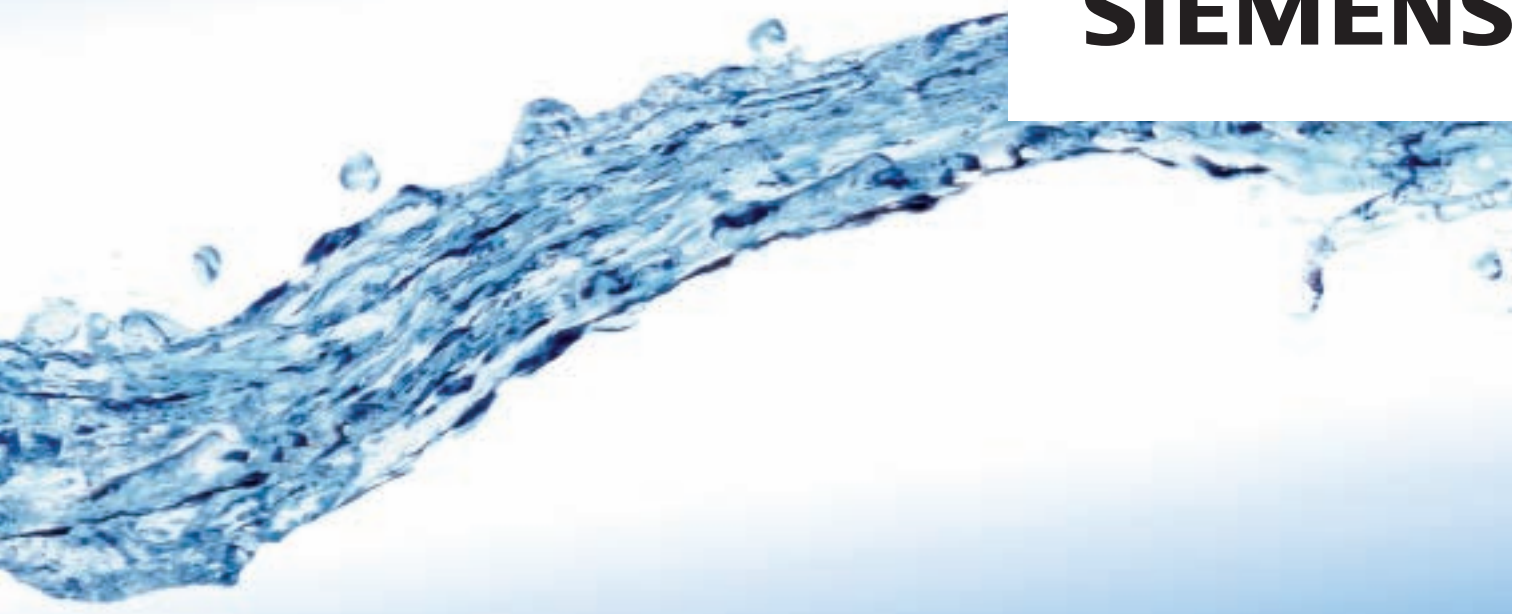
Water Technologies

Providing reliable choices for water purification and wastewater treatment

SIEMENS



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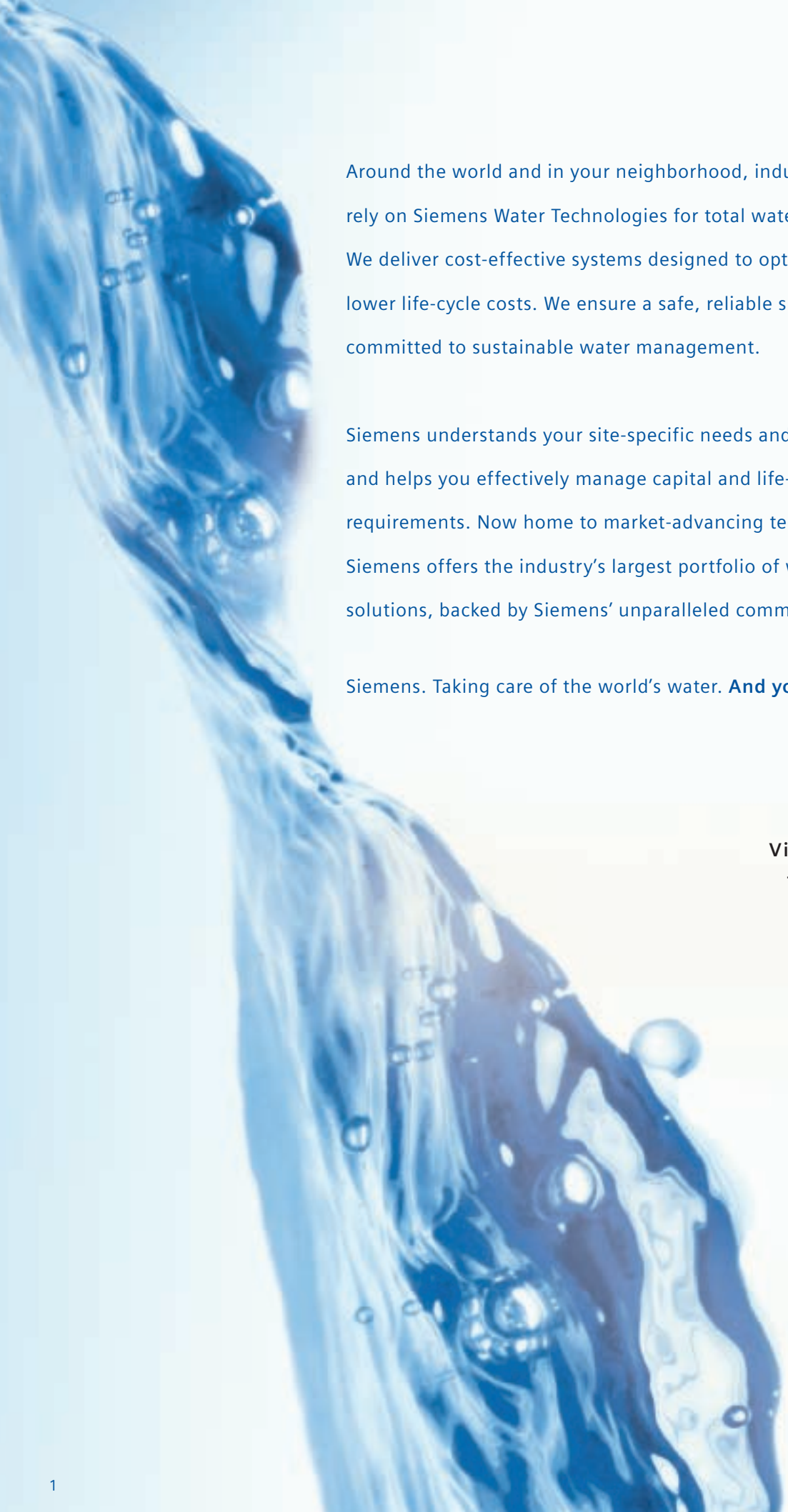


Around the world and in your neighborhood, industries and municipalities rely on Siemens Water Technologies for total water management solutions. We deliver cost-effective systems designed to optimize plant operations and lower life-cycle costs. We ensure a safe, reliable supply of water and are committed to sustainable water management.

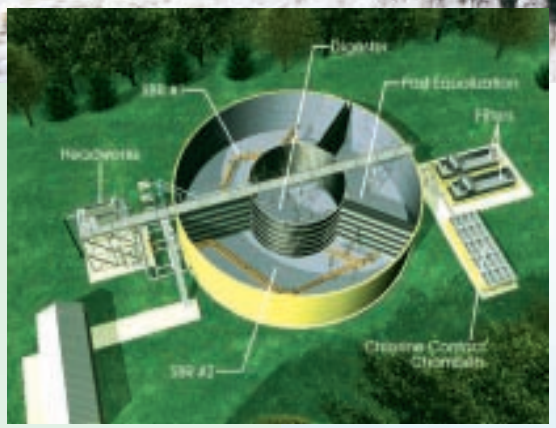
Siemens understands your site-specific needs and treatment objectives, and helps you effectively manage capital and life-cycle costs and regulatory requirements. Now home to market-advancing technologies from USFilter, Siemens offers the industry's largest portfolio of water and wastewater solutions, backed by Siemens' unparalleled commitment to service.

