

# Water Treatment Solutions

Bringing the right products and people to your industrial operation



For more than 100 years, water-intensive industrial operations have relied on Solenis to provide innovative solutions for water treatment and process enhancement. We help overcome complex challenges by delivering innovative technologies that improve operational efficiencies, reduce water and energy use, protect plant assets and minimize environmental impact. We implement and support these solutions through one of the industry's largest and most experienced teams of field representatives, who work side-by-side with your plant personnel to design a total-system approach tailored to your specific needs.

## Water Treatment Solutions

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Excellent water treatment not only protects the assets of industrial operations but it also ensures optimal operational efficiency. Untreated or improperly treated water can lead to a host of problems, including reduced production, increased water and energy consumption, higher maintenance costs and decreased equipment life, all of which cut directly into profitability. If your plant is facing similar challenges, Solenis can help you protect your productivity, profits and assets.

The foundation of Solenis is our team of field representatives, who work with your plant personnel to understand the requirements of your systems and then use that information to design specific solutions. Each member of our field team enjoys the support of state-of-the-art water analytical laboratories, the largest and most experienced group of applications experts in the industry, and a company dedicated to advancing water

treatment for water-intensive industrial operations through innovative chemical and equipment technologies.

Solenis' water-treatment solutions start at the influent water and carry through to the wastewater, supporting every aspect of your operations and enhancing your plant's efficiency, reliability and profitability. We offer a complete portfolio of chemistries and an advanced suite of monitoring and control devices, known as OnGuard™, for:

- Raw water treatment
- Reverse osmosis membrane treatment
- Boiler water treatment
- Cooling water treatment
- Wastewater treatment and sludge dewatering

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## Raw Water

Solenis treats the influent water as part of an integrated system. Our specialized team addresses all the variables affecting the quality of your water, including:

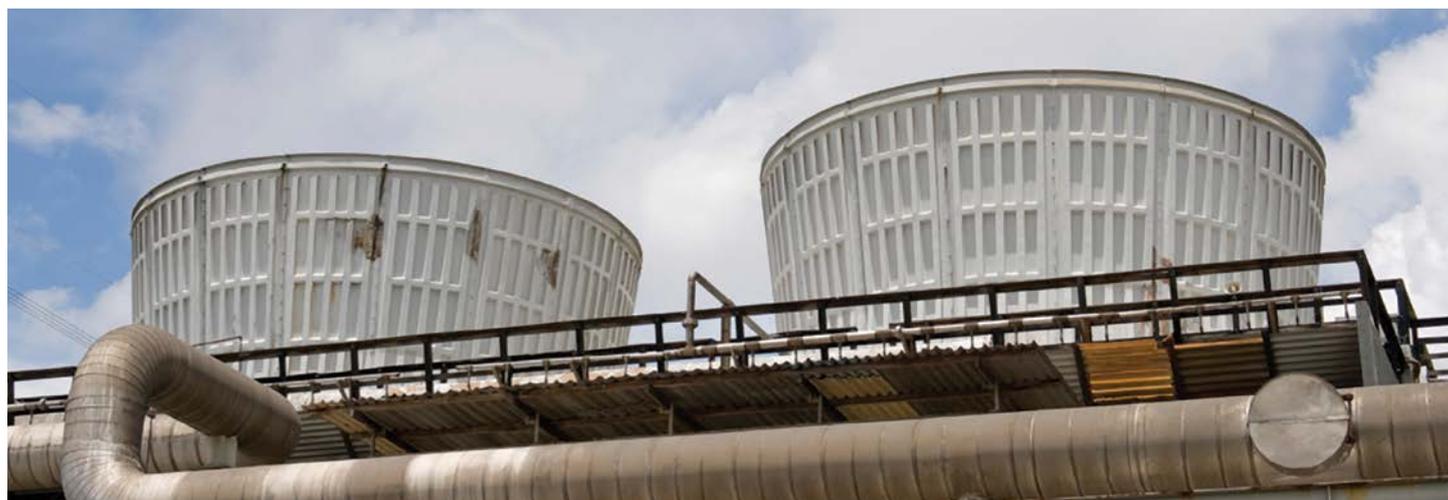
- Water temperature, pH, alkalinity, turbidity, color and microbiological activity
- Variations in water flow versus design limitations and demand
- Downstream user requirements such as filtration, demineralization or reverse osmosis for cooling or boiler water
- Regulatory requirements

