AquaEnergy Expo Magazine
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FROM •••

WASTEWATER TO GREEN HORIZONS: REUSING WASTEWATER TO GREEN THE SAHARA



FILTRALITE®

Rethinking Filtration Efficiency:
Getting More from Existing Water Treatment Systems

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From Water Supply to Acoustic Drainage:
A Complete Piping Solutions Portfolio

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ENVISHIELD

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GTH Turbo Blowers:
How It Maintains High Airflow and Consistent Efficiency Across Operating Conditions

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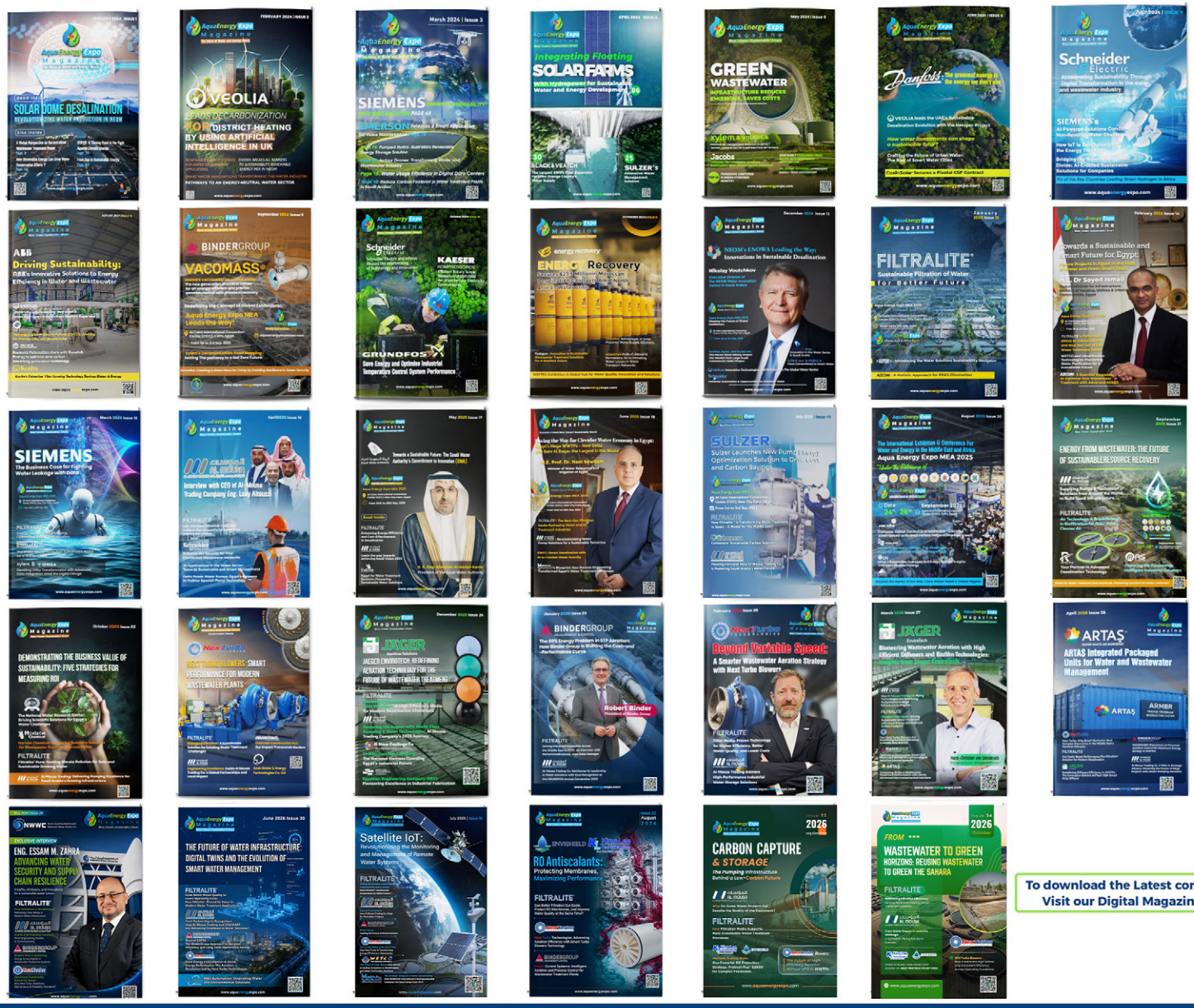
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Innovative Solutions to Achieve Sustainability in Water and Energy

From The Editor

The water and energy sectors are evolving rapidly as growing demand, environmental pressures, and technological change create new challenges and opportunities. In this issue of Aqua Energy Expo, we explore how engineering innovation, responsible resource management, and human expertise can contribute to more efficient and resilient water systems.

We begin with wastewater reuse on the edge of the Sahara, exploring experiences in Egypt, Morocco, and Algeria that demonstrate how treated wastewater can support afforestation and land restoration, while highlighting the importance of salinity control and long-term management.

Our focus then turns to integrated piping solutions, examining how different pipe systems, valves, and acoustic drainage technologies serve diverse building and infrastructure requirements. We also investigate filtration efficiency, showing how improved filter media and fewer backwashing cycles can help treatment plants enhance performance and make better use of existing infrastructure.

For membrane treatment, we explore the challenge of managing multiple scaling risks in reverse osmosis systems, emphasizing the importance of matching pretreatment and chemical dosing to actual feedwater conditions. Complementing this, our feature on GTH turbo blower technology examines airflow regulation, engineering design, and the role of reliable aeration in wastewater treatment performance.

Engineering expertise takes center stage in our interview with Mustafa Kadry Bayoumi Abdelfatah of Torishima Service Solutions Egypt, who shares insights into pump selection, technical sales, project coordination, and the importance of considering lifecycle costs beyond the initial purchase.

Moving from treatment to recovery, "From H_2S Waste to Valuable Resources" explores established hydrogen sulfide control methods alongside emerging approaches to recovering sulfur and hydrogen. Meanwhile, our article on nanobubble ozone technology examines the potential of treating pollution directly in rivers and other water bodies, including field results from the Tijuana River and the limitations that remain.

Digital transformation connects our final two features. "AI for Water Operators" considers how artificial intelligence can support decision-making, preserve operational knowledge, and strengthen workforce capabilities without replacing essential human judgment. "Thirsty AI" examines the growing water demands of data centers and the opportunities presented by improved cooling, water reuse, monitoring, and heat recovery.

Across these diverse topics, one message stands out: meaningful progress depends not only on adopting new technologies, but on applying them responsibly and adapting them to real-world needs.

We hope this issue offers valuable insights and inspires continued collaboration toward a more efficient, sustainable, and water-secure future.



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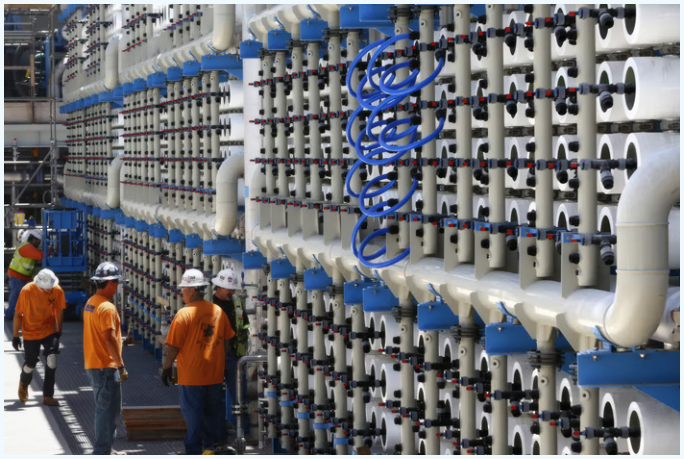


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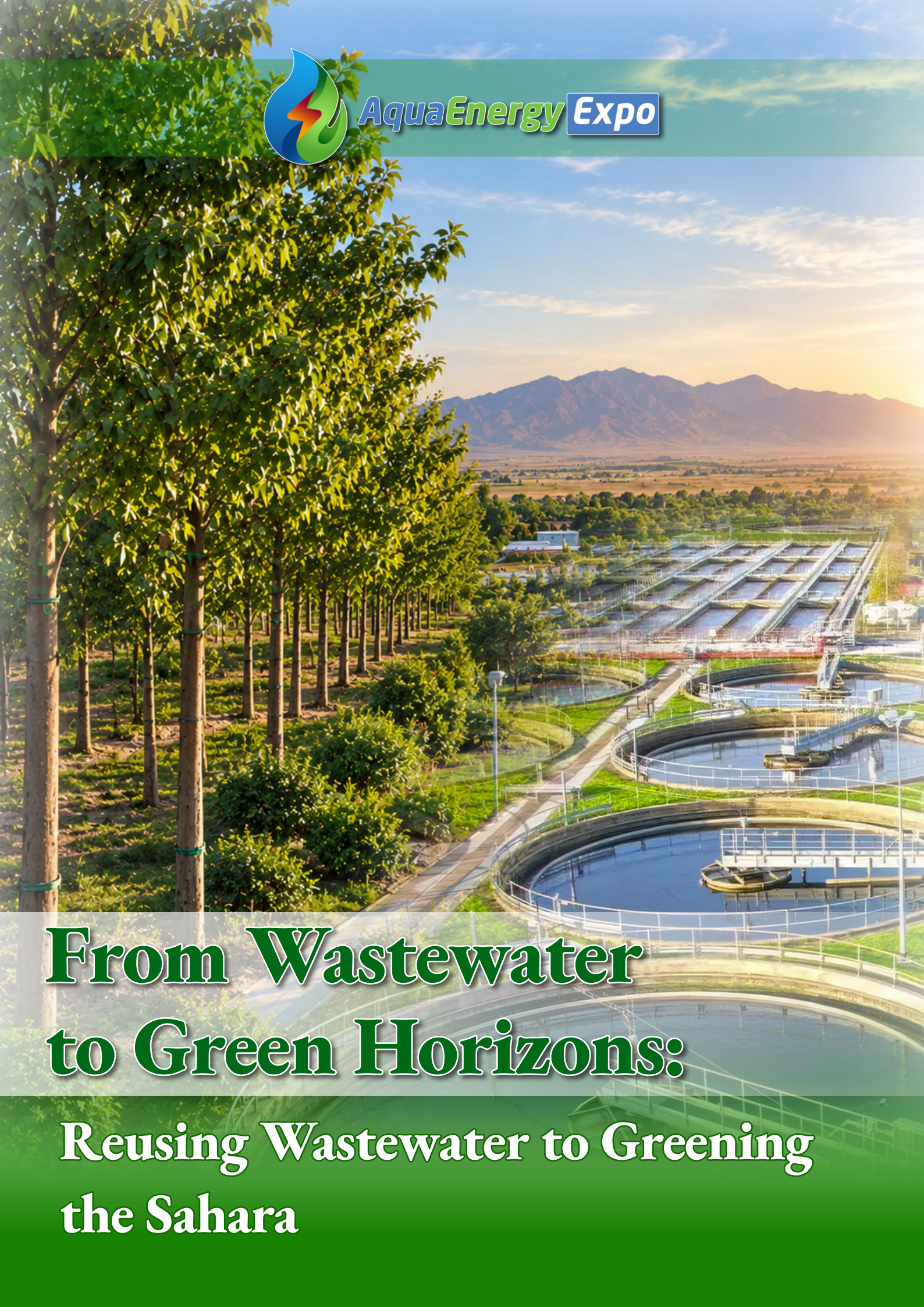
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From Wastewater to Green Horizons:

Reusing Wastewater to Greening the Sahara

Across North Africa's dry landscapes, water scarcity and desertification are closely linked challenges. Freshwater resources face increasing pressure, while growing communities continue to generate large quantities of wastewater. An approach gaining practical attention is to treat wastewater as a resource rather than simply a stream requiring disposal.

From Egypt's desert forests to Morocco's green belt in Ouarzazate and wastewater treatment plants across the Algerian Sahara, different experiences demonstrate the potential of treated wastewater to support vegetation and land restoration. However, these projects also reveal an important distinction: successful treatment does not automatically guarantee sustainable reuse. Water quality, salinity, climate, vegetation, and long-term management all influence the outcome.

Turning Wastewater into a Water Resource

In water-scarce regions, wastewater reuse can provide an additional water source for activities that do not necessarily require freshwater. It can also reduce pollutant discharge and help ease pressure on groundwater resources.

Egypt has explored this approach through a national afforestation programme. A 2011 study reported a programme target of reusing 2.4 billion cubic metres of treated wastewater annually to irrigate 84,000 hectares of man-made forests. These figures describe the programme's intended scale, rather than verified achievements. The study also emphasized the need to consider tree water requirements, climatic conditions, soil types, irrigation systems, and measures to prevent deep percolation that could contaminate groundwater. This approach connects wastewater management with land restoration, but its success depends on designing the entire system around local environmental conditions.



Egypt's Forests in the Desert

Serapium: A Forest Sustained by Reused Water

One of the most striking examples is the Serapium Forest, located near Ismailia in Egypt's eastern desert. Established in 1998, the plantation covers approximately 210 hectares and receives wastewater from the nearby municipal treatment plant.

Research on the forest reports average concentrations of 25.0 mg/L of ammoniacal nitrogen and 2.8 mg/L of total phosphorus in the primary-treated wastewater used for irrigation. These nutrients can support plant growth, illustrating how wastewater may provide both water and some of the nutrients required by trees.



Tree Growth and Environmental Potential

Different species have been examined for their ability to grow under desert conditions, including Khaya senegalensis, Casuarina equisetifolia, and Corymbia citriodora. Research into their growth, biomass, and carbon sequestration highlights the potential of desert afforestation to generate environmental benefits alongside timber production.

Nevertheless, the potential of these forests extends beyond planting trees. Their performance depends on the reliable delivery of irrigation water, appropriate species selection, and effective management. The Egyptian experience therefore offers both a practical example of wastewater reuse & a reminder that long-term planning is essential.

Morocco's Green Belt: Reusing Water, Restoring Land

Addressing Water Scarcity in Ouarzazate

Egypt is not alone in exploring this approach. In Morocco, the city of Ouarzazate has developed a green-belt initiative designed to create a protective zone between the city and the surrounding desert.

The project addresses competing demands on the El Mansour Eddahbi dam, which supplies water for the city, irrigation, and activities associated with the nearby Noor solar power plant. Rather than allocating additional freshwater to the green belt, the initiative uses treated wastewater and solar-powered pumping to irrigate trees.



Measuring Progress

According to the United Nations Environment Programme (UNEP), the project was designed to cover approximately 635 hectares. By October 2015, 400 hectares had been planted, representing about 63% of the stated target at that stage.

The project aimed to reduce exposure to dust and protect the surrounding environment from desertification and land degradation. It was also intended to create recreational spaces for residents, extending its purpose beyond environmental protection alone.

Environmental and Community Benefits

The initiative generated employment opportunities and involved residents in planting and maintaining the trees. Local knowledge also helped identify soil-related problems affecting tree survival, demonstrating the value of community participation in environmental projects.

