

WATER TREATMENT TECHNOLOGY

**Bringing the right products and people
to your papermaking**



For decades, the pulp and paper industry has relied on Solenis to provide solutions for its process and water treatment needs. We help overcome complex challenges by delivering innovative technologies that improve operational efficiencies, enhance product quality, 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 an approach tailored to your needs.

Technology Overview

Excellent water treatment not only protects the assets of pulp and paper mills — it also ensures the quality of their final product. Water-treatment problems can lead to fouling, equipment losses and reduced product quality, all of which cuts directly into profitability. If your mill is facing similar challenges, Solenis can help — protect your assets, your product and your profits.

The foundation of Solenis is our team of dedicated field specialists, 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 pulp and mills by introducing new technologies to the market.

Solenis' water-treatment solutions start at the influent water system and carry through to the waste-treatment area, supporting every aspect of your operations and enhancing your mill's reliability, efficiency and profitability. We offer chemicals and a complete family of monitoring and control equipment — known as OnGuard™ — for:

- Influent water
- Reverse osmosis
- Feedwater, boiler and condensate
- Cooling water
- Effluent water and sludge dewatering

Influent 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:

- Influent water temperature, pH, alkalinity, turbidity and color
- 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 issues or concerns

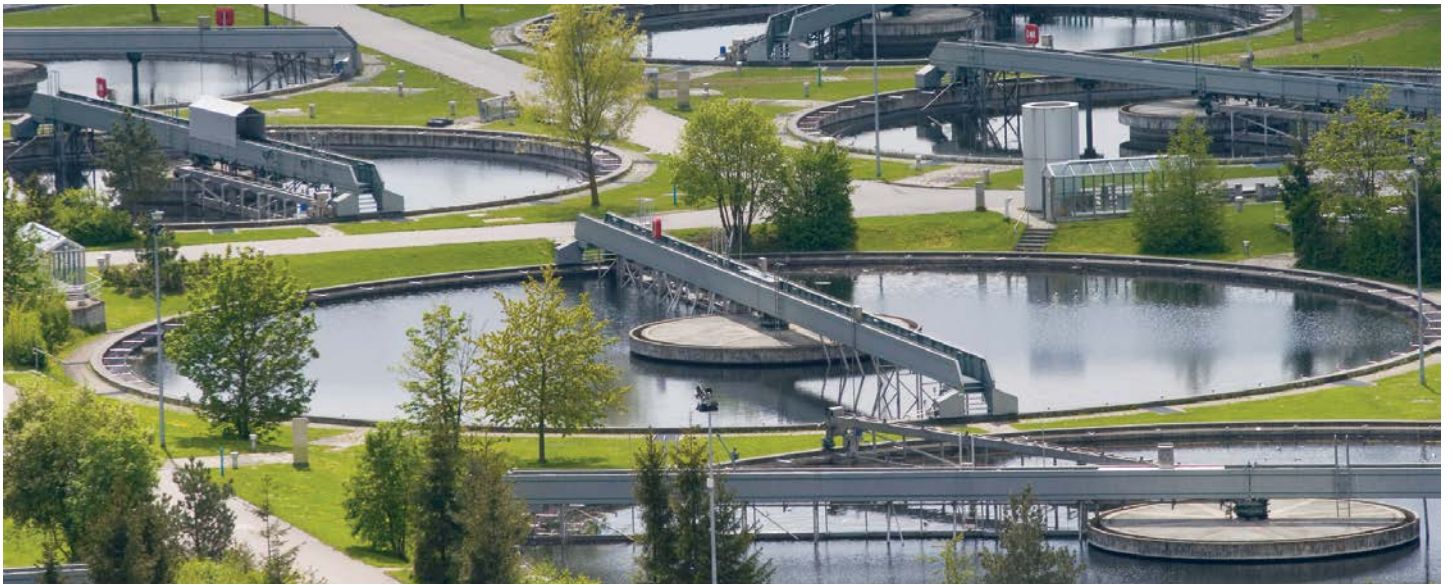
Our solutions combine a comprehensive portfolio of coagulants and flocculants with the OnGuard monitoring and control system to minimize raw-water variations and improve water clarity.

Cooling Water

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

- Freshwater corrosion control to protect assets, minimize machine deposition, and improve product quality
- Freshwater microbiological control to minimize slime and microbial growth
- OnGuard performance monitoring and control technology to minimize corrosion and deposition of critical heat transfer surfaces
- Patented and proprietary oxidizing biocide technology to address the hardest-to-treat microbiological growth challenges





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 jeopardize the integrity of your equipment.

Solenis' comprehensive portfolio of products for utility, power and recovery boiler systems includes:

- Feedwater corrosion protection chemicals
- Boiler water deposit and corrosion control chemicals
- Membrane treatments suitable for potable water systems
- Steam and condensate system corrosion protection chemicals
- Rigorous auditing programs, including recovery boiler system audits
- OnGuard feed and control systems, including automated congruent phosphate control
- Recovery boiler leak indication

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

Effluent Water and Sludge Dewatering

Whether your goal is to remove pollutants, minimize sludge handling and disposal costs, recycle effluent or improve wastewater quality, Solenis can design cost-effective solutions for your mill. 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 biochemical 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

All of these products can be coupled with our OnGuard monitoring and control systems, and our experienced applications engineers will help you diagnose problems and design solutions that deliver superior environmental and operational performance.

Recovery Boilers

Reliable operation of the recovery boiler is a high priority — both to protect worker safety and to ensure the efficiency of the process. We offer a number of innovative technologies for recovery boiler systems, including the OnGuard family of monitoring and control systems and proprietary statistical software that can detect leaks with maximum sensitivity. And our team of applications engineers can perform audits specifically designed to identify those critical operating practices and conditions that threaten the integrity and reliability of the recovery boiler.



Solenis

Strong Bonds. Trusted Solutions.

Solenis supplies specialty chemicals for water-intensive industries, including the pulp and paper, oil and gas, chemical processing, mining, biorefining and power markets. Whether you want to increase production, develop new products, reduce costs or simply do more with less, we can help. With our innovative technologies, passionate people and unrivaled experience, Solenis is ready to deliver the solutions you need.

To learn more, contact your technical sales representative or visit us online.

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