USA, the European Union's Water Framework Directive (WFD), and similar agencies worldwide set stringent guidelines for water quality and treatment processes. Our filtration technologies must meet these regulatory standards to ensure compliance and promote public health and environmental protection.

Also, industry-specific standards, such as those established by the American Water Works Association (AWWA) or the International Organization for Standardization (ISO), may apply. These standards often define performance criteria, materials requirements, and testing procedures for filtration systems. Moreover, adherence to health and safety regulations, including occupational health and safety guidelines and product safety standards, is crucial to ensure the safe and effective implementation of our filtration technologies. By proactively addressing regulatory considerations and meeting relevant standards, we can facilitate the widespread adoption of our advanced filtration technologies, ensuring their efficacy, safety, and compliance with regulatory requirements on a larger scale.

Q: Could you elaborate on any partnerships or collaborations your company has engaged in to drive innovation in water filtration technology?

A: We, at MMP take pride in our commitment to innovation in water filtration technology. While we value collaboration and partnership opportunities, we have chosen to focus primarily on our internal research and development capabilities. Our dedicated team of leaders and experts possess a strong technical background, allowing us to drive innovation independently. We believe in our ability to generate unique solutions and

advancements within the field of filtration without relying on external partnerships or collaborations. It's important to note that our approach is rooted in confidence. We strive to lead by example and set industry standards through our own initiatives and developments. While we appreciate the potential benefits of collaboration, we have found success in our self-reliance and innovative spirit.

Q: Finally, how do you measure the success or effectiveness of these advanced water filtration technologies, and what potential challenges lie ahead for further implementation and adoption?

A: Measuring the success and effectiveness of our advanced water filtration technologies involves several key metrics and considerations. Firstly, we assess the performance of our filtration systems in terms of their ability to remove contaminants, including microplastics and emerging pollutants, from water sources. This evaluation includes rigorous testing to ensure that our technologies meet or exceed regulatory standards for water quality.

Additionally, we analyze the efficiency and reliability of our filtration processes, taking into account factors such as flow rate, pressure drop, and filtration capacity. By monitoring these parameters, we can identify any areas for improvement and optimize our systems for maximum effectiveness. Furthermore, we consider the environmental impact of our filtration technologies, including their use of sustainable materials and their contribution to reducing waste and resource consumption. By incorporating recycled fibers and biodegradable polymers into our products, we strive to minimize our environmental footprint, while still delivering high-performance filtration solutions. In terms of challenges for further implementation and adoption, one potential obstacle is the need for continued research and development to keep pace with evolving contaminants and regulatory requirements. As new pollutants emerge and environmental standards evolve, we must adapt our filtration technologies accordingly to ensure ongoing effectiveness and compliance.

Moreover, there may be logistical challenges associated with scaling up production and distribution of our advanced filtration systems, especially in underserved communities or regions with limited infrastructure. Overcoming these challenges will require strategic partnerships, innovative solutions, and a continued commitment to our core values of innovation,

quality, and sustainability. Overall, by carefully monitoring performance metrics, addressing environmental concerns, and navigating potential challenges, we believe our advanced water filtration technologies have the potential to make a significant impact on global access to clean drinking water while safeguarding the environment for future generations.





INTERVIEW WITH Zoran Skoric

International Sales Manager
FILTRAGLASS, S.L

Q: What recent advancements in water filtration technology has your company been involved in or observed?

A: The advancements in water technology in some industries have been towards making filtration more accessible in skid mounted units / treating water near to the source and doing away with the need of large Treatment plants, or draining to CETP thus saving on energy and space.

This also does away with the mixing of effluents thereby making it easier for water to be treated without the recurring expense of multiple chemicals.

We provide skid mounted filtration machines with a very small footprint that address the filtration needs of Glass processors who normally recycle dirty water in their machines till their production is halted to switch out the water and then treat it using settling pits / tanks along with basic Gen1 filtration equipment.

As glass processing particularly Solar Glass processing takes off in India most companies operating with the above filtration process are looking at the problem in an unsustainable way but it is also affecting their production as they scale up.

Q: How do these advancements compare to traditional water filtration methods in terms of efficiency, effectiveness, and environmental impact? .

A: When it comes to Water Filtration for the Glass Industry processors who use CNC / Edging Machines the trend overseas is to recycle and reuse the water sometimes as long as 4 years. We have seen a lot of people who were not looking at water purification as a component of production but as a forced commitment

relook it as a factor of production.

The trend in India has always been to evaluate commercials of filtration technology equipment on a per kg basis, than as a machine, that is a factor of production.

The machines that we promote for the filtration of Grinding glass water (and also Grinding the surface of various Marbles and Stones) does away with the problem of glass sludge all together as it is extracted from the water as a dry cake which is easily bagged and sold to recyclers for various applications.

Q: Can you discuss any innovative materials or designs being utilised in these new water filtration technologies?

A: Our filtration process is based on simple principals, but the core of the technology lies in making the filtration process completely automated which reduces any scope for human error thereby enabling continuous production.

Q: What role does sustainability play in the development and implementation of these advanced water filtration technologies?

A: Our water filtration machines and built around the philosophy that Water filtration technologies should have less emphasis on chemicals and also conserve energy. We also believe that the "effluent" extracted should be in such a form that its easily transportable and if possible be a raw material for industry.

Q: How do these advancements address challenges such as removing microplastics, pharmaceuticals, and other emerging contaminants from water sources?

A: Not applicable to our technology

Q: Are there any specific industries or regions where these advanced water filtration technologies are particularly beneficial or in high demand?

A: Water is scarce and not an infinite resource, In India as the benefits of Tap water reach everyone consumption per capita will also increase, Industry HAS to come up with better solutions to recycle and reuse their process water. The days of dumping semi treated effluent into the open sea and rivers are over.

Q: What regulatory considerations or standards do these new filtration technologies need to meet in order to be implemented on a larger scale?

A: Regulators need to get more strict with large and medium companies that abuse existing local laws and get away with dumping effluent in the ETP Drain.

Q: Could you elaborate on any partnerships or collaborations your company has engaged in to drive innovation in water filtration technology?

A: We have partnered with Filtraglass from Spain who are also our principals in providing the best solutions to the Glass Processing Industry. As you know Spain is a very water scarce country especially in the South and Filtraglass has over 20 years of experience in Filtration technology and its various applications.

Q: How do you anticipate these advancements will impact the accessibility of clean drinking water globally, especially in underserved communities?

A: Water is scarce and not an infinite resource, In India as the Jal Mission rolls out Tap water to all households, consumption per capita will also increase. Industry HAS to come up with better solutions to recycle and reuse their process water. The days of dumping semi treated effluent into the open sea and rivers are over.

Q: Finally, how do you measure the success or effectiveness of these advanced water filtration technologies, and what potential challenges lie ahead for further implementation and adoption?

A: The success of any technology lies in its potential to cause its users less grief and more joy. Superior technology should always be easy to operate and

maintain and have a minimal operating cost.

The challenge is changing the mindset of the end-user to adopt water-filtration as a factor of production and not as a peripheral activity.

Q: Finally, How do you see the future of Global industry water consumption issues and it's needs?