Ouarzazate shows how wastewater reuse can connect land restoration with employment and improved public spaces. It also illustrates the importance of maintaining vegetation after planting, rather than measuring success through planted area alone.

The Wider North African Water Challenge

The experiences of Egypt and Morocco form part of a broader regional response to water scarcity. Across North Africa, countries including Tunisia, Morocco, and Algeria have been exploring non-conventional water resources, including desalination and treated wastewater.

These approaches serve different purposes. Desalination produces freshwater from seawater, while wastewater reuse recovers water already used by households and communities. Where treatment quality is appropriate, the latter can provide an additional supply for selected agricultural, forestry, and environmental applications.

However, wastewater reuse should not be considered a universal substitute for freshwater. Its value depends on the quality of the available effluent, the intended use, and the environmental conditions of the receiving area.

The Technology Challenge in the Algerian Sahara

Treatment Under Extreme Conditions

The Algerian Sahara illustrates the technical challenges involved in managing wastewater under extreme climatic conditions. Research published by IntechOpen examined 10 wastewater treatment plants across five southern Algerian provinces, highlighting operational difficulties associated with high temperatures, evaporation, sand, salinity, and water management.





The study describes a region where annual rainfall can fall below 100 millimetres, while summer temperatures can exceed 45°C. Under these conditions, evaporation can concentrate salts in treatment lagoons, while sandy or unstable ground can complicate the design and operation of treatment facilities.

Infrastructure and Treatment Capacity

More than 90% of the planned treatment plants discussed in the study relied on extensive treatment approaches, including lagoon systems. These systems can require relatively little electromechanical equipment, but they also need substantial land areas.

The Ghardaïa natural-lagoon plant, for example, occupies 79 hectares and was designed for a maximum capacity of 46,400 cubic metres per day. This illustrates the considerable land requirements that some treatment approaches can involve in desert environments.

Other facilities use aerated lagoons. The Kouinine plant was reported to handle a treated flow of 33,251 cubic metres per day. Together, these examples illustrate the scale of infrastructure needed to manage wastewater in the region.

Selecting the Appropriate Treatment System

No single treatment process is suitable for every location. The choice must reflect available land, energy requirements, climatic conditions, wastewater characteristics, and the capacity to maintain the equipment and treatment process over time.

Systems that perform effectively under one set of conditions may produce different results in hotter, drier, or more saline environments. Consequently, treatment design must account for local constraints from the beginning rather than relying on technical performance alone.

High Treatment Efficiency Does Not Guarantee Reuse

What the 2026 Research Reveals

Research published in Processes in 2026 examined two wastewater treatment plants operating under arid and hyperarid conditions in southern Algeria. The study found that both plants achieved high removal rates for organic matter and suspended solids.

Chemical oxygen demand (COD) removal reached 88.7% and 90.4%, while five-day biochemical oxygen demand (BOD_5) removal reached 90.0% and 90.9%. Total suspended solids (TSS) removal was 92.9% and 93.9%, respectively, demonstrating the plants' ability to reduce several major pollution indicators.

The Remaining Salinity Challenge

Despite these results, residual salinity & sodium-related indicators remained important constraints on the long-term suitability of the treated water for agricultural reuse. This distinction is critical. Conventional treatment can substantially reduce organic pollution, but it doesn't necessarily remove dissolved salts to the extent required for every agricultural application.

In dry environments, where evaporation is high and rainfall provides limited natural leaching, salinity management becomes particularly important.

Assessing Water Beyond Conventional Indicators

The study highlights the need to assess treated wastewater using more than conventional pollution-removal indicators. Electrical conductivity, sodium adsorption ratio, and residual sodium carbonate provide additional information relevant to irrigation suitability.

Without such assessment, water that performs well in a treatment plant may still present risks to soil quality over time. Sustainable reuse therefore requires attention to both treatment performance and the longer-term effects of irrigation on the receiving environment.

The Principles Behind Successful Reuse

• Appropriate Treatment

Wastewater must be treated according to its intended use. Reliable treatment is the starting point for reuse, but it does not automatically make the resulting water suitable for every application. Water-quality requirements must be considered alongside the needs of the receiving environment.

• Matching Technology to Local Conditions

Temperature, evaporation, salinity, soil characteristics, land availability, and energy requirements all influence the performance and sustainability of different treatment processes. The Algerian experience demonstrates why selecting a treatment system requires an understanding of local environmental and operational constraints.

• Choosing Suitable Vegetation

Egypt's afforestation experience demonstrates the importance of evaluating tree species under desert conditions. Morocco's green-belt initiative shows how planting can serve broader environmental and community objectives. In both cases, the selection of vegetation must reflect the characteristics of the site and the availability of suitable irrigation water.

• Long-Term Management

Irrigation infrastructure, soil conditions, maintenance, and local expertise can determine whether a project continues to deliver benefits after its initial development. Effective management must therefore extend beyond construction and planting to include continued operation, monitoring, and maintenance.



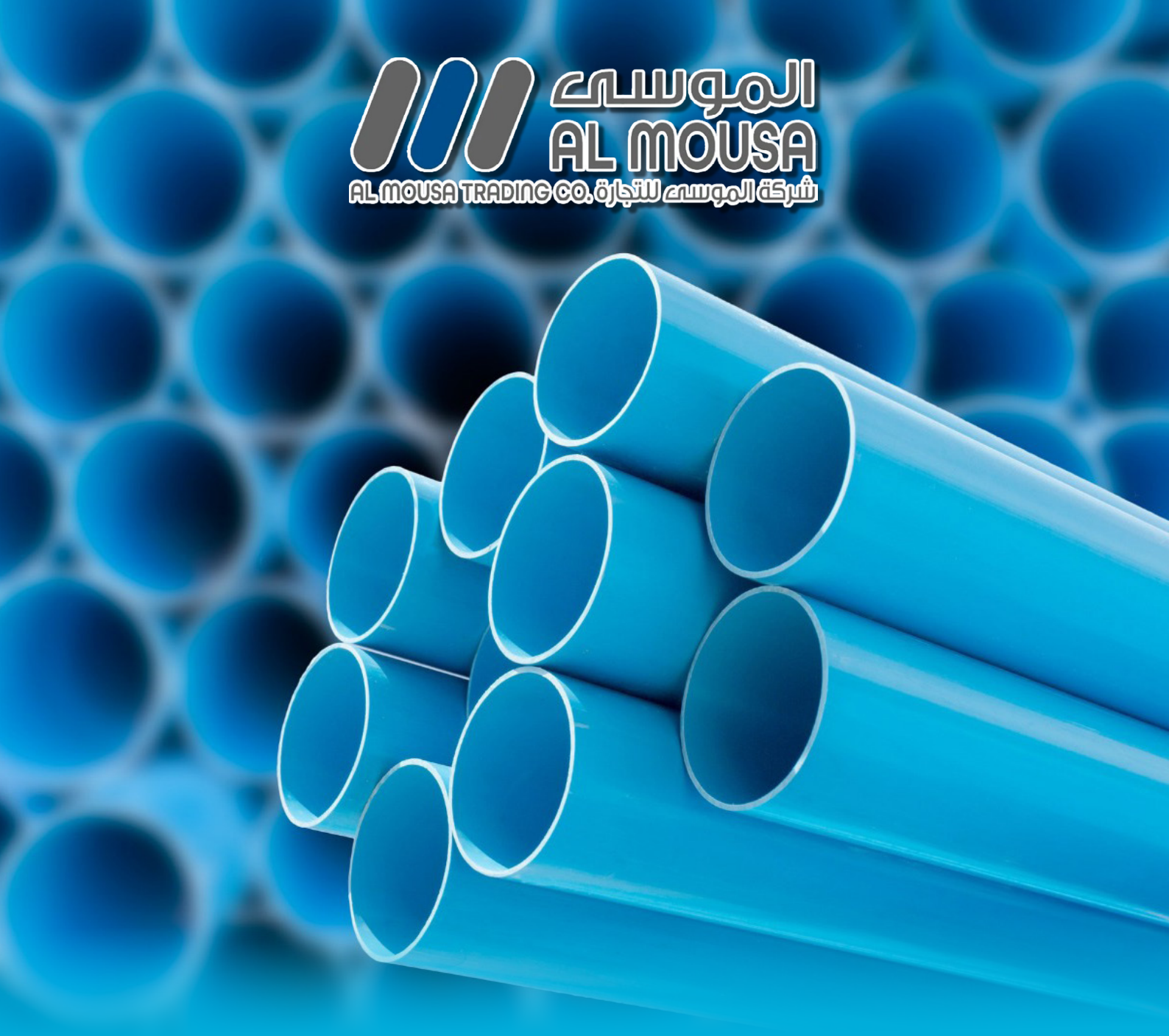
Conclusion

The transformation of wastewater into green landscapes at the edge of the Sahara offers a different perspective on water management. Egypt's desert forests, Morocco's green belt, and Algeria's treatment infrastructure demonstrate that wastewater can have value beyond disposal, supporting vegetation and contributing to land restoration when appropriately managed.

The evidence also shows why successful reuse requires more than high treatment efficiency. Water quality, salinity, climate, soil, vegetation, and reliable operation must be considered together.

As freshwater resources face growing pressure across North Africa, treated wastewater can become an increasingly valuable part of a broader water-management strategy. The most promising approach is not simply to use more wastewater, but to recover and reuse it carefully, according to the needs and limitations of each environment.

The desert may remain dry, but water that has already been used need not lose its potential to support greener, more resilient landscapes.



From Water Supply to Acoustic Drainage: A Complete Piping Solutions Portfolio

When piping is part of a project, choosing the right system is not simply about selecting a pipe. It is about finding the right solution for every application. From water distribution and HVAC circuits to drainage systems, different project requirements call for different piping solutions. That is why a strong portfolio needs to bring together the right systems, components, and technical support under one approach.

A Piping Portfolio Built Around Project Requirements

At Al Mousa Trading Co., the Piping Solutions Department provides piping systems for residential, commercial, industrial, healthcare, and infrastructure projects. The portfolio brings together four main solution areas: PPR & PPR-CT systems, PEX systems, Plumbing & HVAC valves, and Acoustic Drainage systems.

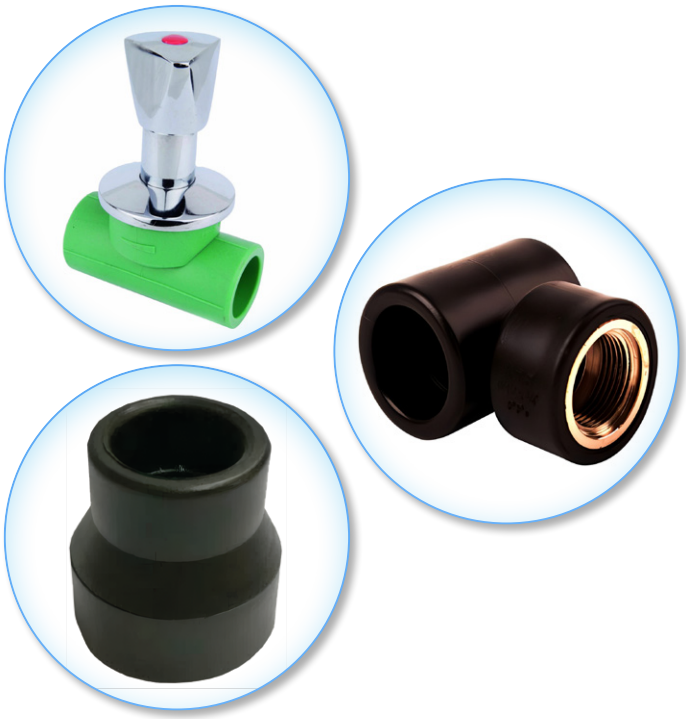
PPR & PPR-CT Systems

For building water supply applications, the portfolio includes PPR and PPR-CT pipes and fittings from three manufacturers, giving clients a choice of origin across the PPR and PPR-CT range.

Aquaterra provides PPR and PPR-CT pipes and fittings, including threaded transition fittings, stop valves, and pipe supports.



Koblan KTP provides a locally produced range of pipes, fittings, and valves with PPR connections, supporting in-Kingdom sourcing.



Wefatherm provides pipes and fittings, including flange adaptors and threaded tees for connections to pumps, valves, and equipment.

Together, these options provide sourcing flexibility within the PPR and PPR-CT portfolio.



PEX Systems

For building water distribution, UniDelta supplies PEX pipes together with a matching range of brass fittings.

The pipes are available in coils, including versions with blue and red protective sleeves for identifying cold and hot lines. The system also supports long continuous runs with fewer joints, with both pipes and fittings available from one source.



Plumbing & HVAC Valves

Not every piping requirement is about the pipe itself. Valves are another part of plumbing and HVAC systems. Through VIR, the portfolio includes brass valves for plumbing and HVAC services, including handwheel-operated valves, valves with measuring points, and actuator-ready valves.

These solutions are used for water distribution and HVAC heating and cooling circuits, while actuator-ready options support integration with building control systems.



Acoustic Drainage

In occupied buildings, drainage performance can also involve noise control.

dBlue by Aliaxis provides an acoustic soil and waste system designed to reduce drainage noise inside occupied buildings. The range includes pipes and push-fit socket fittings with sealing rings, such as branches, bends, and couplings.



Integrated Solutions, From Selection to Commissioning

A complete piping solution is not only defined by the products within the portfolio. The way those products are selected, supplied, installed, and supported also matters.

Al Mousa supports clients through engineering support and material selection, supply and installation, testing and commissioning, and after-sales support.

The portfolio also brings together matched pipes, fittings, and valves, helping reduce interface issues between components while supporting installation efficiency and project suitability.

Proven Solutions Across Diverse Projects

The portfolio is designed to serve residential, commercial, industrial, healthcare, and infrastructure projects.

Selected references include Dallah Hospital and Dr. Sulaiman Al Habib Hospital, where dBlue acoustic drainage systems were used, as well as the Diriyah Project, where Aquaterra PPR & PPR-CT systems were selected.

The portfolio also provides sourcing flexibility, with PPR solutions available from Saudi Arabia, the UAE, and Germany, allowing clients to consider origin, lead time, and budget when selecting their systems.

Piping Solutions Partner

From PPR and PEX systems to valves and acoustic drainage, piping requirements can vary significantly from one application to another.

Al Mousa Trading Co. brings these different solution areas together within its Piping Solutions Department, supported by engineering expertise, product selection, supply, installation, testing, commissioning, and after-sales support.

The right piping solution starts with understanding the application and choosing the right system to meet it.

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FILTRALITE®

Rethinking Filtration Efficiency:

Getting More from Existing Water Treatment Systems

As water demand continues to grow, water treatment plants are under increasing pressure to improve capacity while controlling water and energy consumption. Traditionally, increasing treatment capacity has often meant adding new infrastructure or expanding the plant footprint.

But what if the existing system could deliver more?

Improving the filtration process itself can provide an alternative approach—one that focuses on making better use of infrastructure that is already in place.

Can Existing Systems Do More?