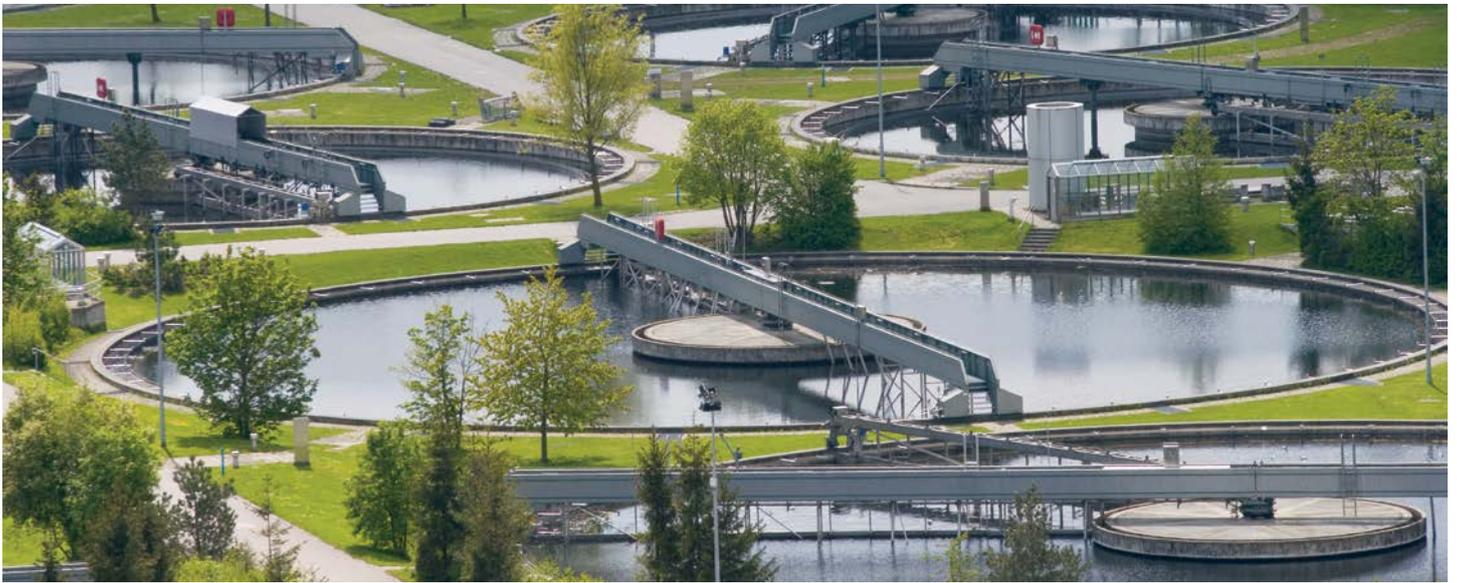
Our solutions combine a comprehensive portfolio of advanced microbiological control chemistries, organic and inorganic coagulants and flocculants, and state-of-the-art monitoring and control systems to minimize raw-water variations and improve water clarity.

## Cooling Water

Solenis offers a variety of innovative programs to help industrial operations conserve water and maintain the reliability and performance of open recirculating, closed and once-through cooling water systems. We'll help you prevent corrosion, scale and microbiological growth problems that lead to flow restrictions, unscheduled outages, high maintenance costs and reduced operating efficiency. Our program offerings include:

- Microbiological control treatments that significantly reduce microbial activity and biofilm growth, ensuring optimal cooling efficiency
- Corrosion control treatments that prevent corrosion damage, improving system reliability and extending asset life
- Scale control treatments that address the formation of virtually any type of scale, reducing energy and maintenance costs
- Proprietary monitoring and control systems that provide performance-based control of biofilm, corrosion and scale





## Boiler Water

Solenis has decades of experience working with boiler water systems and can provide comprehensive solutions to head off the threats to your boiler that not only affect productivity but also jeopardize the integrity of your equipment.

Solenis' comprehensive portfolio of products for boiler systems includes:

- Boiler water deposit and corrosion control treatments
- Reverse osmosis membrane treatments
- Steam and condensate system corrosion control treatments
- Rigorous auditing programs, including boiler system audits
- OnGuard feed and control systems, including automated congruent phosphate control
- Boiler leak detection system

Industrial operations around the world rely on these best-in-class solutions to extend asset life, improve operational efficiency, conserve water and energy, reduce downtime and protect the health and safety of their workers.