A: We are all aware and we can see, that the global industry has grown a lot during last 20 years. But this growth does not mean that natural resources will grow proportionately.

As humans we don't always respect what we should

really respect. When we are born, till we die we depend on nature, and a big part of nature is – water, air, food... still we act and live as if the supply of everything is endless.

We are so occupied by daily life, business, jobs, and obligations that we have, we don't want or we don't have the time to understand that every source has its limit, its end. On the same way, we should think and treat drinking water as our source of life.

For example, in India average water consumption per person (drinking, cooking, cleaning, washing...) is 50-60 litres in rural areas, and 150-200 litres in the cities, per day.

It means around 3,000 Litres per month per person, average. One glass processing CNC machine has an average tap water consumption of 10 Litres per minute, plus water that is recirculated and replaced daily. We can say, that one CNC machine in 2 shift production can spend around 5-8,000 Litres of TAP water, daily. In a month it can reach around 2,00,000 Litres, which is the consumption of drinking water for about 1 lakh people / day .if a glass company has say 10 CNC machines, plus other machine types that consume water as a coolant liquid for glass processing. This is no longer acceptable!

Industry must be pushed from governments to reuse the water for machines, and that is the only way we will be able to save drinking water, for human use.



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INTERVIEW WITH Lalit Mohan Sharma

Principal Scientist (Water Research & Training)
SM Sehgal Foundation

According to the latest report of UNICEF and World Health Organization (WHO) in 2022, 2.2 billion people lack access to safe drinking water and previous findings indicate that improving access to safe drinking water prevents 4 percent of the global disease burden.

Water quality challenges such as iron, manganese, arsenic, fluoride, and microbial contamination are prevalent in India. SM Sehgal Foundation advocates the adoption of low-cost sustainable point-of-use (household) water treatment technologies.

MatiKalp Ceramic Pot Filters (CPF) stand out as a potential sustainable low-cost solution capable of removing iron, manganese, and microbial contamination. However, there's a need for a sustainable solution to remove arsenic contamination from drinking water. Today, we are here to discuss one of the main innovations i.e. MatiKalp Ceramic Pot Filter which promotes access to safe drinking water for rural communities to prevent waterborne diseases.

Q: What is a MatiKalp Ceramic Pot Filter (CPF)?

A: MatiKalp is a simple, low-cost sustainable technology with raw materials such as clay, combustible material, and sand processed locally and formed into the shape of a pot. During the firing process of the dried pot, the burn-out material was gasified, leaving behind a network of micropores connected with a micro-channels to facilitate the filtration of water. The filter cost is affordable between 500 to 800 INR, ensuring accessibility without compromising on effectiveness. This low-cost solution addresses critical water quality issues, making safe drinking water attainable for rural communities.

Q: What recent advancements in water filtration .

technology has your organization been involved in?

A: The recent advancement in technology is developing MatiKalp CPF for arsenic removal by the integration of ZVI. Furthermore, a diffuser is also incorporated above the filter pot to increase the interaction of water with air by increasing the surface area of water in manifolds which leads to enhancing the effective removal of iron, manganese and converting arsenic III to arsenic V through oxidation

Q: How do these advancements compare to traditional water filtration methods in terms of efficiency, effectiveness, and environmental impact?

A: Traditional CPF is effective on suspended particles and microbial contamination. In this advancement, we have conducted a feasibility study for the integration of Zero-Valent Iron (ZVI) into the ceramic pot filter to remove arsenic. The introduction of a diffuser into CPF allows the conversion of arsenic III (soluble) to arsenic V (insoluble) form before it is adsorbed on the ZVI. However, recognizing the potential ionic interference we are in the process of conducting an optimization study.

Additionally, we conducted a Toxic Characteristic Leaching Procedure (TCLP) study to assess the safety of sludge generated in the treatment process for safe disposal into the environment. Our goal is not only to provide a solution for arsenic removal but also to ensure the safety and sustainability of the environment.

Also, our innovative furnace design for the firing process is designed to prioritize eco-friendliness, effectiveness, and efficiency, ensuring a sustainable

and efficient filtration process.

Q: What factors make this technology particularly well-suited for rural and low-income communities?

A: MatiKalp is a simple and affordable solution for ensuring access to safe drinking water in rural India that can be produced locally by engaging local resources. It is capable of addressing key water challenges by effectively removing contaminants like iron, arsenic, manganese, arsenic, and pathogens.

The key innovative features of MatiKalp are integration of diffuse, ZVI and silver impregnation to enhance iron, arsenic and microbial removal effectiveness. Moreover, its design includes a built-in safe storage container, ensuring the safety of filtered water while taking care of the risk of recontamination through silver leaching. Overall, it is a practical, affordable, and sustainable solution for improving access to safe drinking water in rural communities.

Q: What role does sustainability play in the development and implementation of these advanced water filtration technologies?

A: Producing CPFs can be a unique opportunity to address both water quality challenges and economic livelihoods in rural India. Pottery has been a traditional skill passed down through many generations, but the rise of industrialization and the introduction of plastics and metals have sidelined the local pottery artisans and loss of their livelihoods. By leveraging the knowledge and skills of local potters and, supporting them with the scientific design of MatiKalp, we are turning the challenges of drinking water quality and potter's livelihood into opportunities for each other. This will not only ensure access to safe drinking water but also reinstate the art of pottery and livelihood.

Q: Do these advancements address challenges such as removing microplastics, pharmaceuticals, and other emerging contaminants from water sources?

A: MatiKalp is a potential solution for micro-plastics by mechanical trapping, and other contaminants through adsorption while it effectively removes iron, arsenic, and manganese through oxidation and silver impregnation ensures removal of iron, manganese and microbial contamination.

Q: Are there any specific regions where these advanced water filtration technologies are particularly beneficial?

A: Bihar, West Bengal, Eastern Uttar Pradesh, and parts of Orissa, Chhattisgarh, Jharkhand, Northeastern states are severely affected by water contamination issues, including high levels of iron, arsenic, and microbial contaminants. These contaminants pose serious health risks leading to various waterborne diseases and long-term health effects. Given the need to address this issue, there's a significant demand for an effective solution like MatiKalp which has the potential to mitigate health risks by reducing waterborne diseases.

Q: Could you elaborate on any partnerships or collaborations your organization has engaged in to drive innovation in water filtration technology?

A: The collaboration between SM Sehgal Foundation and the Centre for Affordable Water Sanitation and Technology (CAWST), a Canadian organization, promotes low-cost sustainable point-of-use water filtration technology. Together, we also work to build the capacity of grassroots organizations, implementers, and water practitioners to adopt and implement these innovative solutions effectively.

Additionally, SM Sehgal Foundation has partnered with TERI School of Advanced Studies (TERI SAS), a research institute in Delhi, to study the effectiveness of MatiKalp in removing iron, manganese, and microbial contaminants. This collaboration involves studying the filtration technology in TERI SAS's environmental laboratory, ensuring its efficacy under extreme conditions.

Furthermore, collaboration with the Indian Institute of Technology (IIT), Kanpur, has focused on studying the Toxicity Characteristic Leaching Procedure (TCLP) impact of the sludge generated from arsenic removal through ZVI. To assess the environmental implications and safety considerations associated with the disposal of sludge, contributing valuable insights into the sustainable implementation of the technology.