Filtration performance depends on more than the filter structure itself. The characteristics of the filter media can influence particle retention, head loss development, and how long a filter can operate before backwashing is required.

This makes filter media an important part of overall treatment efficiency.

According to Geir Norden, Research and Development Expert at Filtralite®, developing existing filtration processes further can create opportunities to improve efficiency without necessarily requiring major infrastructure expansion.

The focus is not simply on changing the media, but on improving the performance of the filtration process as a whole.

Why Filter Media Matters

One of the key properties influencing filtration performance is porosity.

A highly porous medium provides greater void volume and surface area within the filter bed. This structure can support effective particle retention while allowing water to pass through the media efficiently.



Filtralite® develops filter media produced from lightweight expanded clay, with a highly porous structure designed to support applications where efficient contaminant removal, longer filter runs, and reduced backwashing are important operational objectives. When a filter can operate for longer periods before backwashing, the treatment process can make more productive use of its available capacity.

Longer Filter Runs, Fewer Backwashes

Backwashing is essential for maintaining performance, but it also consumes resources and temporarily takes the filter out of service.

Longer filtration cycles can mean:

- Fewer backwash operations
- Lower water consumption
- Lower energy requirements
- Greater filter availability
- More productive use of existing capacity

This connects the characteristics of the filter media directly to the wider efficiency of the treatment plant.

Improving Existing Infrastructure

For treatment plants facing increasing demand, physical expansion is not always straightforward. Limited space, construction requirements, and the cost of new infrastructure can make capacity expansion complex.

An alternative is to examine whether the existing filtration stage can be improved. Filtralite® filter media can be used in retrofit applications, allowing existing infrastructure to be upgraded rather than automatically replaced or expanded. This approach can help treatment plants explore additional capacity and efficiency while making better use of assets already in place.

The implementation is simple: the existing filter media can be removed and replaced with Filtralite®, while keeping the existing filter infrastructure in place.

Performance in Practice: Llobregat Drinking Water Treatment Plant

At the Llobregat Drinking Water Treatment Plant in Spain, Filtralite® Mono-Multi was compared with conventional sand filtration during an industrial-scale evaluation.

The trial treated approximately 2.78 million m^3 of water over around 3,900 operating hours. The Filtralite® filter required 16 backwashes, compared with 45 for the sand filter, demonstrating the potential for longer operating cycles and fewer backwashes.

From Better Media to Better Filtration

Filtration efficiency is increasingly about achieving more from every part of the treatment process.





For plants looking to improve performance without automatically expanding their physical footprint, the filter medium can be an important engineering consideration.

Filtralite® offers a portfolio of filtration media developed for different applications:

- Filtralite® Pure — for drinking water and desalination pretreatment
- Filtralite® Clean — for wastewater and industrial water treatment
- Filtralite® Air — for odour treatment and air and gas purification

The underlying principle is straightforward: improving the properties of the filtration medium can help improve the performance of the process itself.

As water treatment plants face growing pressure to conserve resources, increase efficiency, and make better use of existing infrastructure, the question is no longer only how to build more capacity.

It is also worth asking:

How much more performance can be achieved from the filtration capacity already in place?

For many treatment applications, that question may be the starting point for a more efficient approach to water treatment.

FILTRALITE®

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WHAT DEFINES EFFICIENT WATER TREATMENT?

FILTRALITE®
Treated Expanded Clay Filter Media
MORE SURFACE AREA MORE VOID VOLUME

KEY BENEFITS

-Longer Filter Runs
-Fewer Backwashes
-Lower Water & Energy Consumption

LLOBREGAT | PROOF POINT
16 vs. 45 Backwashes
Filtralite® Mono-Multi vs. Conventional Sand



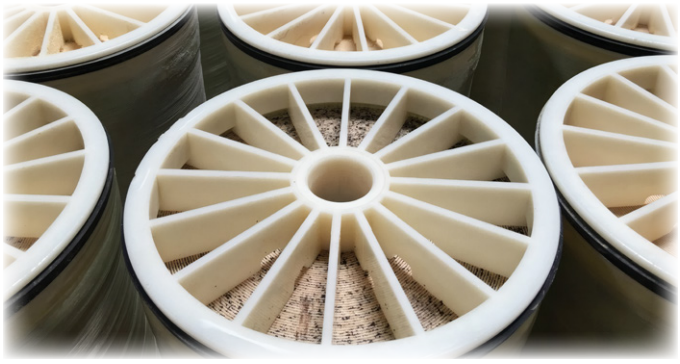
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WHEN SCALING CHALLENGES KEEP ADDING UP.

MEET PRETREAT PLUS® 0100.

Maintaining stable RO performance becomes more challenging when feedwater contains multiple scale-forming compounds. These conditions can affect system performance, increase operating pressure, and lead to more frequent cleaning.



WHEN SCALE RISKS ARE MULTIPLE, CONTROL SHOULD BE BROADER

When different scaling risks exist in the same feedwater, choosing an Antiscalant that can address multiple contributors becomes an important part of RO pretreatment.

Instead of selecting a treatment based on a single scaling risk, the Antiscalant should match the actual feedwater conditions and operating requirements of the system.

This is where Pretreat Plus® 0100 comes in.

PRETREAT PLUS® 0100: BROAD-SPECTRUM ANTISCALANT

Developed by King Lee Technologies, Pretreat Plus® 0100 is designed for feedwaters with high levels of scale-forming minerals and metal oxides.

It provides broad-spectrum control by:

- Controlling Calcium Carbonate and Calcium Sulfate scales.
- Decreasing precipitation of Aluminum, Iron, and Heavy Metal salts.
- Controlling inorganic scale across a wide concentration range.

Its liquid formulation supports convenient application, while its compatibility with RO, NF, and UF Membranes allows it to be used across different membrane-based treatment systems.



THE RIGHT DOSAGE STARTS WITH THE RIGHT DATA

Choosing the right Antiscalant is only one part of effective scale control. The dosage should be based on the actual feedwater characteristics and RO operating conditions.

King Lee Technologies' HydraCalc chemical dosing software supports Antiscalant selection and dosing by evaluating key operating data, including:

- Feedwater cation and anion concentrations
- pH
- Temperature
- Flow rates
- Recovery rate

This data-based approach helps determine a suitable dosage for the specific application rather than relying on a fixed dosing rate, supporting more stable RO operation and scale control.

BEHIND EVERY SOLUTION

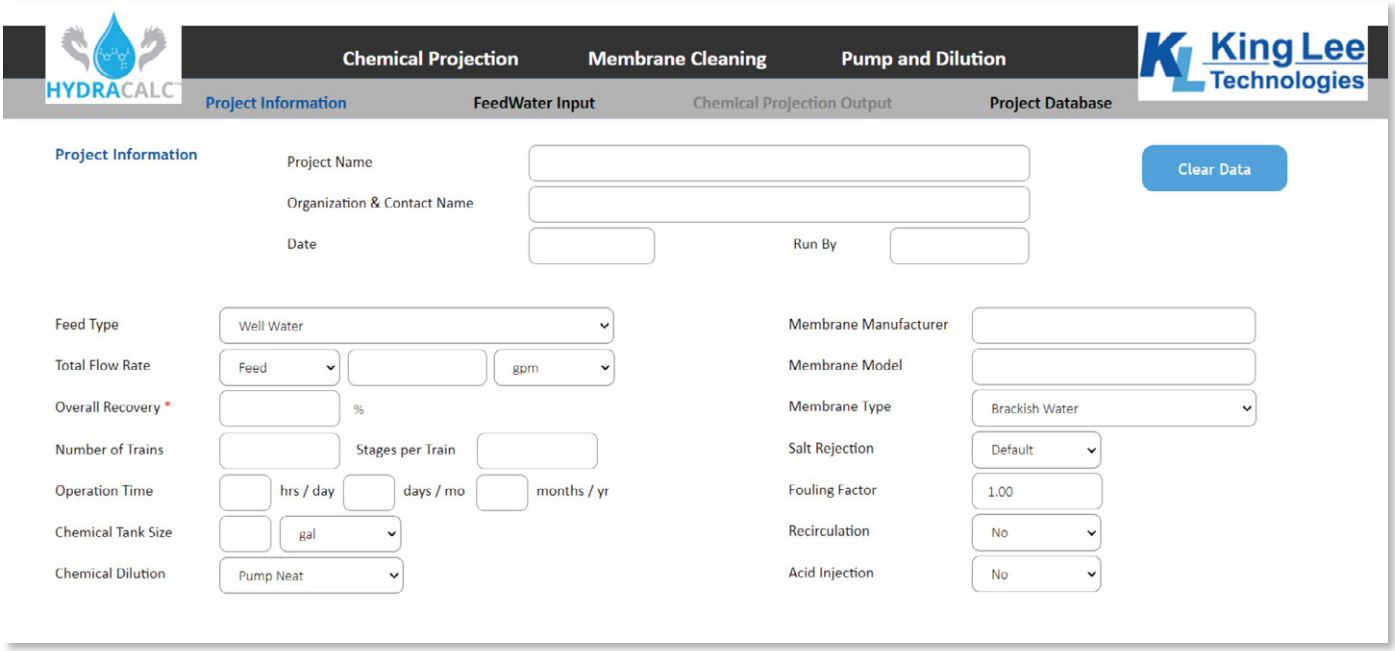
With extensive experience in membrane chemistry and water treatment, King Lee Technologies develops proprietary Antiscalants and specialty chemicals for membrane-based water treatment applications.

In Saudi Arabia, these solutions are available through Envishield, the exclusive agent of King Lee Technologies, bringing its specialized products to the local market and supporting the needs of challenging membrane applications.

BEYOND SCALE CONTROL: BUILDING CONFIDENCE INTO EVERY RO SYSTEM

Effective RO operation starts with making the right treatment decisions based on actual feedwater and operating conditions.

With Pretreat Plus® 0100, broad-spectrum scale control becomes part of a more informed approach to membrane water treatment—helping water treatment professionals manage multiple scaling risks with greater confidence.



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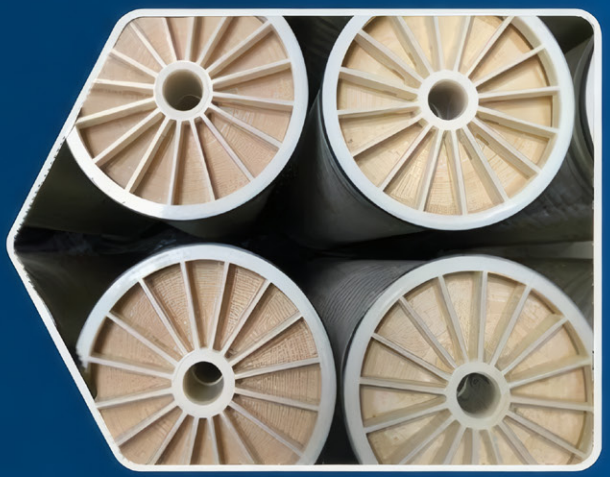
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- Controls calcium carbonate and calcium sulfate scales.
- Decreases precipitation of aluminum, iron, and heavy metal salts.

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Buyers Guide for Water and Renewable Energy Companies

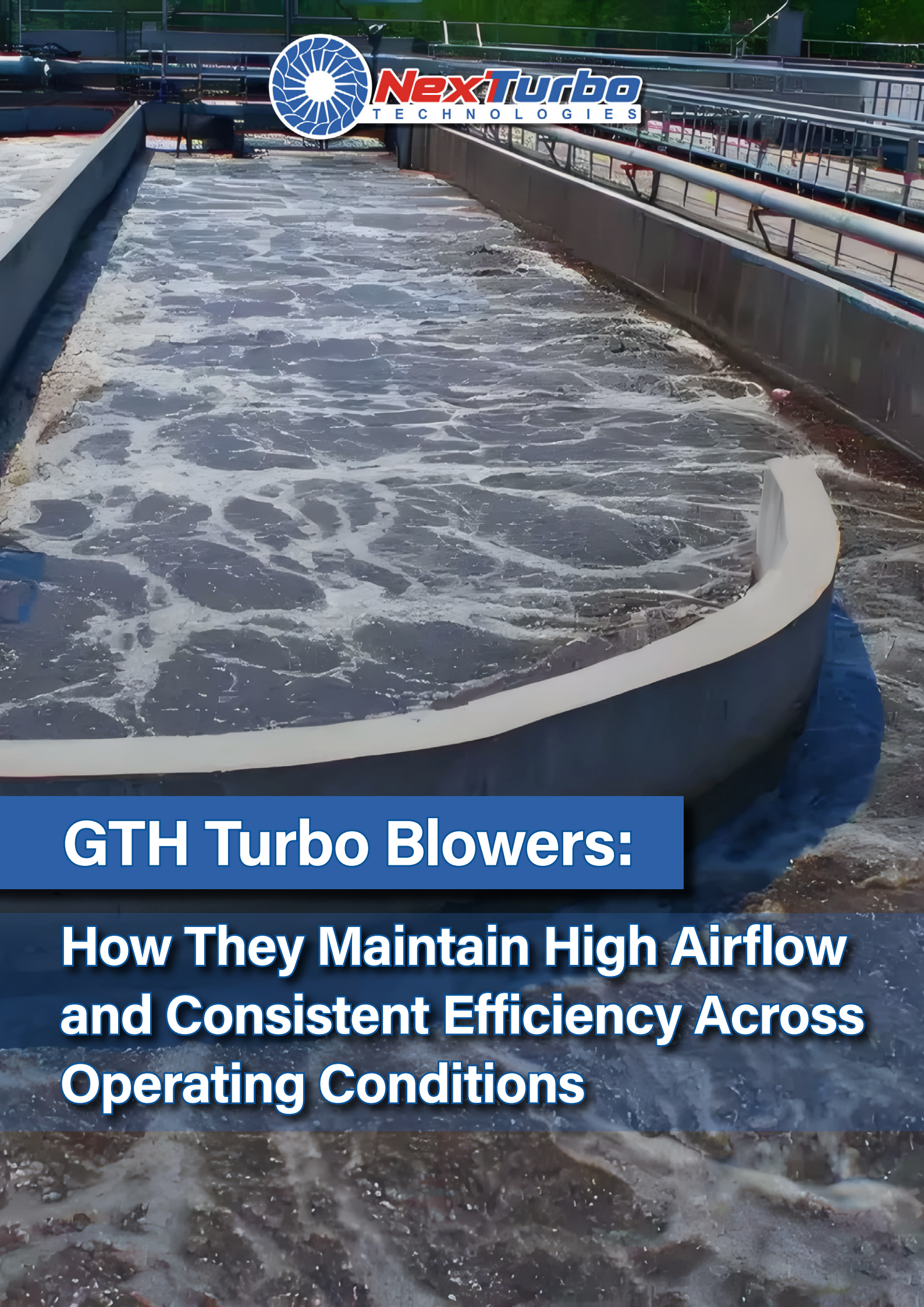
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GTH Turbo Blowers:

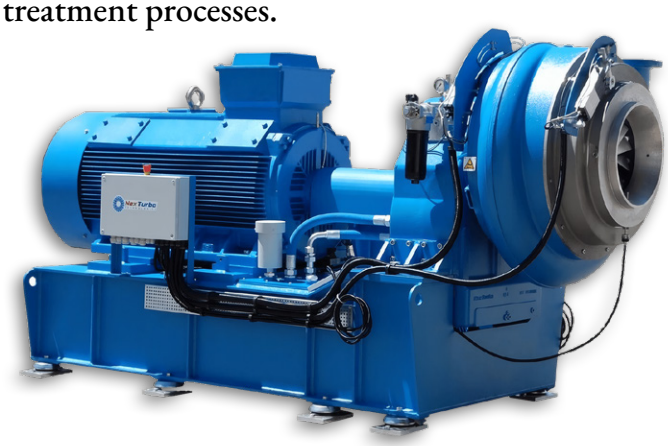
How They Maintain High Airflow and Consistent Efficiency Across Operating Conditions

In modern wastewater treatment plants, aeration is one of the most critical processes—and one of the areas where blower performance can significantly affect overall plant operation.