Siemens. Taking care of the world's water. **And yours.**

Visit www.siemens.com/water for a more comprehensive look at all of the industry-leading technologies Siemens has to offer.

Biological Treatment

Orbal® Multichannel Oxidation System



OMNIPAC® Field-Erected SBR

Biological treatment is the science by which bacteria and other microorganisms break down complex materials into simple, more stable substances. So, how does Siemens fit in? We appreciate how integral this science is to improving the wastewater treatment process, and we have created small systems, field-erected approaches and custom-designed solutions to do just that.

Looking for a simple system that requires less power to operate than any comparable system? The Orbal® multichannel oxidation system is the best selection for you. The typical Orbal basin has three concentric channels that allow for operation at high MLSS concentrations. In addition to conventional activated sludge or advanced secondary sludge treatment, it provides a simultaneous nitrification-denitrification environment and results in an overall denitrification performance rate of 80 percent. Stormflow rates five times the average flow can go through the Orbal basin. Most plants can achieve effluent phosphorus levels of 1 mg/l or lower without chemical addition.

MemJet® MBR (Membrane Bioreactor)

If you want to produce high-quality effluent suitable for direct reuse applications, the MemJet® MBR (membrane bioreactor) is ideal. Siemens can combine one of its many biological treatment processes with its world-renowned membrane operating system for the most energy efficient and fully automated integrated MBR system. This process provides municipalities with recycled, treated wastewater to save on the costs of clean water and ensure its future supply in the face of this decreasing resource.

Additional biological treatment technologies can be found at www.siemens.com/water

Q: Can I really reduce my sludge volume by up to 80 percent?

A: Yes. The unique Cannibal® solids reduction process combines conventional activated sludge treatment with a smaller, separate sidestream system to recycle and restructure the bacterial population until all biological material is completely broken down and degraded. The Cannibal® destruction technology achieves 80 percent reduction in biosolids yield.

Biosolids Management

The Sernagiotto CTD Dryer utilizes a heat recovery system for significantly improved plant efficiency.

Radial Wedge Belt Press

Today, because of investments in research—in part by Siemens—and sound public policies, there are safe and reliable biosolids treatment solutions available. Count on Siemens for cost-effective solutions that also comply with ever-changing environmental regulations.

A "Class A" end product used as a fertilizer is becoming increasingly popular. To achieve a Class A product, we suggest a Siemens biosolids dryer. The Dragon Dryer® system is a single-pass, indirect rotating chamber biosolids dryer that meets the needs of municipalities with a sludge production of up to 40 dry tons per day. Sludge volume is reduced by approximately 75 percent.

If your production needs are greater, the Convective Thermal Dryer (CTD), a triple-pass direct biosolids dryer, is recommended. The CTD is capable of evaporating up to 22,000 lbs (10,000 kg) of water per hour from dewatered sludge, which corresponds to about 90 dry tons per day at 25 percent feed. It utilizes a heat recovery system for improved efficiency and allows for pellet size customization of the end product.

Effective management of sludge production can drastically reduce capital and operating costs associated with biosolids. Siemens has a wide range of solutions—from dewatering and drying technology to complete biosolids reduction processes.

Additional solutions can be found at www.siemens.com/water

Siemens provides technologies for:

- Stabilization
- Thickening
- Dewatering
- Drying (direct and indirect)
- Incineration
- Composting
- Storage and Conveying
- Biosolids Elimination

Odor and Corrosion Control

The LO/PRO® Multi-Stage Packaged Odor Control System has removal efficiency of over 99.9%.