These partnerships demonstrate a multi-stakeholder approach to developing innovation for addressing water quality challenges to ensure the effectiveness, sustainability, and scalability of water filtration technologies like MatiKalp.

Q: How do you anticipate these advancements will

impact the accessibility of clean drinking water globally, especially in underserved communities?

A: Emphasizing a "Vocal 4 Local" approach is crucial for addressing the specific needs of underserved communities when it comes to access to safe drinking water. The approach we prioritized is locally-produced, low-cost sustainable solutions, ensuring affordability, promoting environmental sustainability, and empowering rural communities. These advancements hold the potential to drive positive change and enhance the accessibility of safe drinking water for underserved people in need.

Q: Finally, how do you measure the success or effectiveness of these advanced water filtration technologies, and what potential challenges lie ahead for further implementation and adoption?

A: Measuring the success or effectiveness of MatiKalp includes:

1. **Reduction in Waterborne Diseases:** A significant decrease in the incidence of waterborne diseases was observed among 537 households that adopted MatiKalp is a promising outcome. It indicates its effectiveness in lowering the health risks by improving water quality.
2. **Economic and Social Impact:** The same study says that 92 percent of the targeted households have reported positive economic and social impacts of the MatiKalp, by saving money from waterborne diseases and not getting trapped in the poverty cycle.
3. **User Satisfaction:** Collecting feedback from end-users regarding their satisfaction with the water quality, ease of use, and reliability of the MatiKalp providing insights on easy and beneficial adoption.

Potential challenges for further implementation include:

1. **Microenterprise Development:** Supporting local potters and microenterprises in switching to the production of filtration units requires capacity building, training, and access to resources.
2. **Demand Creation:** Generating awareness to create demand for the technology among target communities through behavior change communication initiatives to ensure fast-track scaling-up.
3. **Financial Support:** Securing financial resources for setting up production units, scaling up operations, and

supporting the cost of filtration units to make them affordable and accessible to people in need. Despite government initiatives such as PM Vishwakarma and the MUDRA schemes, awareness of these programs and willingness to avail among the rural population remains low.

Overcoming these challenges requires collaboration between stakeholders to create an environment for innovation and access to safe drinking water solutions.





INTERVIEW WITH **Aumsat Riddhish Soni**

CEO
AUMSAT TECHNOLOGIES

Q: What recent advancements in water filtration technology has your company been involved in or observed?

A: Aumsat Technologies has been at the forefront of recent advancements in water filtration technology, focusing on both innovative solutions and environmental sustainability. The company has developed a patented water conditioning technology that operates without the use of membranes or filters and does not require electricity, significantly reducing the energy usage typically associated with water purification processes. This technology, complemented by a hydrocavitation-based disinfection method known as hydrocawach, developed by researchers at the Institute of Chemical Technology, Mumbai, effectively removes biological contaminants.

This method ensures the provision of safe drinking water without the need for traditional chemical disinfectants. In addition to these proprietary technologies, Aumsat has observed several key trends in the industry, including Automatic Variable Filtration (AVF), which uses techno bed filters in variable arrays for efficient and cost-effective microfiltration. Advanced oxidation processes are also being utilized to break down complex pollutants, while nanotechnology is being applied to enhance filtration efficiency by targeting micropollutants, thus significantly improving water purity. Furthermore, the integration of green infrastructure, such as rain gardens and green roofs, helps manage stormwater and improve air quality. Blockchain and IoT technologies are increasingly used to enhance the integrity, transparency, and efficiency of water management systems, enabling real-time monitoring and effective water conservation strategies. These advancements underscore Aumsat Technologies'

commitment to pioneering sustainable and cost-effective water treatment solutions.

Q: How do these advancements compare to traditional water filtration methods in terms of efficiency, effectiveness, and environmental impact?

A: The advancements made by Aumsat Technologies in water filtration significantly outperform traditional methods in terms of efficiency, effectiveness, and environmental impact. Aumsat's patented water conditioning technology reduces dissolved solids in water by 50%, enhancing water quality more efficiently than conventional systems which often rely on extensive physical and chemical processes. This technology also increases energy use efficiency by 10%, a notable improvement over traditional methods that typically consume more energy.

In agricultural applications, Aumsat's technology has demonstrated a remarkable ability to increase crop yields by 28% through improved irrigation water quality. This is particularly significant compared to traditional irrigation methods, which may not optimize water condition for maximum crop yield.

Furthermore, the hydrocawach technology developed by the Institute of Chemical Technology is exceptionally effective in removing biological contaminants, achieving a 99% removal rate without the use of electricity. This is a stark contrast to traditional disinfection methods like chlorination or UV treatment, which require energy and can leave harmful residues or by-products.

Overall, Aumsat Technologies' non-conventional approaches not only provide more effective water treatment solutions but also promote sustainability by reducing energy consumption and avoiding the environmental impacts associated with chemical

treatments. This combination of high efficiency, effectiveness, and reduced environmental impact highlights the superiority of Aumsat's advancements over traditional water filtration methods.

Q: Can you discuss any innovative materials or designs being utilised in these new water filtration technologies?

A: In the realm of new water filtration technologies, several innovative materials and designs are being employed to enhance efficiency and effectiveness. One such material is Zeolites, a modified form of zeolites, which are microporous, aluminosilicate minerals known for their ability to trap contaminants through an ion-exchange process. This makes them particularly effective in water softening and in removing heavy metals from water.

Another innovative material being used is Buna-N nanomaterial. Buna-N, or nitrile rubber, is known for its excellent resistance to oils and chemicals. When engineered at the nanoscale, its properties enhance the filtration system's ability to remove a wide range of pollutants, including organic compounds and certain pathogens, due to increased surface area and reactivity.

Lastly, FKM Terpolymer, a type of fluorocarbon-based synthetic rubber, is notable for its high resistance to heat, chemicals, and electricity. In water filtration systems, FKM Terpolymer is used in seals and gaskets that are exposed to harsh chemical environments, ensuring long-term durability and reliability of the filtration units.

These materials are chosen for their specific properties that contribute to more durable, efficient, and effective water filtration systems, supporting the shift towards more advanced and sustainable water treatment technologies.

Q: What role does sustainability play in the development and implementation of these advanced water filtration technologies?

A: Sustainability is a key factor in the development and implementation of Aumsat Technologies' advanced water filtration systems. Our company has innovated several environmentally friendly solutions, such as a patented water conditioning technology that operates without membranes or filters and does not

require electricity. This reduces the energy consumption typically associated with water purification, aligning with sustainable practices.

Additionally, hydrocavach technology, developed in collaboration with the Institute of Chemical Technology, Mumbai, effectively removes 99% of biological contaminants without electricity, contrasting sharply with traditional methods that often rely on chemical disinfectants and consume more energy. We also acknowledge the other sustainable technologies, such as Automatic Variable Filtration (AVF), which uses technologically advanced bed filters for efficient microfiltration, and advanced oxidation processes that break down complex pollutants. These systems are supported by the use of innovative materials like Xeolites for ion-exchange, Buna-N nanomaterial for enhanced pollutant removal, and FKM Terpolymer for durable filtration components. Moreover, the integration of green infrastructure and technologies like blockchain and IoT further enhances the sustainability of their water management systems.