> The right turbo blower must deliver the required airflow and pressure while maintaining reliable performance across changing operating conditions.
>
> The GTH Turbo Blower from Next Turbo is designed to address these demanding requirements, combining advanced turbo machinery technology, robust construction, flexible airflow regulation, and project-specific engineering.

Built for High-Performance Applications

The GTH series is part of Next Turbo's range of integrally geared, single-stage centrifugal turbo machines. It is designed for applications requiring large airflows and pressures, making it particularly suitable for demanding industrial and wastewater treatment processes.



The GTH range offers impressive operating capabilities:

» Up to 4,000 kW
» Up to 1,500 mbar(g)
» Up to 130,000 m^3/h

These capabilities allow the GTH to address a wide range of plant requirements, from high-flow aeration systems to applications where higher discharge pressure is required.

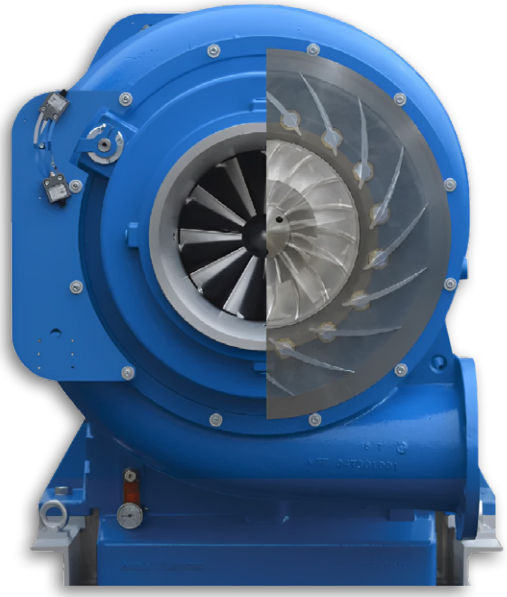
Advanced Bearing & Lubrication Technology

One of the key elements of the GTH design is its bearing technology. The GTH series utilizes tilting pad bearings, supported by a dedicated lubrication system. This technology is designed for demanding, high-duty applications and contributes to reliable operation of the turbo machine.

The GTH architecture also enables the integration of vibration monitoring through proximity sensors mounted on the gearbox, providing an important tool for monitoring machine condition and supporting reliable operation.

Optimized Airflow Regulation

Wastewater aeration systems rarely operate at a single constant airflow demand. Process requirements can change according to oxygen demand, basin conditions, and overall plant operation. The GTH can therefore be configured with different airflow regulation systems, including Variable Diffuser Vanes (VDV) and Inlet Guide Vanes (IGV).



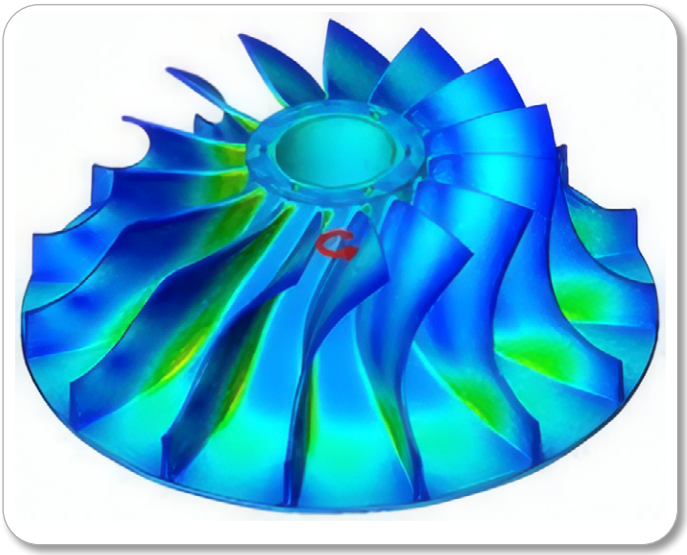
VDV regulation provides a wide airflow regulation range and is particularly suitable for static-pressure applications commonly found in aeration and oxidation processes. IGV regulation, meanwhile, provides an efficient approach when airflow requirements follow changes in system pressure. For applications requiring additional flexibility, VDV and IGV can be combined in a two-point regulation configuration.

Because airflow is regulated through VDV and IGV rather than by reducing speed alone, the GTH holds high efficiency across a wide operating range — from roughly 40% to 100% of load — sustaining performance under varying oxygen demand, where speed-controlled machines often lose efficiency at partial load.

Project-Specific Impeller Design

Efficiency begins with the design of the impeller. Rather than using a single standard impeller for every application, Next Turbo designs each impeller according to the project's specific flow, pressure, and suction conditions.

The impeller geometry—including height, radius, and blade bending—is optimized for the required operating conditions and developed using CFD technology. This project-specific approach helps ensure that the machine is appropriately matched to the application.



Reliability Designed for Long-Term Operation

For wastewater treatment plants, reliability is not simply a technical advantage—it is essential for continuous process operation. The GTH is engineered as a robust turbo machine, while Next Turbo blower solutions offer flexible packaging, control, testing, and maintenance options.

The company also emphasizes serviceability, allowing maintenance teams or local service providers to inspect components, perform preventive maintenance, troubleshoot equipment, and support long-term operation.

25+ Years of Lifetime

With a lifetime of 25+ years, Next Turbo blowers are designed for long-term operation and maintenance. Their service-oriented design allows components to be inspected, repaired, and maintained rather than relying on complete subsystem replacement. This approach supports equipment longevity and helps maintain reliable performance throughout the blower's operational life.

Tested for Performance & Quality

Performance claims are only meaningful when supported by testing. Next Turbo's facility provides full-load performance testing up to 2 MW (50Hz), with testing capabilities according to ISO 5389 and ASME PTC-10.

These testing capabilities support the evaluation of blower performance and help ensure that the equipment meets the required operating conditions before being delivered to the project.

GTH Turbo Blower for Modern Wastewater Treatment

From high airflow and pressure requirements to flexible regulation, project-specific impeller design, and long-term reliability, the GTH Turbo Blower is engineered to meet the demanding requirements of modern wastewater aeration.

With capabilities of up to 4,000 kW, 1,500 mbar(g), and 130,000 m^3/h, together with a proven lifetime of 25+ years, the GTH provides a scalable solution for plants looking for advanced blower technology, reliable operation, and optimized airflow management.

For wastewater treatment projects where performance, reliability, efficiency, and process flexibility matter, the GTH represents a next-generation approach to turbo blower technology.



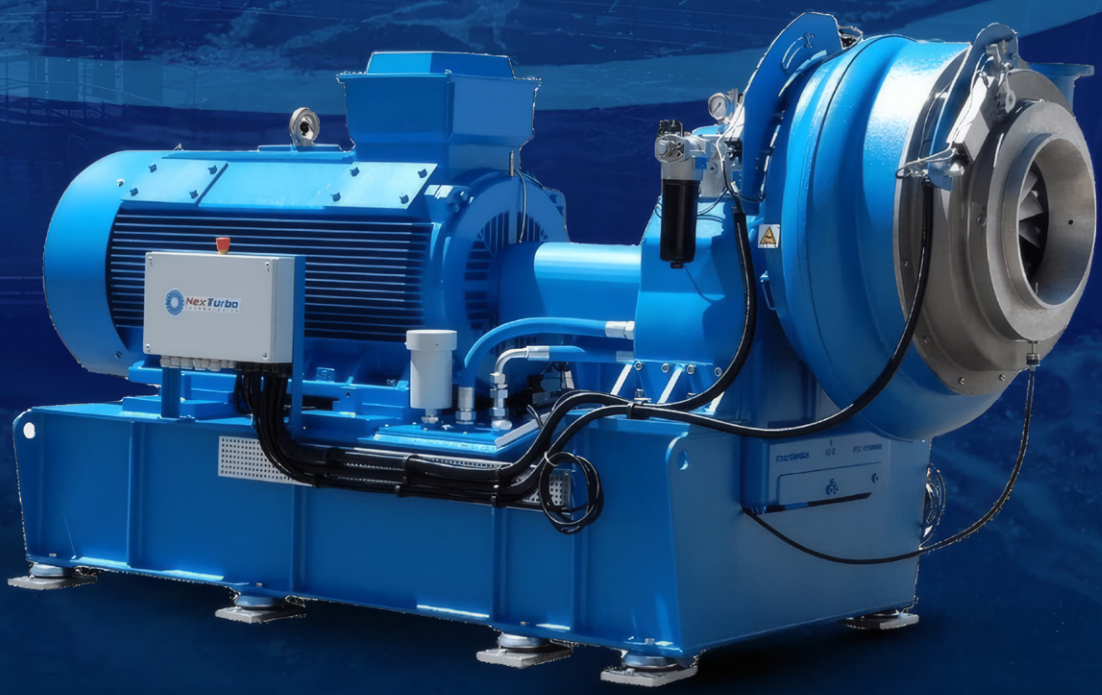
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GTH SERIES

Next Turbo Blowers for Smarter Wastewater Aeration



AIRFLOW
Up to 130,000 m³/hr FAD

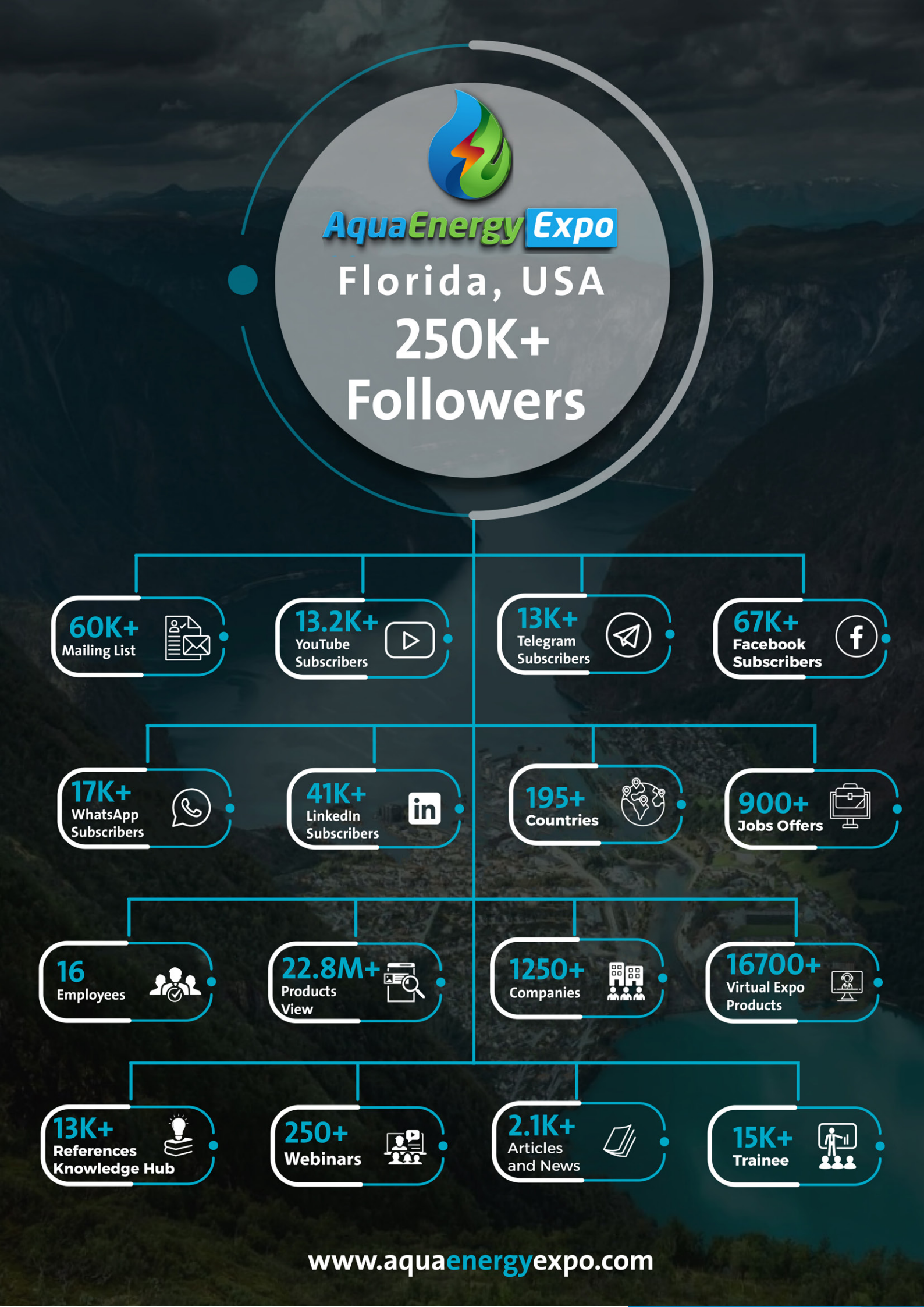
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PRESSURE
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From Pump Selection to Project Success:

The Role of Engineering and Technical Sales in Water & Wastewater Projects



Mustafa Kadry Bayoumi Abdelfatah

Regional Sales Manager (Egypt and Africa)
Torishima Service Solutions Egypt

With more than 20 years of experience spanning mechanical engineering, technical sales, and business development, Mustafa Kadry is currently serving as Regional Sales Manager at TORISHIMA Group. His career has focused strongly on the water and wastewater sector, with extensive experience in pump solutions, project management, technical consulting, and strategic sales.

Throughout his career with TORISHIMA Group, IMAG, and KSB's sole agent in Egypt, he has worked closely with consultants, contractors, and key clients to develop tailored pumping solutions and support major water and wastewater projects. His combination of strong technical expertise, commercial insight, and leadership experience provides a valuable perspective on the evolving water infrastructure and pumping solutions market.

Q1 You have built your career across technical engineering, water and wastewater projects, and technical sales. How has this combination shaped your approach to delivering solutions for water infrastructure projects?

A1 My engineering background gives me a strong understanding of the technical side of pumping systems, while my experience in water & wastewater projects has helped me understand the practical challenges faced by operators, contractors, and end users.

Moving into technical sales and business development added another dimension. I learned that delivering the right solution is not only about selecting the right equipment, but also about understanding the client's real needs, project constraints, budget, operation, & long-term objectives.