## Wastewater and Sludge Dewatering

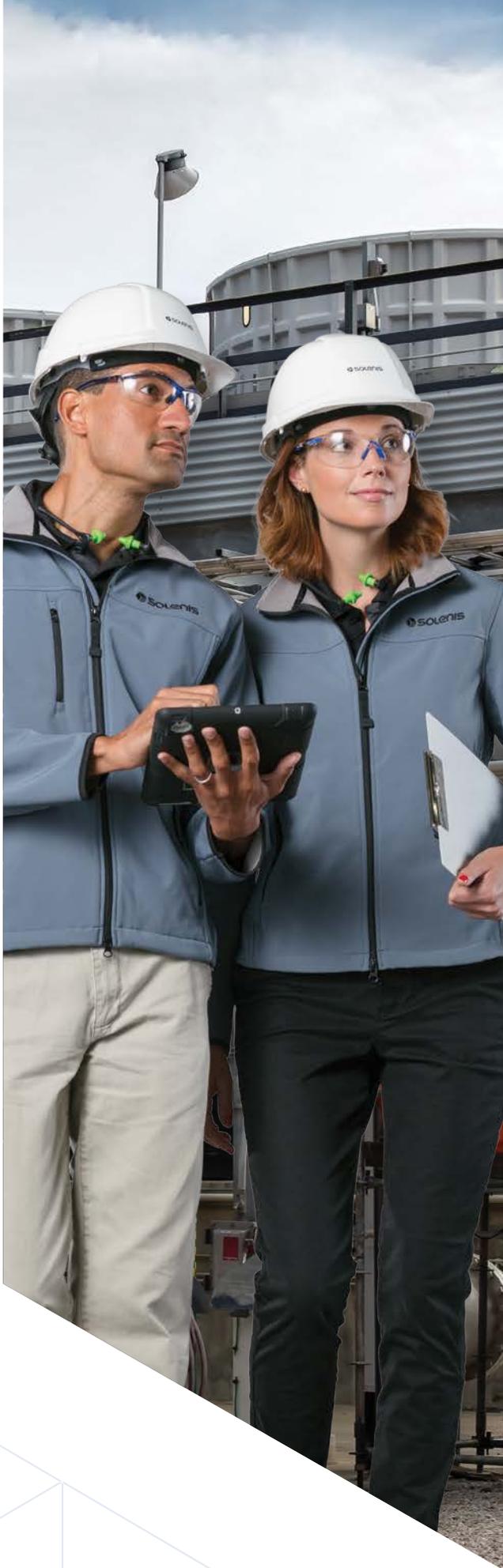
Whether your goal is to remove pollutants, minimize sludge handling and disposal costs, recycle effluent or improve wastewater quality, Solenis offers cost-effective solutions for your plant. Our solutions include:

- Coagulants and flocculants designed to produce clear water and concentrated solids in clarifiers, thickeners and flotation units
- Flocculants to maximize cake solids, reducing incineration or hauling costs
- Bioaugmentation technology for enhanced biological oxygen demand (BOD) and chemical oxygen demand (COD) removal in activated sludge systems and aerated lagoons
- Antifoams and defoamers for process optimization
- Odor control chemicals and distribution equipment
- Data acquisition and statistical tools for system monitoring and control
- Dilution and feeding systems for liquid, emulsion and dry products

Armed with these products and a complete understanding of your process, our experienced applications engineers will help diagnose problems and design solutions that deliver superior environmental and operational performance for your system.

## ClearPoint<sup>SM</sup> Biofilm Detection & Control

*Solenis' ClearPoint program is a one-of-a-kind microbiological control solution for industrial water systems. The program brings together a new-to-the-world monitoring device, advanced chemistry and expert service to provide a comprehensive safeguard against microbiological activity and biofilm. The monitoring device employs a patented ultrasonic sensor to detect biofilm growth earlier than any other commercially available technology, allowing corrective action to be taken before biofilm causes heat transfer loss or equipment damage.*



## Advanced problem-solving for your toughest challenges.

Solenis is a global leader in specialty chemicals for water-intensive industries. With an average of 20 years expertise, our team is the industry's most knowledgeable. That's how we solve your toughest challenges—whether you're in the pulp, paper, oil and gas, petroleum refining, chemical processing, mining, biorefining, power and municipal market. Combining the right people, the right experience and the right technology, we're built to deliver value.



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