Q: How do these advancements address challenges such as removing microplastics, pharmaceuticals, and other emerging contaminants from water sources?

A: Advancements in water filtration technology have made significant strides in addressing the challenges posed by microplastics, pharmaceuticals, and emerging contaminants in water sources. These advancements include Automatic Variable Filtration (AVF), nanotechnology, advanced oxidation processes, magnetocatalytics, ion exchange, and hydrocavitation. Automatic Variable Filtration (AVF) employs adjustable bed filters capable of targeting specific contaminants in water. While primarily effective for larger particulates, AVF can enhance its efficacy against smaller particles like microplastics by incorporating finer, more reactive materials.

Nanotechnology offers a promising avenue for removing fine contaminants, utilizing nano-sized materials to attract and capture microscopic pollutants such as pharmaceutical residues and microplastics. The high surface area to volume ratio of nanoparticles ensures efficient trapping of tiny particles often missed by traditional filtration methods.

Advanced Oxidation Processes play a crucial role in degrading persistent organic molecules like

pharmaceuticals. By generating highly reactive radicals, these processes break down contaminants at the molecular level, transforming them into harmless substances. This method effectively targets a wide range of emerging contaminants, bolstering water safety and quality.

Magnetocatalytics leverage magnetic materials to catalyze chemical reactions, aiding in the degradation of contaminants. By harnessing magnetic fields, this technology enhances the efficiency of oxidation processes, further improving water purification.

Ion exchange involves the removal of contaminants by exchanging ions between a solid phase and a liquid phase. This method effectively removes charged contaminants like heavy metals and certain pharmaceuticals, contributing to overall water purity.

Hydrocavitation utilizes the formation and collapse of cavitation bubbles to break down contaminants in water. This process generates intense pressure and temperature conditions, facilitating the degradation of pollutants and enhancing water treatment efficiency.

By integrating these advanced technologies into water treatment infrastructures, we can significantly improve the purity and safety of water, mitigating the risks associated with modern contaminants and ensuring environmental and public health protection.

Q: Are there any specific industries or regions where these advanced water filtration technologies are particularly beneficial or in high demand?

A: In India, several industries and regions face unique water pollution challenges and environmental concerns, making advanced water filtration technologies particularly beneficial and in high demand.

Industrial Manufacturing: With India's rapidly growing industrial sector, including pharmaceuticals, electronics manufacturing, and chemical production, there's a pressing need to address wastewater pollution. Advanced filtration technologies like nanotechnology and advanced oxidation processes are essential for treating industrial effluents and ensuring compliance with environmental regulations, especially in regions with high industrial activity such as Gujarat, Maharashtra, and Tamil Nadu.

Agriculture: Agricultural runoff containing pesticides,

fertilizers, and other chemicals is a significant source of water pollution in rural areas of India. Advanced filtration technologies such as ion exchange and magnetocatalytics play a crucial role in removing these contaminants from water sources, safeguarding water quality for agricultural and domestic use, particularly in states with intensive agricultural practices like Punjab, Haryana, and Uttar Pradesh.

Urban Areas: Rapid urbanization in cities like Mumbai, Delhi, and Bangalore strains existing water infrastructure and leads to increased pollution in water bodies. Advanced filtration technologies are vital for municipal water treatment plants to cope with growing demand and maintain water quality standards in densely populated urban areas, ensuring safe drinking water for residents and reducing environmental pollution.

Coastal Communities: India's extensive coastline faces challenges such as saltwater intrusion and contamination from marine sources. Advanced filtration technologies, coupled with desalination processes, are crucial for providing clean drinking water to coastal communities, especially in states like Gujarat, Tamil Nadu, and Kerala, where coastal populations rely heavily on groundwater and surface water sources prone to contamination.

Rural and Underserved Communities: Many rural and underserved communities in India lack access to clean water and adequate sanitation facilities, leading to waterborne diseases and environmental degradation. Advanced filtration technologies offer scalable and cost-effective solutions for improving water quality in these regions, promoting public health, and supporting sustainable development initiatives, particularly in states with high water stress like Rajasthan, Madhya Pradesh, and Bihar.

Q: What regulatory considerations or standards do these new filtration technologies need to meet in order to be implemented on a larger scale?

A: To ensure the widespread adoption of new filtration technologies in India, meeting regulatory considerations and standards is paramount. Accreditation by the National Accreditation Board for Testing and Calibration Laboratories (NABL), certification from the Jal Jeevan Mission, certification from CSIR institutes, and certification from the Bureau of Indian Standards (BIS) are key aspects.

NABL Certification: Obtaining certification of water samples from NABL certified Laboratories is essential to establish the credibility and reliability of water filtration technologies. NABL evaluates laboratories and testing facilities based on international standards, ensuring they meet stringent criteria for competence and compliance. For filtration technologies, NABL accreditation assures stakeholders of accurate performance testing, reliable results, and adherence to quality assurance protocols.

Certification from Jal Jeevan Mission: The Jal Jeevan Mission, a flagship initiative of the Indian government, aims to provide safe drinking water to rural households by 2024. Under this mission, the Bureau of Indian Standards (BIS) establishes standards and specifications for water supply systems, including filtration technologies. Certification from the Jal Jeevan Mission signifies compliance with these standards, ensuring that filtration technologies meet quality and performance requirements for deployment in rural areas. This certification also facilitates funding, support, and integration of filtration technologies into rural water supply infrastructure.

Certification from CSIR Institutes: Certification from Council of Scientific and Industrial Research (CSIR) institutes adds another layer of credibility and validation to filtration technologies. CSIR institutes conduct research and development in various scientific fields, including water purification technology. Certification from CSIR institutes signifies that the filtration technology has undergone rigorous scientific evaluation, further reinforcing its effectiveness, safety, and reliability. This certification enhances the technology's market acceptance and fosters trust among stakeholders, including policymakers, regulators, and consumers.

BIS Certification: Certification from the Bureau of Indian Standards (BIS) is essential for demonstrating compliance with national quality and safety standards. BIS sets standards and specifications for various products and services, including water filtration technologies, ensuring they meet the requirements for quality, performance, and safety. Obtaining BIS certification signifies that the filtration technology conforms to these standards, enhancing consumer confidence and facilitating market access both domestically and internationally.

Q: Could you elaborate on any partnerships or

collaborations your company has engaged in to drive innovation in water filtration technology?

A: Aumsat has forged strategic partnerships and collaborations with prominent organizations and institutions aimed at spearheading advancements in water filtration technology. These alliances encompass engagements with esteemed entities such as Water.org, a nonprofit organization committed to broadening the accessibility of safe water and sanitation, offering invaluable expertise and networks to facilitate the implementation of filtration solutions in underserved regions.