Today, I try to look at a project from all these perspectives and provide a solution that is technically sound, commercially viable, reliable, & sustainable throughout its lifecycle.

Q2 From your experience in water and wastewater projects, what are the most important factors that should be considered when selecting pumping equipment for a project?

A2 The first step is always to clearly understand the hydraulic requirements, particularly the required flow, head, operating conditions, & the expected operating range. But pump selection should go beyond these basic parameters.

We also need to consider efficiency, reliability, the characteristics of the pumped fluid, material selection, motor and control requirements, installation conditions, maintenance requirements, and the applicable standards and specifications.

Most importantly, I believe we should consider the complete lifecycle of the equip ment. A pump that looks attractive from an initial purchase price may not necessarily be the most economical solution over 15 or 20 years of operation.



Q3 How can an incorrect pump selection affect the overall performance, energy consumption, reliability, & lifecycle cost of a water or wastewater system?

A3 An incorrect pump selection can have a significant impact on the entire system. If the pump operates away from its best efficiency point, it can consume more energy, experience higher vibration and wear, and require more frequent maintenance.

It can also lead to operational problems such as insufficient flow, excessive pressure, cavitation, or frequent equipment trips. Because pumping systems can operate for many years, even a relatively small reduction in efficiency can result in significant additional energy costs. Therefore, correct pump selection is not simply a technical decision; it directly affects reliability, operating costs, and the overall lifecycle cost of the project.

Q4 In large pumping projects, how do you balance technical requirements, operational needs, and commercial considerations when proposing the right pumping solution?

A4 I start by identifying the non-negotiable technical and operational requirements. Safety, reliability, hydraulic performance, applicable standards, and the client's operating conditions must come first. Once these requirements are clearly defined, I look at different technical solutions and evaluate them from a lifecycle-cost perspective, including energy consumption, maintenance, spare parts, and expected operating life.

The commercial aspect is also important, because the solution has to be competitive and fit within the project budget. The objective is not necessarily to offer the cheapest equipment, but to offer the best overall value for the client while meeting the technical requirements.

Q5 What are some of the most common challenges you have encountered when moving from technical specifications and tender requirements to the actual selection and supply of pumping equipment?

A5 One of the biggest challenges is translating a general or sometimes very detailed tender specification into an actual equipment selection that will perform correctly in the real operating conditions.

There can also be differences between the consultant's requirements, the contractor's commercial objectives, and the end user's operational expectations. Sometimes the specification focuses heavily on the initial purchase price, while the end user is more concerned about reliability, efficiency, and maintenance.

Another challenge is ensuring that all interfaces are properly considered, including the pump, motor, VFD or starter, control system, piping, civil works, and installation requirements. This is why close technical coordination between all parties is essential before finalizing the equipment.



Q6 How important is early technical involvement with consultants, contractors, & end users in ensuring that pumping solutions are properly specified from the beginning of a project?

A6 I believe early technical involvement is extremely important. In many projects, decisions made during the specification and design stage can determine the performance and cost of the system for many years.

When we are involved early, we can better understand the actual operating conditions and help ensure that the hydraulic requirements, efficiency targets, materials, standards, maintenance philosophy, and equipment interfaces are properly defined. Early engagement also allows us to identify potential problems before they become expensive changes during procurement or installation. It creates a better opportunity to develop a solution that works for the consultant, contractor, and ultimately the end user.

Q7 With your experience in technical sales and business development, how has your engineering background helped you build stronger relationships with clients and understand their actual project needs?

A7 My engineering background allows me to communicate with clients at a technical level and understand the challenges behind their requirements. When a client discusses a problem, I try not to immediately focus on selling a product.

Instead, I ask questions and try to understand the actual operating conditions, the problem they are facing, and what they are trying to achieve.

> "This creates a different type of relationship. The client sees you not only as a supplier, but as someone who can help solve technical and operational problems. I believe this combination of technical knowledge and commercial understanding has been one of the most important factors in developing long-term customer relationships."

Q8 In a highly competitive water market, what differentiates a successful technical sales approach from simply selling equipment based on price and specifications? solution?

A8 I believe successful technical sales is about selling value rather than simply selling equipment. Price & specifications are important, but they are only part of the decision. A successful technical sales approach starts with understanding the customer's problem & then demonstrating how the proposed solution can improve reliability, efficiency, maintenance, and overall project performance. It is also about providing strong technical support before and after the sale.

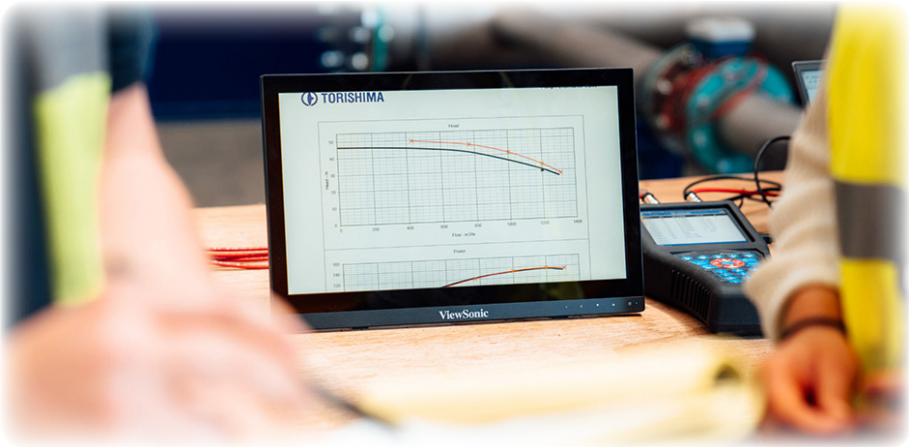
In the water sector, customers are often looking for a long-term partner rather than simply a supplier for one transaction.

If we can demonstrate measurable value & build trust, the discussion becomes less focused on the initial price and more focused on the overall value of the solution.

Q9 What role do factors such as energy efficiency, reliability, maintenance requirements, & lifecycle cost play in today's pumping decisions?

A9 They play a very important role, particularly in large water infrastructure projects where pumps may operate continuously for many years. Energy can represent a significant part of the total operating cost of a pumping system.

Therefore, improving pump efficiency, selecting the appropriate motor and control strategy, and operating the pump close to its optimum range can generate substantial savings over time.



Reliability and maintenance are equally important because unplanned downtime in a water or wastewater facility can have a major operational impact. For this reason, I believe the industry is increasingly moving from a focus on initial purchase price toward total cost of ownership and lifecycle value.

Q10 Based on your experience across water and wastewater projects in the region, what trends or changes do you believe are currently influencing the demand for pumping solutions?

A10 One of the major trends is the increasing focus on energy efficiency and reducing operating costs. Water and wastewater facilities consume significant amounts of energy, so there is growing interest in improving the efficiency of existing pumping systems as well as selecting more efficient equipment for new projects.

I also see increasing demand for rehabilitation, maintenance, and life-extension of existing pumping assets, rather than relying only on new installations.



> "Another important trend is the need for more reliable and intelligent pumping systems, including better monitoring, condition assessment, variable-speed operation, and data-driven maintenance. At the same time, water scarcity and the development of large infrastructure and irrigation projects are increasing the need for efficient and reliable pumping solutions across the region."

Q11 Finally, what advice would you give to young engineers who want to build a career that combines technical engineering expertise with business development & technical sales? solution?

A11 My advice would be to build a strong technical foundation first, but don't stop there. An engineer working in technical sales needs to understand not only how equipment works, but also how projects are designed, how decisions are made, and what is important to the customer from both a technical and commercial perspective.

I would also encourage young engineers to develop their communication, negotiation, presentation, & business skills. Spend time with customers, contractors, consultants, and site teams because this is where you learn how engineering decisions are actually made. Most importantly, stay curious and keep learning. Technical knowledge may open the door, but the ability to understand customer needs, build trust, and deliver value is what creates a successful long-term career.



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WEBINARS



DR: EL-SAWY MABROUK.

Industrial Waste Treatment Consultant

Webinar Title:
"Biological Treatment of Industrial Wastewater Pros, Cons, and Challenges"

Date: Friday, October 9
Time: 08:00 – 10:00 PM (Cairo & KSA Time)



DR. IMAN FOUAD

Researcher specializing in Artificial Intelligence and Geospatial Data Science for Water Resources Management.

Part Two:
"Water Time Engineering: Toward Smarter and More Efficient Water Treatment & Desalination Plants"

Date: Saturday, October 10
Time: 08:00–10:00 PM | (Cairo & KSA Time)



DR. ZAKARIA MURAD

Sternova USA,
Chair of the Board

Webinar Series

Applied Dynamics of Biomass Engineering in Biological Treatment Technologies
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-**Webinar 2** • DESIGN & OPERATE: From Influent to Technology
What to measure, which process fits, and how to run it by numbers.
-**Webinar 3** • CONTROL: Smart Biological Treatment

Date: Fridays, October 16 & 23 | Saturday, October 31
Time: 07:00-09:00 (Cairo & KSA Time)



ENG. MOHAMED ISSA.

Senior sales at Al Mousa Trading Co.

Webinar Title:
"From Material Supply to Integrated Piping Solutions"

Date: Saturday, October 24
Time: 08:00 – 10:00 PM (Cairo & KSA Time)

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From H_2S Waste to Valuable Resources

Hydrogen sulfide (H_2S) is often treated as a contaminant that must be removed. Recognized by its characteristic rotten-egg odor, the gas can create far more serious challenges than unpleasant smells. In wastewater systems, oxygen-deficient conditions and sulfate-reducing bacteria drive its formation, while in industrial gas streams it can contribute to corrosion, safety concerns, environmental emissions, and operational difficulties.

These challenges have traditionally driven treatment strategies toward capturing, oxidizing, adsorbing, or transferring H_2S away from the process. Increasingly, however, the focus is shifting toward a more resource-oriented question: can hydrogen sulfide be treated not only as waste, but also as a source of useful materials and energy?

Understanding the Source of the Problem

• How Hydrogen Sulfide Forms

In wastewater treatment systems, H_2S formation is closely linked to anaerobic conditions. When dissolved oxygen becomes insufficient, sulfate-reducing bacteria can use sulfate during the degradation of organic matter, producing sulfide that can subsequently form hydrogen sulfide. Low dissolved oxygen, excessive organic loading, sludge accumulation, poor mixing, and elevated sulfate concentrations can all contribute to conditions favorable for H_2S generation. Sewer networks, equalization tanks, sludge-holding areas, & poorly oxygenated treatment zones can therefore become important locations for sulfide formation.

Understanding these conditions is essential for identifying where control measures are needed and preventing the problem from spreading throughout wastewater collection and treatment systems.

• Beyond Odor: Operational and Environmental Challenges

The consequences extend beyond unpleasant smells. At elevated concentrations, H_2S can create serious occupational safety concerns and contribute to corrosion of concrete structures, pipelines, and equipment. Persistent sulfide formation can therefore increase maintenance requirements, threaten infrastructure integrity, and complicate wastewater operations.

For treatment plant operators, H_2S represents an intersection of process performance, infrastructure protection, environmental management, and community concerns. Effective management consequently requires more than addressing odor after it develops. Controlling the conditions that generate H_2S is an important part of protecting workers, maintaining reliable operations, and reducing the wider consequences associated with sulfide accumulation.



Moving Beyond Conventional Removal

• Selecting the Right Treatment Approach

There is no single H_2S treatment approach suitable for every application. Treatment selection depends on factors such as H_2S concentration, sulfur loading, whether the stream is gas or liquid, flow rate, pressure, temperature, moisture, outlet requirements, and the management of treatment byproducts. Technologies that perform well under one set of conditions may therefore be less suitable under another.

Understanding these variables helps operators select treatment strategies that match the characteristics of the stream and the required treatment outcome. It also highlights why effective H_2S management depends on balancing removal performance, operational demands, and the handling or recovery of the resulting products.



• Established Treatment Methods

Conventional approaches include chemical scavenging, reactive media, activated carbon, molecular sieves, chemical scrubbing, biological treatment, and aeration or stripping. Each follows a different mechanism and offers advantages under particular operating conditions.

Reactive media can convert H_2S into solid sulfur compounds, while activated carbon provides adsorption and can be used for final treatment or polishing. Regenerable adsorption systems can support repeated treatment cycles.

Liquid redox processes can convert H_2S into elemental sulfur, while chemical treatment can be applied to gas or liquid streams depending on process requirements. These options demonstrate that H_2S removal is not a single process but a diverse field of treatment approaches. Their suitability depends on the stream composition, required removal level, operating conditions, and the management of spent media or other byproducts.

• Biological Treatment and Source Control

Biological treatment offers another pathway, using microorganisms to oxidize H_2S into less harmful compounds such as elemental sulfur or sulfate. In wastewater environments, biological control can also target the conditions responsible for H_2S formation rather than treating the gas only after it has been produced.

Maintaining adequate oxygen availability and biological balance can reduce the activity of sulfate-reducing bacteria and limit the development of anaerobic zones. Other control measures may involve managing organic loading, sludge accumulation, and operating conditions that encourage sulfide production.



This distinction is important: treating existing H_2S addresses the immediate problem, while controlling its formation can help prevent recurring odor, corrosion, and maintenance challenges. Combining source control with appropriate treatment can provide a more comprehensive approach to wastewater management.

• Emerging Technologies and Hybrid Systems

Newer approaches are expanding the technological toolbox. Advanced adsorption materials, catalytic oxidation, membrane separation, photocatalysis, hybrid treatment systems, and real-time monitoring are being explored to improve selectivity, efficiency, flexibility, and operational control.

Hybrid systems are particularly promising because combining different treatment mechanisms can allow one process to compensate for the limitations of another. Monitoring and automated control can also help treatment systems respond to changing operating conditions rather than relying exclusively on fixed treatment settings.

Nevertheless, no emerging technology is universally suitable. Performance depends on the characteristics of the H_2S stream, energy requirements, process integration, and the desired treatment outcome. The broader direction is toward more adaptable treatment strategies that consider efficiency and resource use alongside contaminant removal.

The Shift from Removal to Recovery

• From Contaminant to Resource

The most significant change in the way H_2S is being considered is the transition from contaminant removal to resource recovery. Rather than focusing exclusively on eliminating the gas, resource-oriented approaches seek to recover useful products from its chemical composition.

Traditional sulfur-recovery pathways can convert H_2S into elemental sulfur, creating a useful industrial material rather than leaving the sulfur component entirely within a waste stream. More recent research goes a step further by targeting both components of the H_2S molecule: sulfur and hydrogen. Each H_2S molecule contains two hydrogen atoms and one sulfur atom. Its decomposition therefore presents an opportunity to recover these elements in useful forms, potentially connecting pollution control with material recovery and energy production.





• Harnessing Light to Produce Hydrogen

One promising research direction uses light-driven photocatalysis. Laboratory research has demonstrated that visible light can drive the conversion of H_2S into hydrogen gas and sulfur using a photocatalytic material.