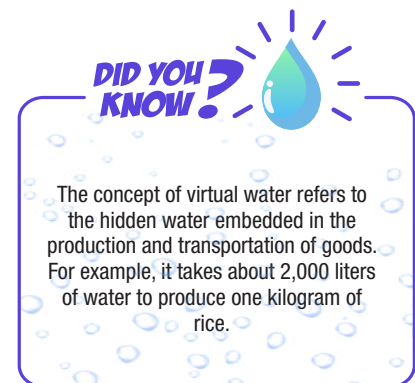
Additionally, collaborative efforts with the SELCO Foundation and ICICI Foundation serve to foster innovation and facilitate knowledge sharing within the water, sanitation, and hygiene sector. Furthermore, our engagement with the Administrative Staff College of India (ASCI) plays a pivotal role in facilitating research endeavors, capacity-building initiatives, and policy advocacy efforts. Moreover, by collaborating with the Ministry of Housing and Urban Affairs (AMRUT 2.0) and the Jal Jeevan Mission, we align our endeavors with national priorities, working towards the enhancement of urban and rural water filtration systems. Through these concerted efforts, we aim to contribute significantly to the realization of improved access to clean water for all segments of society.

Q: Finally, how do you measure the success or effectiveness of these advanced water filtration technologies, and what potential challenges lie ahead for further implementation and adoption?

A: Evaluating the success or effectiveness of advanced water filtration technologies involves a comprehensive assessment across multiple dimensions. This includes examining improvements in water quality indicators such as turbidity levels, pH balance, dissolved solids, and the reduction of contaminants before and after filtration processes. Additionally, measuring the impact on public health through reductions in waterborne diseases and improvements in community health indicators provides crucial insights into the technology's effectiveness in safeguarding human well-being. Assessing the environmental footprint of these technologies is equally essential, involving an evaluation of factors such as energy consumption, waste generation, and carbon emissions to ensure sustainability and minimize ecological impacts. Operational efficiency, including filtration rates,

maintenance requirements, and system reliability, is another key aspect to consider to ensure the technology functions optimally in real-world conditions.

Moreover, understanding the cost-effectiveness of these technologies, including initial investment, operational expenses, and long-term maintenance costs compared to the benefits accrued, is vital for assessing their economic viability and scalability. However, several challenges must be addressed for further implementation and adoption of these technologies. These include overcoming initial cost barriers, especially in resource-constrained settings, addressing infrastructure limitations such as inadequate water distribution networks and unreliable electricity supply, and providing the necessary technical expertise for proper operation and maintenance. Moreover, navigating regulatory compliance complexities, obtaining necessary certifications, and addressing behavioral and cultural factors affecting community acceptance pose additional hurdles that require targeted interventions and collaborative efforts from various stakeholders. Therefore, a multifaceted approach involving government agencies, non-profit organizations, academia, and the private sector is essential to develop tailored solutions, provide technical support, facilitate financing mechanisms, and raise awareness about the benefits of advanced filtration technologies, ultimately ensuring improved access to clean water for all.





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INTERVIEW WITH Parimal Pajankar

Director
ZEN ENGINEERING

Q: What recent advancements in water filtration technology has your company been involved in or observed?

A: Membrane filtration: This includes advancements in reverse osmosis (RO) membranes, nanofiltration (NF) membranes, and ultrafiltration (UF) membranes, which are becoming more efficient and cost-effective.

Smart water treatment systems: Integration of sensors, automation, and data analytics into water treatment systems allows for real-time monitoring and optimization, leading to improved efficiency and reliability.

Purified Water Generation System: The combination of Reverse Osmosis (RO) and Electrodeionization (EDI) is widely recognized as a popular technique for generating purified water, particularly in scenarios where replacing a Demineralization (DM) plant is required.

Q: How do these advancements compare to traditional water filtration methods in terms of efficiency, effectiveness, and environmental impact?

A: These advancements represent significant progress in water filtration technology compared to traditional methods, offering several advantages in terms of efficiency, effectiveness, and environmental impact:

(a) Efficiency:

- Membrane filtration technologies like RO, NF, and UF are generally more efficient than traditional filtration methods. They can remove a wider range of contaminants more effectively and often require less energy to operate.
- Smart water treatment systems improve efficiency

by optimizing processes in real-time. This optimization reduces resource usage and operating costs compared to traditional, manually-controlled systems.

(b) Effectiveness:

- Membrane filtration technologies provide higher levels of purity by effectively removing contaminants at the molecular level. This results in water that meets stringent quality standards and is suitable for various applications, including drinking water and industrial processes.

- The combination of RO and EDI for purified water generation offers superior effectiveness compared to traditional methods like Demineralization (DM) plants. It produces consistently high-quality water with minimal chemical usage and operational downtime.

(c) Environmental Impact:

- Advancements in membrane filtration technology often led to reduced environmental impact. These methods typically produce less waste and require fewer chemicals compared to traditional filtration methods.

- Smart water treatment systems contribute to environmental sustainability by optimizing resource usage and reducing energy consumption. Real-time monitoring and control help minimize water wastage and chemical discharge, thereby mitigating the environmental footprint of water treatment processes.

Q: Can you discuss any innovative materials or designs being utilised in these new water filtration technologies?

A: some examples of innovative designs being utilized:

(a) Spiral Wound Modules:

- Spiral wound modules are commonly used in reverse osmosis (RO) and nanofiltration (NF) systems.

These modules consist of flat-sheet membranes wound around a permeate collection tube in a spiral configuration. This design maximizes the membrane surface area within a compact footprint, allowing for efficient water treatment in various applications.

(b) Hollow Fiber Membrane Modules:

- Hollow fiber membrane modules utilize bundles of hollow fiber membranes for water filtration. These modules offer high packing density and efficient flow distribution, leading to improved filtration performance and reduced energy consumption. They are commonly used in ultrafiltration (UF) and microfiltration (MF) applications for water and wastewater treatment.

(c) Crossflow Filtration Systems:

- Crossflow filtration systems utilize a tangential flow mechanism where the feed water flows parallel to the membrane surface. This design minimizes fouling by continuously sweeping away retained particles, leading to longer membrane life and consistent filtration performance. Crossflow filtration systems are widely used in various membrane-based filtration processes, including RO, UF, and MF.

(d) Hybrid Filtration Systems:

- Hybrid filtration systems combine multiple filtration techniques or stages within a single system to achieve higher purity and efficiency. For example, some systems integrate RO membranes with other advanced treatment processes like UV disinfection or advanced oxidation to target specific contaminants and enhance overall water quality.

(e) Self-Cleaning and Antifouling Designs:

- Filtration systems incorporating self-cleaning and antifouling designs help mitigate membrane fouling and reduce maintenance requirements. These designs may include features such as air scouring, backwashing, or surface modifications to prevent the buildup of foulants and prolong membrane life.

Q: What role does sustainability play in the development and implementation of these advanced water filtration technologies?

A: several key aspects:

(a) Resource Efficiency:

- Advanced filtration technologies aim to optimize resource usage, including water, energy, and chemicals. By maximizing the efficiency of filtration

processes, these technologies minimize resource consumption and reduce operational costs.

(b) Environmental Impact:

- Advanced treatment processes often employ low-impact or environmentally friendly chemicals and materials, reducing the environmental footprint of water treatment operations.

(c) Waste Reduction:

- Advanced filtration technologies aim to minimize waste generation and promote the reuse and recycling of water and filtration byproducts.

Q: How do these advancements address challenges such as removing microplastics, pharmaceuticals, and other emerging contaminants from water sources?

A: (a) Microplastics Removal:

- Advanced filtration techniques, such as nanofiltration (NF) and reverse osmosis (RO), are effective in removing microplastics from water sources. These membranes have pore sizes small enough to capture microplastic particles, ensuring they are not released into the treated water.

(b) Pharmaceuticals Removal:

- Pharmaceutical compounds present in water sources pose a significant challenge due to their persistence and potential adverse effects on human health and the environment. Advanced water treatment technologies, including advanced oxidation processes (AOPs) and activated carbon filtration, are effective in removing pharmaceuticals from water.

(c) Emerging Contaminants Removal:

- Emerging contaminants, such as personal care products and disrupting chemicals, require specialized treatment approaches due to their complex nature and low concentration levels in water sources. Advanced filtration technologies, including membrane filtration (e.g., RO, NF, UF) are effective in removing emerging contaminants from water.

Q: Are there any specific industries or regions where these advanced water filtration technologies are particularly beneficial or in high demand?

A: (a) Municipal Water Treatment:

- Municipalities worldwide are increasingly adopting advanced water filtration technologies to meet growing

water demand, comply with stringent water quality regulations, and address challenges such as population growth, urbanization, and aging infrastructure.

(b) Industrial Water Treatment:

- Industries such as pharmaceuticals, semiconductors, food and beverage manufacturing, and power generation require high-quality water for various processes.

(c) Oil and Gas Industry:

- The oil and gas industry relies on advanced water filtration technologies for produced water treatment, hydraulic operations, and enhanced oil recovery processes.

(d) Desalination:

- Regions facing water scarcity or dependence on saline water sources, such as coastal areas, arid regions, and islands, rely on desalination technologies to produce freshwater.

(e) Emerging Markets:

- Emerging markets with rapid industrialization and urbanization are witnessing increased demand for clean water and wastewater treatment solutions.

Q: What regulatory considerations or standards do these new filtration technologies need to meet in order to be implemented on a larger scale?

A: (a) Drinking Water Regulations:

- New filtration technologies used for drinking water treatment must comply with regulations and standards established by regulatory agencies such as the BIS, Environmental Protection Agency (EPA), the World Health Organization (WHO), and the European Union's Drinking Water Directive.

(b) Wastewater Discharge Regulations:

- Filtration technologies employed for wastewater treatment must meet effluent quality standards and discharge limits set by regulatory agencies to protect receiving water bodies and ecosystems.

(c) Product Certification and Validation:

- Certification such as BIS, NSF International, the Water Quality Association (WQA), and the International Organization for Standardization (ISO) provide third-party verification of product performance and compliance with applicable standards.

(d) Occupational Health and Safety:

- Filtration technologies used in industrial settings must adhere to occupational health and safety regulations to protect workers from exposure to hazardous substances and operating conditions.

Q: How do you anticipate these advancements will impact the accessibility of clean drinking water globally, especially in underserved communities?

A: The progress in water filtration technology could revolutionize global water accessibility, making clean drinking water more affordable, dependable, and sustainable for marginalized communities. Through the utilization of creative solutions, cooperative partnerships, and community involvement, stakeholders can strive to achieve widespread access to safe and pure drinking water.



THINGS YOU MUST DO BEFORE YOU BUY AN OZONE SYSTEM

Selecting and buying an ozone system in India can be very dicey. Since the legal system is very tedious process and many buyers do not want to get into such a mess, the least thing you could do is to exercise caution while you buy an ozone system. It may take you little bit longer to make a purchase decision but you are sure that you do not end up with ornamental ozone systems.

Step 1: Check out exactly how much ozone you require. Don't go by hear say. It has become almost common for an ozone supplier to suggest to you 5 to 10 times more ozone dose than it is required for your application, because that system produces 5 to 10 times lesser ozone that it is supposed to produce .

Step 2: Get detailed technical specification from the Manufacturer. By studying the technical specs, you will know 100% if the ozone system is capable of producing the ozone required for your process .There is no short cut for this . Get from one or two suppliers and compare. Get help from some consultants. When you buy a TV or a smart phone you get all the information you want, you ask your friends, your browse through the internet for the best buy , than why not for an ozone generator ?

Step 3: An ozone application includes injecting ozone into the water. This is a very important step. Check out exactly how this is being done. If through injectors, get details on the injectors and pumps. Do not compromise on locally fabricated injectors. Buy branded injectors even though you pay little more This is also a safety aspect as you are sure there is no ozone leakage in the plant room

Step 4: Ensure you get all the test certificates including ozone production. Get performance data of the venturi and the pump. Check this out and you can find out loop holes in the system

Step 5: Ask for references and contact numbers. Don't just get and keep them. Call them up and check out. If the OEM takes a long time to provide you with reference numbers, than you know something is wrong. If you are local , it is worth visiting one such installation . Visit or call up installations that are 4-5 years old.

Step 6: ozone is a toxic gas. Ozone is produced by high voltage. Hence safety is prime most important. Check out all safety aspects of the ozone generator and the process. Ensure you get a operation manual that covers all safety aspects of the equipment and process. Ensure that training in operations are included. Do not buy systems through internet and install yourself. This is a recipe for disaster

Step 7: Once you have an ozone system in place, ensure you have a regular mechanism to check out on the system and the process. Because more than 90% of the ozone users in the country are not aware if the ozone system is working or producing ozone as required. It is only when there is a process failure, do the user realise that all in not well with the ozone system.

Step 8: Please note. Your nose is very sensitive to ozone smell. You can smell ozone at 0.01 ppm. So you must understand that if you smell ozone that does not mean that the ozone system is producing ozone as claimed. Xerox machines produce ozone but this is not sufficient for any application of ozone.

Awareness can bring about quality enhancement. If there is no system in place to control unscrupulous selling, the user can enforce discipline. Follow these effective steps and you could have a reliable ozone system in place.

ISSUED IN PUBLIC INTEREST BY
V.BARATHARAJ

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web: www.otsil.net

UNRAVELING THE SECRETS: LAKE BAIKAL'S MYSTICAL DEPTHS



Stretching across the North Atlantic Ocean, the Sargasso Sea stands as a silent sentinel of maritime mysteries, cloaked in a veil of floating seaweed and whispered legends. Its tranquil surface belies the enigmatic forces that have long captivated sailors and storytellers alike, weaving tales of ships ensnared in its embrace and voyagers lost to its eternal grasp.

As the sun dips below the horizon, casting a golden hue upon the gently undulating waves, the Sargasso Sea transforms into a realm of uncertainty and intrigue. Within its labyrinthine depths, the tangled



strands of Sargassum seaweed create a maze that ensnares unwary vessels, trapping them in a watery purgatory where time seems to stand still.

For centuries, sailors have navigated the waters of the Sargasso Sea with trepidation, wary of the eerie calm

that blankets its expanse and the spectral apparitions said to haunt its mist-shrouded realm. Tales of ghost ships adrift in its currents and phantom voices carried on the wind speak to the enduring allure of this enigmatic sea, where reality blurs with myth and legend.