This approach differs from conventional sulfur-recovery processes that produce elemental sulfur without recovering the hydrogen as a separate product. By preserving hydrogen in molecular form, photocatalytic decomposition creates the possibility of recovering a potentially valuable energy carrier while also producing sulfur.

The use of visible light is particularly interesting because it opens the possibility of integrating solar energy into the process. However, laboratory results should not automatically be interpreted as proof of commercial readiness. Further development and evaluation are needed to establish performance, energy requirements, and suitability for larger-scale applications.

Catalysts: Unlocking the Chemistry of H_2S

• The Role of Molybdenum Disulfide

Another research pathway focuses on catalytic decomposition. Studies of molybdenum disulfide (MoS_2) have shown that catalyst surface structure plays an important role in determining how efficiently H_2S can be split into hydrogen and sulfur.

In particular, the edges of MoS_2 sheets can provide favorable reaction sites where H_2S molecules dissociate and their components participate in the reactions that produce hydrogen and sulfur. This makes catalyst design an important part of developing more effective conversion processes.

The significance extends beyond one material. Understanding how catalysts interact with H_2S at the molecular level can help researchers identify structures and compositions that improve reaction performance, potentially reducing barriers to more efficient resource recovery.

• Designing More Effective Catalysts

Research into MoS_2 highlights an important principle in sustainable chemical processing: improving performance is not necessarily about simply using more catalyst, but about understanding the molecular-scale characteristics that determine catalytic activity. Computational analysis and laboratory experiments have identified the importance of surface edges, structural imperfections, and hydrogen-binding strength.

These characteristics influence how molecules interact with the catalyst and how readily the desired reactions proceed. Similar investigations have pointed toward other metal disulfides, including vanadium disulfide and niobium disulfide, as potential candidates for further development. These findings expand the range of materials that could be investigated for H_2S decomposition.

The wider objective is to develop catalytic processes that recover useful products from a toxic compound while improving reaction efficiency & supporting more sustainable industrial chemistry.

From Laboratory Chemistry to Industrial Demonstration

• Scaling Up Hydrogen & Sulfur Recovery

The concept is also beginning to move beyond laboratory-scale research. A 2026 report described an industrial demonstration in China in which H_2S was decomposed through electrocatalysis into hydrogen and sulfur. According to the report, the facility was designed to process 100,000 m^3 of H_2S annually, with a reported conversion rate above 99.999%. The resulting hydrogen and sulfur were also reported to meet commercial standards.

These figures illustrate the potential scale of resource recovery when H_2S conversion is integrated into an industrial process. They also distinguish this development from laboratory research by demonstrating an application designed around industrial throughput and product requirements.

However, the reported performance relates to the specific project described and should not be assumed to represent the performance of all electrocatalytic systems or H_2S treatment processes.



• The Potential for Low-Carbon Hydrogen

The broader significance of industrial H_2S decomposition lies in its potential connection with low-carbon hydrogen production and resource recycling. The same 2026 report suggested that applying the process to H_2S treated annually in China, using renewable electricity, could produce approximately 730,000 tonnes of hydrogen per year.

This figure represents a projected potential rather than an established annual production total. Realizing such an opportunity would depend on factors including the availability and composition of H_2S streams, electricity requirements, process efficiency, and the practical deployment of suitable facilities.

Nevertheless, the estimate highlights why H_2S recovery is attracting interest beyond conventional pollution control. Under appropriate conditions, a waste stream could become a feedstock for producing hydrogen while recovering sulfur as another useful product.



• Integrating Recovery into Industrial Processes

These developments point toward a new way of thinking about sulfur-containing waste streams. Instead of designing treatment solely around the question of how to eliminate H_2S, future systems may increasingly consider what useful products can be recovered and how the treatment process can integrate with wider energy and resource strategies.

Such integration requires more than a successful chemical reaction. Treatment performance, product quality, energy supply, operational reliability, and the handling of recovered materials all influence whether resource recovery is practical.

The opportunity therefore lies in evaluating H_2S management as part of a broader industrial system, where environmental control and resource production can potentially support one another.

Toward a More Circular Approach

• Combining Prevention, Treatment, and Recovery

The evolution of H_2S treatment reflects a wider transformation across water and industrial processing. The objective is expanding from simply meeting an outlet concentration to achieving several benefits simultaneously: controlling toxicity and odor, protecting infrastructure, reducing chemical and operational burdens, recovering useful materials, and potentially producing valuable energy carriers.

For wastewater systems, this begins with understanding why H_2S forms and controlling the biological and operating conditions that encourage its production. For industrial streams, it means selecting treatment according to process characteristics and considering the fate of sulfur-containing byproducts.

At the emerging end of the technology spectrum, it also means exploring whether H_2S can become a feedstock for hydrogen and sulfur recovery rather than simply a contaminant to be destroyed. These approaches address different stages of the problem but can contribute to a more comprehensive resource-management strategy.

• Opportunities and Challenges

The transition from removal to recovery is promising, but it is not yet a universal replacement for established treatment methods. Some hydrogen-producing approaches remain at the research or demonstration stages, & catalyst performance, process integration, energy requirements, & scale-up remain important considerations. The most appropriate solution will continue to depend on the characteristics of each H_2S stream and the objectives of the treatment process.

In some applications, reliable removal or source control may remain the most practical priority. In others, recovering sulfur or producing hydrogen could offer additional value.

Evaluating these possibilities requires attention to the complete process, including the energy consumed, the products recovered, and the environmental and operational outcomes achieved.

• Redefining the Value of Waste

The next generation of H_2S treatment strategies may therefore be defined not simply by how effectively they remove hydrogen sulfide, but by what they can recover from it.

Turning a toxic waste stream into sulfur, hydrogen, or other useful resources could strengthen the connection between environmental protection, energy recovery, and the principles of the circular economy. At the same time, preventing unnecessary H_2S formation and selecting appropriate treatment methods remain essential to safe and reliable operations.

Ultimately, the opportunity is to move beyond viewing H_2S exclusively as a contaminant. Through a combination of prevention, effective treatment, and resource recovery, hydrogen sulfide management could become part of a broader transition toward more efficient and circular water and industrial systems.



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WATER NEWS BRIEF

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TAIF Wastewater Treatment Project, Led by Tedagua, Wins Sustainability & Innovation Award at SHARAKAT 2026

The TAIF Independent Sewage Treatment Plant (ISTP), developed by Tedagua and Tawzea, won the Sustainability & Innovation Award at the SHARAKAT Awards 2026 in Riyadh. This facility is the first wastewater treatment plant in Saudi Arabia to operate under a public-private partnership. With an initial capacity of 100,000 m^3/day, expandable to 270,000 m^3/day, it serves 750,000 people. The plant features advanced biological treatment, solar sludge drying, and energy recovery, generating over 30% of its electricity. The award emphasizes TAIF's role in sustainable water management and highlights Tedagua's commitment to innovation and energy efficiency for future generations.



Egypt Signs US$83 Million Private Sector O&M Contracts for 11 Desalination Plants



Egypt has signed contracts worth approximately EGP 4.6 billion (US$83 million) with private operators for the operation and maintenance of 11 seawater desalination plants, totaling 485,000 m^3/day capacity. These plants serve North and South Sinai, Matrouh, and the Red Sea governorates. The agreements aim to enhance performance, reduce downtime, and ensure preventive maintenance, supported by the Holding Company for Drinking Water and Wastewater. This initiative aligns with Egypt's strategy to expand desalination capacity to nearly 10 million m^3/day by 2050, leveraging private sector expertise to improve efficiency and maintain water quality for urban and industrial development.

86% Drop in Sewage Discharges into Thames as the Operation of Thames Tideway Tunnel Transfers to Thames Water

The first annual Tideway Benefits Report highlights significant improvements in the River Thames' health following the opening of the Thames Tideway Tunnel in 2025. Storm overflows to the tidal Thames have decreased by 86%, with annual volumes dropping to under three million cubic meters. This reduction has led to a dramatic decline in days associated with elevated health risks for river users, from 75.7% to just 10.4%. Additionally, approximately 84 tonnes of sewage-derived litter were prevented from entering the river. The report underscores the tunnel's positive impact on water quality & wildlife conditions, marking a crucial step towards a cleaner Thames.



Veolia Strengthens Its Position in Oman with a Strategic Contract for Al Asilah Desalination Plant

Veolia, through its partnership with Bahwan Engineering Company, has secured a five-year Operations & Maintenance (O&M) contract for the Al Asilah Desalination Plant in Oman, which has a production capacity of 80,000 m³/day. This facility is Veolia's fourth in Oman, enhancing the country's water security and supplying high-quality drinking water to approximately 600,000 residents. The project emphasizes innovation and local expertise, aligning with Oman Vision 2040. Veolia aims to optimize performance, support lower-carbon water production, and build national capabilities through training and professional development. This contract strengthens Veolia's commitment to expanding desalination capacity globally by 2030.



Aganova Enters the Greek Market with Its First Project, Inspecting a Wastewater Pipeline in Volos

Aganova, a leader in leak detection and pipeline assessment, is entering the Greek market with its first project for the Volos Water Supply and Sewerage Company (DEYAMB). The project involves inspecting about 8 kilometers of a DN800 wastewater transmission pipeline, including 600 meters of polyethylene and 7.4 kilometers of asbestos cement. Scheduled for this autumn, Aganova will use its in-line inspection technology to identify leaks and assess pipeline conditions, aiding in infrastructure management. Partnering with local company ONFLOW I.K.E., Aganova aims to enhance pipeline inspection capabilities in Greece and support utilities in making informed maintenance decisions.

Singapore Commits Further $135 Million to Advance Coastal Protection and Flood Resilience Research

Singapore has allocated an additional $135 million for coastal protection and flood resilience research, part of the Research, Innovation and Enterprise 2030 (RIE2030) plan. This funding aims to develop infrastructure to combat rising sea levels and increased rainfall, building on the $125 million awarded in 2023 for the Coastal Protection and Flood Management Research Programme. The initiative will focus on construction efficiency, the design of tidal gates and pumping stations, and digital monitoring for operations and maintenance. Research grants will begin in 2027, supporting 27 projects aimed at enhancing coastal resilience and collaboration between researchers and industry partners.





Global Water Events

FiltXPO 2026

Date: 28 & 29 October 2026
Location: Minneapolis , Minnesota

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Website: filtxpo.com

Aquatech China

Date: From 28 to 30 October 2026
Location: China



China is making monumental investments in this sector, recognizing the critical need to address water shortages in its cities.
With a mandate for cities to reclaim 25% of used water, the commitment is clear. This drive is further evidenced by the planned construction of 100 new sewage treatment plants.

Website: aquatechtrade.com/shanghai

Aquatech Asia

Date: From 25 to 27 November 2026
Location: Bangkok



The most recent addition to the well-known Aquatech portfolio is Aquatech Asia, which will be present at flagship trade shows in China, Mexico, and Amsterdam. Southeast Asian water experts, innovators, and decision-makers will come together at Aquatech Asia.

Website: aquatechtrade.com/asia

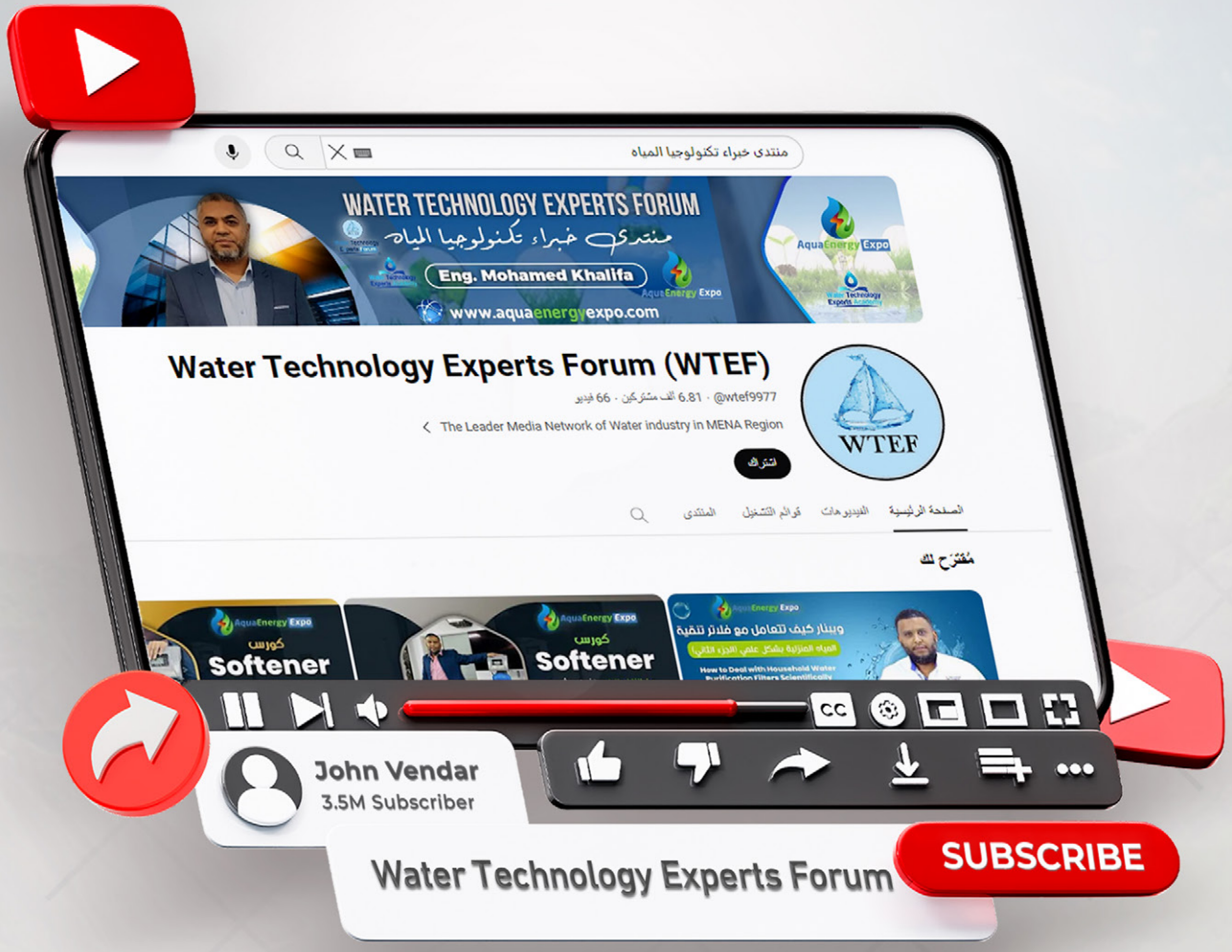
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Treating Water Pollution at Its Source: A New Approach to Cleaner Waterways

Conventional drinking water and wastewater treatment plants play an essential role in protecting public health and maintaining water quality. Yet their effectiveness has limits when untreated sewage enters rivers, polluted runoff reaches lakes, or sudden contamination exceeds existing treatment capacity. Once pollutants enter natural waterways, they can spread downstream, threaten aquatic ecosystems, and create additional challenges for communities that depend on these resources.