Yet, amid the whispers of lost souls and forgotten voyages, the Sargasso Sea remains a beacon of fascination for scientists and adventurers alike. Its unique ecosystem, characterized by floating mats of Sargassum seaweed and diverse marine life, offers a glimpse into the delicate balance of nature's mysteries.



As the moon casts its silvery glow upon the restless waters, casting shadows that dance upon the surface like wraiths in the night, the allure of the Sargasso Sea beckons to those brave enough to seek its secrets. Whether probing its depths in search of hidden treasures or simply marvelling at its haunting beauty, the mysteries of the Sargasso Sea continue to inspire wonder and awe, inviting all who dare to unravel its timeless enigmas.



T E N D E R

Operation Maintenance Of Sewage Water Treatment Plant At Niv, Pashan, Pune			
Category	Manpower, Security Guard Supply tenders		
Location	Maharashtra, Pune		
Bid Open Date	03 may 2024	Tender Value	1.58 Cr
Doc Collection Date	03 may 2024	FTID	2404274102510
Tender Document For Interception And Diversion Work For Tapping Nallah And Setup Sewage Treatment Plant For Used Water Management For Suwasra Town			
Category	Scientific Equipment Tender		
Location	Madhya Pradesh, Suwasara Mandi		
Bid Open Date	14 May 2024	Tender Value	3.16 Cr
Doc Collection Date	13 May 2024	FTID	240426494040
Providing And Laying Cement Concrete Interlocking Paver Blocks Around Water Treatment Plant Rear Side Of Kedaram And Parking At Classroom Cum Laboratory Complex (C 06) At Sahyadri Campus			
Category	Construction, Infrastructure, Civil Work tenders		
Location	Kerala , Palakkad		
Bid Open Date	06 May 2024	Tender Value	86.72 Lac
Doc Collection Date	06 May 2024	FTID	2404264108210
Operation And Maintenance Of Water Works At Bhudhera And Water Treatment Plant At Ww Ghamroj Along With Civil Structures, All Mechanical And Electrical Components, Raw Water Rising Main 900 Mm I/D Psc			
Category	Miscellaneous tenders		
Location	Haryana, Gurugram		
Bid Open Date	13 May 2024	Tender Value	13.49 Cr
Doc Collection Date	14 May 2024	FTID	240425475070
Providing ugss to mannaragudi municipality in thiruvavur district -design, engineering, build, operate and commissioning of 10.05 mld capacity sewage treatment plant			
Category	Miscellaneous tenders		
Location	Tamil Nadu , Thanjavur		
Bid Open Date	17 Apr 2024	Tender Value	20.10 Crores
Doc Collection Date	16 Apr 2024	FTID	240413479660

T E N D E R

Design, Manufacture, Supply, Installation, Testing, Commissioning With Remote Monitoring System 160 Kw Capacity Grid Connected Solar Pv Power Plant Ground Mounted Net Metering System At Water Treatment Plant Dhoki, Tq. Dist. Osmanabad For Dhoki And 4

Category	Miscellaneous tenders		
Location	Maharashtra , Osmanaba		
Bid Open Date	02 May 2024	Tender Value	9.24 Lac
Doc Collection Date	04 May 2024	FTID	24042547641

Providing Ugss To Maraimalainagari Municipality Design, Engineering, Build, Operate And Commissioning Of 4.49 Mld Capacity Sewage Treatment Plant At Chatta Mangalam And 11.43 Mld Capacity Sewage Treat

Category	Electrical and Electrical Equipment tenders		
Location	Andaman & Nicobar , Port Blair		
Bid Open Date	13 May 2024	Tender Value	3.67 Lac
Doc Collection Date	13 May 2024	FTID	24042547979

E-Tender For The Electrification Work Of Water Treatment Plant At Sidco Pressure Die Casting Unit Pappanamcode

Category	Electrical and Electrical Equipment tender		
Location	Kerala , Thiruvananthapura		
Bid Open Date	03 May 2024	Tender Value	3.65 Lac
Doc Collection Date	02 May 2024	FTID	2404244250

EverythingAboutWater

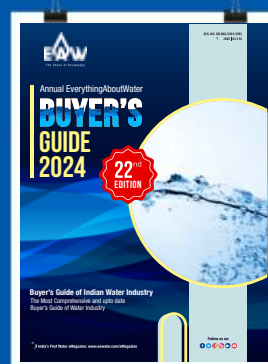
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EVENT CALENDAR



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
www.txwater.org

AZ Water Conference & Exhibition

10 - 12 Apr 2024

Phoenix Convention Center, Phoenix, USA
www.azwater.org/group/annualconference

Water Expo & Forum

16 - 18 Apr 2024

Abu Dhabi National Exhibition Centre -
ADNEC, Abu Dhabi, UAE
www.worldfutureenergysummit.com/en-gb/water.html#/

IE Expo China

18 - 20 Apr 2024

Shanghai New International Expo Centre
(SNIEC), Shanghai, China
www.ie-expo.com

Asia Water

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.limraexpo.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>

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

European Wastewater Management Conference & Exhibition

02-03 July 2024

The Point at Emirates Old Trafford,
Manchester, UK/Online
ewwmconference.com/

Thai Water Expo 2024

03 - 05 Jul 2024

Queen Sirikit National Convention Center,
Bangkok, Thailand
www.thai-water.com

12th Annual International Forum on Water

15-18 July 2024

Athens, Greece
www.atiner.gr/water

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/>

EVENT CALENDAR



August 2024

The Water Expo 2024

20 - 22 Aug 2024
Miami Airport Convention Center, Miami,
USA
www.thewaterexpo.com/

AgriTech India 2024

22 - 24 Aug 2024
BIEC Bengaluru International Exhibition
Centre, Bengaluru, India
agritechindia.com

September 2024

19th EverythingAboutWater Expo 2024

10-12 September 2024
Yashobhoomi, IICC, Dwarka, New Delhi
www.eawaterexpo.com

The Water Expo 2024

20 - 22 Aug 2024
Miami Airport Convention Center, Miami,
USA
www.thewaterexpo.com/

AgriTech India 2024

22 - 24 Aug 2024
BIEC Bengaluru International Exhibition
Centre, Bengaluru, India
agritechindia.com

EcwaTech 2024

10 - 12 Sep 2024
Crocus Expo, Moscow, Russia
en.ecwatech.ru

CamWater 2024

11 - 13 Sep 2024
Diamond Island Convention and Exhibition
Center, Phnom Penh, Cambodia
www.camwaterexpo.com

Taiwan International Water Week 2024

11 - 13 Sep 2024
Taipei World Trade Center, Taipei, Taiwan
www.taiwanintwaterweek.com

Water & Wastewater Management Expo 2024

11 - 12 Sep 2024
The Emergency Services Show,
Birmingham, UK
www.ess-expo.co.uk

Indo Water Expo & Forum 2024

18 - 20 September 2024
Grand City Mall & Convex Surabaya,
Surabaya, Indonesia
indowater.com/

Water and Wastewater Fair 2024

24 - 26 Sep 2024
Elmia, Jönköping, Sweden
www.elmia.se/en/va-massan/

October 2024

Aqua Ukraine

15-17 Oct 2024
Ukraine, Kyiv | International Exhibition Centre
www.iec-expo.com.ua/en/aquaen-2024