Addressing pollution before it travels farther through the environment offers another approach. In situ treatment, which targets contamination directly within a water body, is gaining attention as a potential complement to conventional infrastructure. Among the emerging options is nanobubble ozone technology, which combines the oxidizing properties of ozone with the distinctive behavior of extremely small gas bubbles.

| Understanding Nanobubble Ozone Technology

Nanobubbles are extremely small gas-filled bubbles, generally less than 200 nanometers in diameter. Their small size and high surface-area-to-volume ratio can support gas transfer and allow them to remain dispersed in water longer than conventional bubbles under certain conditions. These characteristics make them promising for applications that require sustained contact between gases and waterborne contaminants.

When ozone is introduced through this approach, it can participate in oxidation reactions that damage microorganisms and transform certain pollutants.

Ozone is already used in water treatment because of its strong oxidizing properties, while nanobubble delivery offers another way to distribute the gas within the water column.

The potential advantage lies in bringing treatment closer to the contamination itself. Mobile or strategically positioned systems may allow polluted water to be treated directly within affected waterways rather than relying exclusively on centralized facilities downstream. However, performance depends on water chemistry, pollutant concentrations, ozone dosage, and contact time. The technology is therefore best considered an additional treatment option, not a universal solution.

| Tackling Harmful Algal Blooms

Bacterial contamination is only one challenge facing natural water bodies. Harmful algal blooms can threaten ecosystems, recreational activities, and drinking water supplies. Certain cyanobacteria produce toxins, including microcystins, while dense blooms can cause unpleasant tastes and odors, contribute to oxygen depletion, and increase the complexity of water treatment.

Nanobubble-based treatment may offer another tool for managing these problems. Introducing ozone into affected water can potentially damage algal cells and help transform selected contaminants. Lakes and reservoirs are particularly relevant settings because recurring blooms can affect water quality and create additional demands on downstream treatment facilities.



However, controlling algal growth and removing algal toxins are not necessarily the same task. When cells are damaged, substances contained within them may be released into the surrounding water. Research into reactive nanobubbles has demonstrated promising effects on algal cells, but the degradation of certain cyanotoxins remains a technical challenge. Treatment must therefore be evaluated according to the organisms and toxins present, with appropriate monitoring and follow-up processes.

| Supporting Drinking Water Treatment

Reservoirs and other surface-water sources can experience seasonal changes in water quality that place additional pressure on drinking water treatment plants. When algae proliferate near an intake, operators may face greater difficulty controlling taste, odor, and toxin-related problemswhile maintaining consistent treatment performance.



Treating affected source water before it reaches the intake could provide an additional layer of protection. Strategically positioned systems may help reduce algal concentrations or selected contaminants entering a conventional plant, potentially easing the burden on downstream treatment processes.

This approach should be understood as pretreatment rather than a substitute for drinking water treatment. Raw water quality varies, and no single intervention can be assumed to remove every contaminant. Reliable monitoring, appropriate treatment combinations, and verification of finished-water quality remain necessary to ensure that improvements in source water translate into meaningful public health benefits.

| Extending Protection Beyond Treatment Plants

Another potential application involves polluted discharges that reach rivers and streams before receiving adequate treatment. Combined sewer overflows, for example, can release mixtures of

stormwater and untreated or partially treated sewage when flows exceed system capacity. These events can introduce pathogens and other pollutants into receiving waters.

Treating contaminated flows near discharge points could help reduce the microbial burden entering natural waterways. Similar approaches may be considered where industrial wastewater requires additional treatment before discharge, provided that the process is suitable for the specific contaminants and meets applicable requirements. Targeted treatment may be particularly useful where infrastructure upgrades require substantial investment or cannot be completed immediately.

It could provide an additional protective measure while longer-term improvements are developed. Nevertheless, its effectiveness must be established through site-specific testing, and it cannot replace the need to control pollution at its source or expand inadequate wastewater infrastructure.



| Environmental Performance and Practical Limitations

The environmental benefits of ozone nanobubble treatment depend on more than its ability to reduce selected pollutants. Ozone reacts with substances in water, and the resulting chemical changes vary with water composition and operating conditions. Treatment intensity, contact time, and the presence of other organic and inorganic compounds all influence performance.

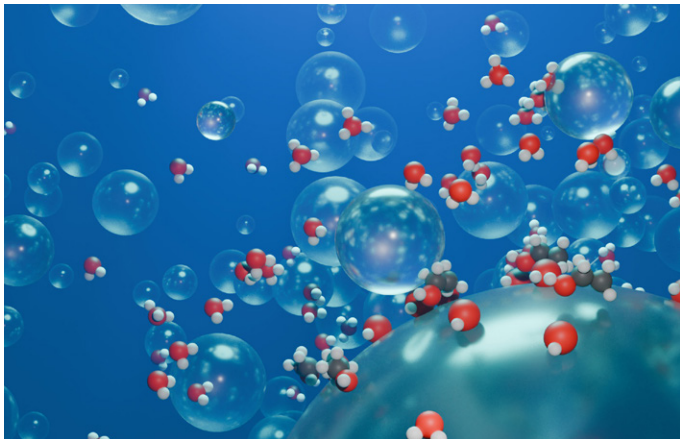
Potential ecological effects must therefore be assessed alongside treatment benefits. Water managers need to consider impacts on non-target organisms, changes in dissolved oxygen, the formation of oxidation by-products, and the fate of algal toxins or transformed contaminants.

Improvements in one water-quality indicator do not automatically establish that an entire ecosystem has recovered. Scaling up presents further challenges. A pilot system treating a limited section of a river may not provide sufficient treatment for the full flow. Larger applications require careful consideration of flow rates, pollutant loads, equipment capacity, operating time, energy requirements, maintenance, and continuous monitoring. Economic feasibility must also be evaluated against local conditions and alternative treatment or infrastructure investments.

| A New Layer of Water Protection

Nanobubble ozone technology illustrates how treatment strategies can extend beyond the boundaries of conventional plants. By targeting contamination within rivers, lakes, reservoirs, or selected discharge points, it may help address problems that centralized infrastructure cannot always prevent on its own. Its greatest potential lies not in replacing established treatment systems, but in adding flexibility to broader water-quality management. The Tijuana River pilot provides encouraging evidence of bacterial reduction under real-world conditions, while research into harmful algal blooms highlights both new opportunities and unresolved questions.

Ultimately, protecting water resources requires a combination of pollution prevention, effective wastewater infrastructure, continuous monitoring, and treatment methods suited to local needs. In this broader framework, treating pollution closer to where it enters the environment could become a valuable additional step toward healthier waterways and more resilient water supplies.



| Case Study: Testing Treatment in the Tijuana River

A field demonstration on the Tijuana River illustrates both the potential of in situ treatment and the challenges of applying it under real-world conditions. The river receives substantial sewage pollution before crossing the United States–Mexico border and continuing toward the Pacific Ocean. The resulting contamination has contributed to serious water-quality concerns and prolonged beach closures in the surrounding region.

Conducted between September 9 and October 14, 2025, the pilot project deployed four mobile ozone nanobubble treatment units directly within the river channel. The objective was to determine whether microbial contamination could be reduced near the point where polluted flows entered the United States, rather than relying solely on treatment farther downstream.

The official project report recorded a cumulative reduction of 91.5% in total coliform bacteria and 83.8% in E. coli in samples collected approximately five yards downstream of the treatment area. Samples collected farther downstream, approximately 250 yards away, showed reductions of 82.4% in total coliforms and 89.3% in E. coli. These figures represent results from different sampling locations and should not be treated as interchangeable measurements.

The project also revealed practical limitations. River debris and changing flow patterns affected operations, leading to a preference for daytime treatment rather than continuous operation. The demonstration did not establish that the entire river had been remediated or that all water-quality requirements could be met at full scale. Instead, it provided evidence that targeted treatment could reduce bacterial contamination under challenging conditions while highlighting the engineering work needed for wider deployment.







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AI for Water Operators:

Smarter Systems, Empowering People and Stronger Workforces

Artificial intelligence (AI) is becoming an increasingly important part of water and wastewater management. From identifying leaks to predicting equipment failures, it offers utilities new ways to improve efficiency, manage operational challenges and make better use of available data. Yet its growing role raises a critical question: how can the water sector embrace intelligent automation without compromising safety, professional judgment or human expertise?

The answer is not to replace operators with machines, but to build systems that help people work more effectively. Achieving this requires a balanced approach that combines technological innovation with clear responsibilities, appropriate safeguards and investment in workforce development.

Beyond Automation: Empowering the Workforce

Water utilities face mounting operational pressures, aging infrastructure and difficulties maintaining an experienced workforce. As skilled employees leave the sector, they take valuable practical knowledge with them, making it harder for newer staff to manage complex situations independently.

AI can help address these challenges by analyzing operational data, identifying unusual patterns and supporting predictive maintenance. It can also simplify access to technical documents and historical records, helping employees find relevant information more quickly.



These capabilities can reduce time spent on repetitive tasks and allow operators to focus on troubleshooting, planning and decisions that require practical experience. The objective, however, should be to strengthen workforce capabilities rather than treat automation primarily as a way to eliminate jobs.

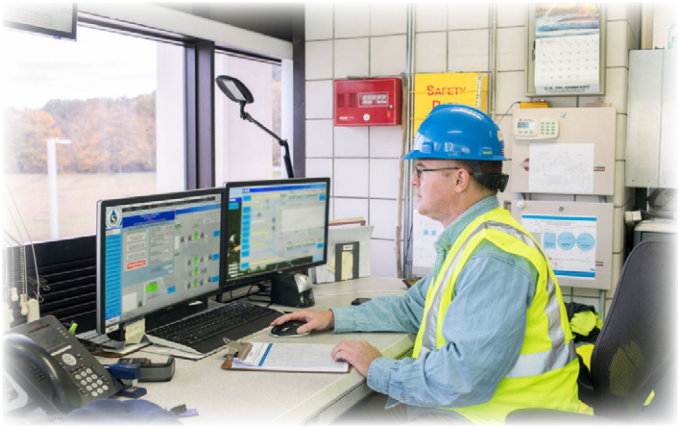
When introduced thoughtfully, AI can help preserve institutional knowledge and support the development of less-experienced employees. Its value lies in complementing human expertise, not assuming that technical predictions can replace professional understanding.

Keeping Human Judgment at the Controls

» Different Tasks, Different Risks

Not all operational decisions carry the same level of risk. Using AI to organize maintenance records is fundamentally different from allowing an automated system to change pump settings or adjust chemical dosing without appropriate oversight. An incorrect prediction may lead to unnecessary maintenance or wasted resources.

In more critical situations, an inappropriate action could affect treatment performance, equipment reliability or public health. AI systems can also produce misleading recommendations when data is incomplete, sensor readings are inaccurate or operating conditions change unexpectedly.



» Establishing Clear Boundaries

Utilities need to distinguish between AI-generated recommendations and authorized operational actions. Decisions with significant safety implications should remain subject to review and approval by qualified personnel, supported by documented procedures and appropriate safeguards.

The level of automation should reflect the consequences of failure. Lower-risk tasks may offer opportunities for greater automation, while safety-critical activities require stronger controls and meaningful human supervision. This approach allows utilities to benefit from AI without surrendering responsibility for the services they provide.

Responsible Adoption Starts with Governance

» Clear Rules and Accountability

Effective AI implementation requires more than choosing a capable system. Utilities need clear rules governing how the technology is used, what information it can access, which decisions require human approval and who remains accountable when something goes wrong.

Without these safeguards, different teams may adopt inconsistent practices, overlook security risks or rely on recommendations that cannot be adequately evaluated. Shared governance principles can help establish consistent expectations and make AI-supported decisions easier to review.

» Data Quality and Transparency

Reliable data is essential to meaningful AI outputs. Incomplete records, inconsistent measurements and disconnected information systems can undermine the reliability of AI-generated insights. Utilities should therefore assess their data before deployment and continue validating system outputs against operational evidence.

Transparency also helps build confidence. Operators need to understand the purpose of an AI recommendation and recognize its limitations rather than accept its conclusions automatically.

Maintaining records of important recommendations, approvals and resulting actions can support accountability and help utilities investigate errors. Governance should not prevent innovation. It should provide the safeguards that make responsible experimentation and wider adoption possible.

Preparing Operators for a Changing Role

» Developing New Skills

As AI becomes more integrated into utility operations, employees will need skills that extend beyond traditional technical knowledge. They may increasingly be expected to interpret automated alerts, assess predictions, identify unreliable outputs & determine when a situation requires intervention. Training should therefore be part of implementation from the beginning. Operators need to understand how AI systems work at a practical level, how data quality influences their results and why an apparently convincing recommendation may still be wrong.

» Preserving Practical Experience

Experienced employees should participate in selecting, testing and evaluating new applications. Their knowledge of treatment processes, equipment behavior and real operating conditions can



reveal weaknesses that automated analysis alone may miss. Utilities can also use AI to make established procedures and technical knowledge easier for employees to access.

When combined with reliable documentation and expert review, this can support knowledge transfer between experienced operators and newer staff. The goal is not simply to teach employees how to use new tools. It is to prepare them to supervise those tools, question their outputs and remain responsible for sound operational decisions.



Making Progress Across Utilities of Every Size

» Addressing Unequal Resources

The benefits of AI should not be restricted to utilities with extensive budgets, advanced digital infrastructure or dedicated data specialists. Smaller service providers may face additional barriers, including limited staffing, aging systems, fragmented records and fewer opportunities for specialized training.

These differences can create an uneven transition, with well-resourced utilities advancing while others struggle to establish the foundations needed for responsible adoption.

» Collaboration and Shared Learning

Collaboration can help reduce this gap. Shared training resources, practical implementation guidance and opportunities to exchange operational experience can make AI adoption more accessible. Common governance principles can also help utilities develop consistent approaches to safety, data protection and accountability.

However, successful implementation will not look identical everywhere. Each utility must consider its operational priorities, available resources, infrastructure and workforce capabilities before deciding which applications are appropriate.

Building readiness may be more important than rushing to deploy sophisticated systems. Reliable data, capable employees and clear procedures provide a stronger foundation for long-term progress than technology investment alone.

From Pilot Projects to Proven Value

» Start with Measurable Objectives

Trust in AI must be earned through practical results, not promises of transformation. Utilities need to demonstrate that specific applications address real operational problems and deliver measurable benefits without introducing unacceptable risks. A sensible starting point is to test clearly defined, relatively low-risk applications, such as identifying unusual consumption patterns, prioritizing maintenance inspections or organizing technical records. Before a trial begins, utilities should establish suitable performance measures, which might include alert accuracy, response times, staff workload or maintenance efficiency.



» Learn from Successes and Failures

Evaluation should consider limitations as carefully as successes. Incorrect predictions, unexpected behavior and difficulties encountered by operators can reveal where systems need improvement. Sharing lessons from unsuccessful trials can help other utilities avoid similar problems and make more informed decisions.

Clear communication is equally important. Employees, customers and regulators should understand where AI is being used, what safeguards are in place and how human responsibility is maintained.

Gradual adoption, supported by evidence and honest evaluation, allows utilities to expand promising applications while remaining alert to their limitations. It also helps build the organizational confidence needed for more complex uses.

A Human-Centred Future for Water

AI offers the water sector valuable opportunities to improve operational efficiency, strengthen maintenance planning and preserve knowledge that might otherwise be lost. However, these benefits depend on more than technical performance. They require reliable data, responsible governance, trained employees and safeguards appropriate to the risks involved.

Utilities that place people at the center of implementation can pursue innovation without weakening professional accountability. By combining intelligent systems with human judgment, investing in workforce capabilities, and learning from practical experience, the sector can use technology better while protecting the reliability of essential services.

Ultimately, progress should not be measured by how many decisions machines can make independently. It should be measured by how effectively AI helps water professionals deliver safer, smarter and more resilient operations.





Thirsty AI:
How Data Centers Create New Opportunities in Water Innovation

Artificial intelligence is transforming industries, accelerating research, and reshaping everyday life. Behind these digital advances lies a rapidly expanding network of data centers that require electricity, generate heat, and depend on reliable cooling systems. As computing workloads become more demanding, managing the water associated with this infrastructure is emerging as an important environmental and engineering challenge.

Yet the issue extends beyond how much water a facility consumes. It also concerns where that water comes from, how efficiently it is used, and how cooling systems can operate reliably with fewer resources. These challenges are creating opportunities for innovation across water treatment, fluid management, cooling infrastructure, and resource recovery.

Understanding the Full Water Footprint

Direct and Indirect Water Consumption

The water footprint of a data center includes both direct consumption and water associated with electricity generation. Some facilities use evaporative cooling, which removes heat by allowing water to evaporate.

Although effective under suitable conditions, this process consumes water that is not immediately returned to the local supply. Electricity production can add another layer of water demand, meaning that the overall footprint depends partly on the energy sources powering the facility. Consequently, reducing water use inside a data center does not necessarily eliminate the water associated with its operation.

The Local Water Challenge

The challenge is particularly significant when data centers are concentrated in water-stressed regions. Even if their share of national water consumption remains relatively small, their local demand can compete with households, agriculture, and other industries.

Water availability, seasonal shortages, infrastructure capacity, and community concerns can influence where new facilities are built and whether they can expand. Understanding these local conditions is essential to developing practical solutions rather than relying on national averages or a single measure of water efficiency.



Rethinking Cooling from the Inside Out

New Approaches to Heat Removal

Cooling is one of the most important areas for water innovation, but it involves two connected systems. The first removes heat from computing equipment, while the second carries it away from the facility. The amount of water ultimately consumed depends largely on how the facility rejects heat into the surrounding environment.

Traditional air-cooling moves air through servers, while direct-to-chip liquid cooling circulates coolant through cold plates attached to processors. Immersion cooling uses specialized dielectric fluids to remove heat from computing equipment. Once the heat has been collected, cooling towers, adiabatic systems, dry coolers, or chillers may be used to release it.



Balancing Water and Energy Efficiency

Direct-to-chip cooling can remove heat more effectively from processors, allowing some facilities to operate with warmer cooling loops. Under suitable climatic conditions, this can make dry cooling practical for more hours and reduce dependence on evaporative systems.

However, liquid cooling does not automatically eliminate water consumption. The final outcome depends on the complete cooling architecture, local climate, and operating conditions. The greatest opportunities emerge when computing equipment and facility cooling are designed together, balancing water conservation, energy efficiency, and operational reliability.

Making Every Drop Work Harder

Optimizing Cooling Tower Operations

Innovation does not always require an entirely new technology. Existing cooling systems can sometimes reduce water consumption through better operation, improved filtration, and more precise control of water chemistry. Cooling towers, for example, lose water through evaporation and through periodic discharge, known as blowdown, which removes concentrated dissolved substances from circulating water.

Increasing cycles of concentration allows water to circulate longer before some of it must be discharged. However, this also concentrates salts and other dissolved materials, potentially increasing scaling, corrosion, and biological growth. Higher concentration therefore requires suitable treatment, reliable filtration, and careful monitoring.

Monitoring and Preventing Water Losses

Automated monitoring can help operators track changing water conditions and identify problems before they disrupt operations. By combining established treatment methods with better measurement and maintenance, facilities may reduce unnecessary water losses while preserving cooling performance.

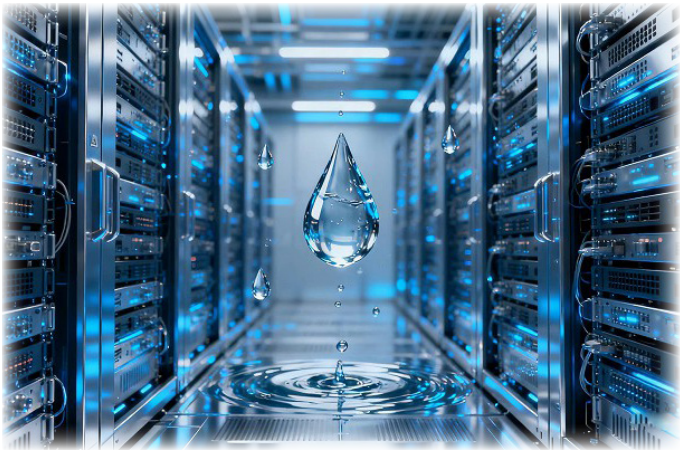
This creates opportunities for improvements in filtration, chemical management, sensing, and integrated system monitoring. Rather than relying entirely on new technologies, facilities can improve efficiency by identifying where water is lost, where treatment is insufficient, and where operating conditions can be adjusted without compromising equipment reliability.

Why Coolant Quality Is Becoming Critical

Protecting the Cooling Loop

As liquid cooling moves closer to processors, the fluid circulating through the system becomes more than a means of transferring heat. Its condition can directly affect equipment performance and operational reliability. Small particles may obstruct narrow cooling channels, while corrosion, changes in fluid chemistry, biological contamination, and leaks can compromise system performance. These challenges create opportunities for innovation inside the cooling loop.

Filtration must be suited to the equipment, while sensors and monitoring systems can help detect changes in fluid condition. Maintenance practices may also need to shift from occasional servicing toward continuous assessment of the cooling circuit.



From Fluid Management to System Reliability

The objective is not simply to introduce a more efficient filter or a different coolant. It is to ensure that the entire system maintains the required fluid quality and heat-transfer performance throughout operation.

This integrated approach becomes increasingly important as cooling architectures evolve and computing equipment operates at higher thermal loads. Water and fluid management are therefore becoming closely connected to the reliability of digital infrastructure, creating opportunities for better monitoring, treatment, and preventive maintenance.

Reclaimed Water and Alternative Sources

Reusing Treated Wastewater

Replacing freshwater with reclaimed wastewater is a promising way to reduce pressure on drinking-water supplies. Treated municipal effluent can support non-potable industrial applications, including cooling, provided that its quality meets the system's requirements.



Depending on the source and intended use, additional treatment may involve filtration, membrane processes, or reverse osmosis to control dissolved substances and other contaminants. However, technical feasibility alone does not guarantee successful implementation. Facilities need a dependable supply, appropriate treatment capacity, distribution pipelines, and the necessary permits and coordination with local utilities. Transporting reclaimed water to a data center can be difficult or expensive when the required infrastructure is unavailable.



Exploring Industrial Water Sources

Industrial wastewater, including water produced during oil and gas operations, may offer additional opportunities where suitable supplies are available. Its composition can vary considerably, requiring careful assessment of salinity, dissolved substances, storage conditions, and material compatibility. Alternative sources must therefore be evaluated individually.

Reclaimed water is not an unlimited substitute for freshwater, and increasing demand may create competition with other users. Its greatest value lies in carefully planned projects where water quality, location, infrastructure, and long-term supply can be aligned.

Turning Waste Heat into a Water Resource

Recovering Useful Thermal Energy

The heat generated by computing equipment is usually treated as something that must be removed. Yet under appropriate conditions, it may also serve as a useful energy source. Heat recovery systems can transfer thermal energy to other processes, potentially including water purification methods that use heat to separate water from dissolved substances. This possibility creates an opportunity to connect digital infrastructure with water-treatment operations. Rather than allowing all recoverable heat to dissipate, a facility could potentially supply thermal energy to a nearby process designed to make use of it. Such integration could support more circular resource management by linking computing, energy recovery, and water production.

Assessing Practical Feasibility

The practical benefits depend on the temperature and availability of the recovered heat, the purification process, and the energy required by supporting equipment. The location of potential water users and the costs of integrating the systems also matter. Heat-driven water treatment should therefore be viewed as an emerging opportunity rather than a universal solution. Its value will depend on whether a particular facility can provide useful heat under conditions that make additional water production technically and economically worthwhile.

Designing for Water Efficiency and Reliability

Measuring Performance Beyond a Single Indicator

Water innovation requires more than selecting individual technologies. Facilities need to consider their water sources, local scarcity, electricity supply, cooling architecture, and operational requirements together. Water Usage Effectiveness (WUE) can helpmeasure water consumption relative to the energy used by information technology

equipment, but no single indicator captures every environmental impact. A system that reduces on-site water consumption may increase electricity demand, shifting part of its water footprint to power generation. Similarly, alternative water supplies may require additional treatment or transportation. Evaluating these trade-offs helps prevent improvements in one area from creating greater burdens elsewhere.

Planning Infrastructure from the Beginning

Planning for water availability and infrastructure at the earliest design stages can improve long-term resilience. Reliable supply arrangements, suitable treatment, monitoring, and maintenance are essential when facilities depend on reclaimed or unconventional water sources.

Integrating these considerations into cooling-system design can help operators pursue water savings without overlooking equipment reliability or the needs of surrounding communities. It can also help identify whether local water supplies, treatment facilities, and distribution networks can support the demands of a new data center before construction begins.

Conclusion | From AI's Water Demand to Water Innovation

The expansion of artificial intelligence presents a growing challenge for water management, but it also creates opportunities to improve how water and heat are handled throughout digital infrastructure. More efficient cooling, advanced filtration, fluid-condition monitoring, reclaimed water, and heat recovery offer different ways to reduce resource pressures and improve operational performance.

The most effective solutions will not necessarily be the newest or most complex. They will be those that match local water availability, climate, infrastructure, and technical requirements while balancing water use against energy consumption and reliability. As data centers evolve, the opportunity for the water sector is to move beyond supplying a growing industry and help redesign how its resources are managed. In this way, AI's expanding demand could become a catalyst for smarter cooling, more circular water use, and a more resilient relationship between digital growth and water security.



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ADNOC Signs Agreement with Gulf Group to Supply Up to 2 Million Tonnes of LNG to Thailand

ADNOC has signed a multi-year Sales and Purchase Agreement (SPA) with Gulf Group to supply approximately 2 million tonnes of liquefied natural gas (LNG) to Asia starting in 2027. This agreement, facilitated by ADNOC's LNG marketing and trading platform, reinforces its commitment to reliable energy supplies in Thailand and Asia. It builds on a prior partnership established in 2025 and enhances ADNOC's global LNG capabilities. Gulf Group aims to diversify its LNG portfolio, ensuring flexibility and resilience in meeting growing energy demands while supporting the region's energy transition. ADNOC Trading is positioned as a key player in the global LNG market.

SunPower Breaks Ground on Reno AI Data Center



SunPower Inc. has initiated construction on a solar power system for a new AI data center in Reno, Nevada. John Paul Bergh, EVP of Cobalt Power Systems, highlighted the project's complexity as a valuable learning opportunity, marking the first phase of the data center's development. T.J. Rodgers, CEO of SunPower, noted the average residential solar installation cost is around $32,000, while high-tech installations in Silicon Valley average $44,000, with some commercial projects exceeding $1 million. This project aligns with SunPower's goal to enhance its commercial system capabilities, especially for projects with stringent performance specifications.

Iberdrola Distributed Nearly 207,000 GWh of Electricity, up 5.8%, Driven by the United Kingdom

In the first nine months of 2026, distributed electricity in the UK increased by 22.8%, driven by higher demand and the integration of Electricity North West. Globally, Iberdrola's distributed electricity rose by 5.8% to 206,947 GWh, with notable growth in Spain (4.8%) and Brazil (6.9%) during the third quarter. Overall production reached 90,560 GWh, up 3%, with an 8.2% increase in Q3. Generation capacity grew to 57,205 MW, an increase of 2,352 MW, largely due to offshore wind (16% growth) and solar (12.2% growth), with significant capacity additions noted in the US, Australia, and Germany.



SUEZ Strengthens Its Hazardous and Non-hazardous Waste Treatment Activities in the West of France

SUEZ has received authorization to extend and expand its SEDA facility in Chenillé-Champteussé, which manages both hazardous and non-hazardous waste with a treatment capacity of 200,000 tonnes per year. This eco-park plays a crucial role in waste management for municipalities and industries in Western France, producing nearly 12 GWh of renewable electricity annually. The facility includes landfill operations, hazardous waste treatment, contaminated soil recovery, and a photovoltaic power plant. The recent expansion will increase waste-treatment capacity and renewable energy generation, supporting the region's environmental transition while meeting stringent regulations and addressing public health concerns.

Envision Energy Named to Fortune's 2026 Change the World List for Advancing AI and Green Energy Convergence



Envision Energy has been recognized on Fortune's 2026 Change the World list for the third time, celebrated for its Mission Gobi initiative and the Envision Galaxy Campus project. This recognition highlights Envision's innovative approach to integrating energy and computing infrastructure in the AI era. Mission Gobi aims to develop 5GW of green AI computing capacity in desert regions by 2030, utilizing abundant wind and solar resources. The Envision Galaxy Campus in Inner Mongolia will support over 2GW of computing capacity, showcasing how previously energy-constrained areas can become hubs of renewable energy. Envision's journey reflects its commitment to advancing the intersection of AI and green energy.

First Solar Files Patent Infringement Lawsuit Against JA Solar & American Panel Solutions

First Solar, Inc. has filed a lawsuit against JA Solar and American Panel Solutions (AMPS) for allegedly infringing its US Patent No. 9,130,074, which pertains to manufacturing methods for Tunnel Oxide Passivated Contact (TOPCon) crystalline silicon photovoltaic solar cells. The lawsuit was submitted to the United States District Court for the District of Delaware. First Solar emphasizes its commitment to defending its intellectual property rights and holding JA Solar and AMPS accountable for unauthorized use of its technology. The patent portfolio, acquired through First Solar's purchase of TetraSun in 2013, includes patents valid in multiple countries, extending to 2030 and beyond.





Global Energy Events

Battery Asset Management Summit Europe 2026

Date: 2 & 3 December 2026
Location: Hotel nhow Roma, Italy



Europe saw unprecedented growth in energy storage last year, with a record-breaking 12GW installed, and Battery Energy Storage Systems (BESS) continued to dominate this expansion. What continued to set this summit apart was the strength of its community. Through technical workshops & structured networking, stakeholders came together not only to learn but also to work through the real operational challenges shaping Europe's storage landscape.

Website: batteryeurope.solarenergyevents.com

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