WWEM - Water, Wastewater and Environmental Monitoring Conference

09-10 Oct 2024
NEC, Birmingham, UK
www.ilmexhibitions.com/wwem/

WETEX 2024

01-03 Oct 2024
Dubai World Trade Centre (DWTC)
www.wetex.ae

IFAT India

16-18 Oct 2024
Bombay Exhibition Centre, NESCO, Mumbai
www.ifat-india.com

Cairo Water Week 2024

13 - 17 Oct 2024
The Nile Ritz-Carlton Cairo, Cairo, Egypt
www.cairowaterweek.eg

November 2024

Produced Water Management, Treatment & Reinjection 2024

28 Oct - 01 Nov 2024
Dubai, UAE
10times.com/e1x5-z5p1-f9sp

Deepwater Operations Conference & Exhibition 2024

05 - 07 Nov 2024
Moody Gardens Hotel Spa and Convention
Center, Galveston, USA
www.offshore-event.com/2024home/home

Vietwater 2024

06 - 08 Nov 2024
Saigon Exhibition and Convention Center, Ho
Chi Minh, Vietnam

vietwater.com

SADC Groundwater Conference 2024

13 - 15 Nov 2024
Maseru, Lesotho
www.sadc.int

Annual WMAO Conference 2024

19 - 20 Nov 2024
Crowne Plaza Columbus North - Worthington,
Columbus, USA
wmao.org

Clean India Show 2024

21 - 23 Nov 2024
Bombay Exhibition Centre (BEC), Mumbai, India
ctwindia.com/clean-india-show/

Floodex 2024

27 - 28 Nov 2024
ExCeL London, London, UK
floodex.co.uk

December 2024

Pak Water & Energy Expo 2024

03 - 05 Dec 2024
Karachi Expo Center, Karachi, Pakistan
www.pakwaterexpo.com

Exhibition on Water / Water Forum

04 - 06 December 2024
Belgrade Fair – Hall 3 / Belgrade / Serbia
www.sajamvoda.rs

Aquatech China 2024

11 - 13 Dec 2024
Shanghai New International Expo Centre
(SNIEC), Shanghai, China
www.aquatechtrade.com/shanghai

January 2025

Water Exhibition & Conference

14 - 16 Jan 2025
ADNEC Centre Abu Dhabi, Abu Dhabi, UAE
www.worldfutureenergysummit.com

NEWEA Annual Technical Exhibition & Conference

26 - 29 Jan 2025
Boston Marriott Copley Place, Boston, USA
annualconference.newea.org

BAYWATCH



Date: 16-18 May 2024

Venue: International Convention City Bashundhara (ICCB), Dhaka, Bangladesh

Website: savor-watermanagement.com

Water Management Show 2024 aims to extend a platform for your organization to come in front of decision makers that spec and source billions of dollars for their plans and multiple projects. Exhibiting at Water Management Show 2024 will generate an opportunity for the exhibitors to engage in discussions, demonstrate and introduce their technologies, ideas, products and services in an interactive manner. Engagement of international exhibitors from potential export zones of Bangladesh may lead good opportunity for our Water industry players to reach beyond domestic peripheral. Moreover this exhibition will build attendance through 360 degree marketing campaigns that creates millions of advertising impressions in print, direct email, e-mail electronic media and so on.



**June 3-5, 2024
NECC, Shanghai**



Date: 03-05 June 2024

Venue: NECC, Shanghai

Website: watertech-buyerlp.informamarketsasia.com

WATERTech China is a three-day professional trade exhibition set to take place on June 3-5, 2024, in the vibrant city of Shanghai, China. This premier event is dedicated to showcasing cutting-edge solutions in water treatment, environmental protection, and energy-saving technologies.

But that's not all. WATERTech China offers a comprehensive overview of the entire supply chain, catering to consumer, commercial, and industrial needs. Key sectors represented at the exhibition include water and wastewater treatment, advanced membrane and water treatment technologies, state-of-the-art pipeline systems, environmental monitoring solutions, as well as innovative pump and valve technologies, and much more. This event promises to be a pivotal gathering for professionals looking to explore the latest advancements and trends in the industry.

BAYWATCH



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19th EVERYTHING ABOUT WATER EXPO SOUTH ASIA'S LARGEST WATER EXHIBITION AND CONFERENCE 2024

Where the Water Community Comes Together

The 19th EverythingAboutWater Expo 2024 stands as a remarkable and all-encompassing annual event in India, spotlighting cutting-edge technologies and solutions within the water sector. This event serves as an exceptional gateway for stakeholders worldwide to immerse themselves in the expansive and dynamic realm of the Indian Water management Industry, facilitating the exchange of business opportunities, networking, and the exploration of innovative Water solutions.

Date: 10 - 12 September 2024

Venue: IICC, New Delhi

Website: www.eawaterexpo.com

India is currently on a trajectory towards severe water stress, with projections indicating a critical situation by 2025. The rapid pace of Industrialization and the burgeoning population have significantly widened the gap between water supply and demand, a matter of deep concern for both the Central and State Governments. Within the framework of the 19th Everything About Water Expo 2024, unparalleled business prospects will emerge for both domestic and international players in the Water Industry. Attendees will have the opportunity to gain valuable insights, discover future trends, and navigate the evolving landscape of the Indian Water market.



Singapore International Water Week (SIWW) is one of the world's premier platforms to share and co-create innovative water, coastal and flood solutions to meet urban water and climate challenges. In cooperation with IFAT and organised by Messe Munich, the SIWW Water Expo is the pre-eminent marketplace for the international water, coastal and flood community to converge and find opportunities in business. The Water Expo showcases the latest state-of-the-art solutions, technologies, products and services for cities, utilities and industry in Asia.

Date: 19-21 June 2024

Venue: Sands Expo & Convention Centre, Marina Bay Sands, Singapore

Website: www.siww.com.sg/water-expo

The SIWW | Water Expo 2024 will take place during SIWW 2024 at the Sands Expo & Convention Centre in Singapore.

As an alternative to an individual participation, companies also have the opportunity to participate in the International Pavilion. With the International Pavilion, we offer companies that do not have the opportunity to participate in a funded national pavilion an attractive and affordable solution to present their company at SIWW | Water Expo. Exhibiting together at the International Pavilion offers attractive key advantages, especially for small and medium-sized companies.

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FAST TRACK YOUR GROWTH

CONFERENCE

The conference program will include internationally renowned keynote speakers encompassing experiences, challenges and solutions from around the world. The conference is structured into 4 sessions and 2 days training programs, spread over two days, focusing on specific theme, besides the inaugural and valedictory session.

- **GLOBAL FORUM: BEST PRACTICES**
- **INDUSTRIAL WATER FORUM**
- **MUNICIPAL FORUM**
- **THE INDUSTRY DISCUSSION FORUMS**

TRAINING

EA Water Master Class on Water Treatment & Recycling

EverythingAboutWater training program equips participants with the special expertise, technical knowledge and skills they need to tackle complex Waste Water Treatment & Recycling challenges, these trainings has been attended by over 25,000 + delegates.

- **INTRODUCTION OF WASTEWATER TREATMENT**
- **WATER RECYCLING**
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