Removal of hydrogen sulfide and other foul odors from air and liquid streams is important in waste treatment. Siemens supplies a wide range of chemicals, chemical injection systems, scrubbers, biofiltration systems, activated carbon and other technologies for odor and gas control. Featured odor control solutions include:

VX-456™ Odor Control Compound

The VX-456™ compound contains a proprietary mixed oxidant and controls odor-causing sulfides and other odor-related compounds.

ZABOCS™ Biological Odor Control System

The ZABOCS™ system combines gas absorption, adsorption and biological treatment to capture and eliminate organic and inorganic odors. It treats three times the air volume compared to similar-sized conventional biofilter systems.

Q: Does the elimination of odor complaints seem too good to be true?

A: With the LO/PRO® multi-stage packaged odor control system from Siemens it's not. The LO/PRO system achieves better than 99.9% removal efficiency for a wide range of odorous compounds. The system features the smallest footprint available, a low profile, low capital and operating costs, and is designed for easy installation and maintenance.

Clarification Processes

Siemens specialists are knowledgeable on a wide variety of clarification options, so whatever your site-specific objectives, we have a solution for you.

For greater mass loading and flow capacities with a much lower suspended solids content, Trans-Flo® secondary clarifiers are the way to go. Their rectangular design significantly saves capital and equipment costs over the average clarifier.

Looking for high-rate clarification and added protection? Trident® HSC delivers multi-barrier protection with two clarification stages to remove settling and non-settling solids. You get superior performance, small footprint, and peace of mind reliability from built-in treatment redundancy.

In the market for a high-rate sludge thickening clarifier? The CONTRAFAST® clarifier eliminates the need for additional sludge thickening. The entire process is contained in a single system, which simplifies installation time and expense.

Q: Is there a process that produces high-quality effluent in a small space?

A: Yes. The Trident® packaged filtration system uniquely combines coagulation, flocculation, high-rate clarification and filtration capabilities. The compact, pre-engineered system saves up to 80% in building floor space required by other conventional systems.

Trident® Packaged Filtration System

Trans-Flo® Secondary Clarifier

Chemical Feed and Disinfection

Wallace & Tiernan and Stranco Products are highlights of our chemical feed and disinfection capabilities which provide an unmatched selection of single-source solutions, backed by the industry's most renowned brands. With more than 125 years of combined experience, they serve as an important problem-solving resource for customers around the world.

The PolyBlend® DP Series system features several patented innovations and simple operation and requires the least maintenance of any other system. It also reduces polymer consumption by at least 25 percent, while improving polymer performance.

When relying on chlorine gas-feed systems for water or wastewater disinfection, customers are faced with safely achieving high gas feed rates. The Equa-Draw® system automatically balances chlorine gas flow rates from multiple supply containers, all under vacuum, eliminating pressurized supply lines and manual balancing requirements.

Why depend on commercial chemical suppliers or worry about transporting, handling, and storing disinfection solutions? Fully automated OSEC® On-Site Electrolytic Chlorination systems provide the capability to produce sodium hypochlorite on-site, on demand from a brine solution at a cost lower than that of purchased chemicals.

The OSEC® System eliminates transporting, handling and storing concerns associated with disinfection chemicals.

PolyBlend® DP Series System

Q: How do I provide the safest drinking water supply for my community with a disinfection technology?

Barrier® M UV System

A: The latest disinfection technology from Siemens is the Barrier® M ultraviolet system. Utilizing medium-pressure UV lamp technology, this system is ideal for inactivating a wide variety of microorganisms, such as *Cryptosporidium* and *Giardia*. Combining this with other disinfection technologies from Siemens achieves a multi-barrier approach, which provides the safest drinking water supply for your community.

Conventional Drinking Water

Siemens offers processes that maintain performance even with variations in influent quality.

Water purification requires optimal treatment, and Siemens has a wide variety of environmentally sensitive and operator friendly solutions. Regardless of the size or situation, we have the right technology for your community.

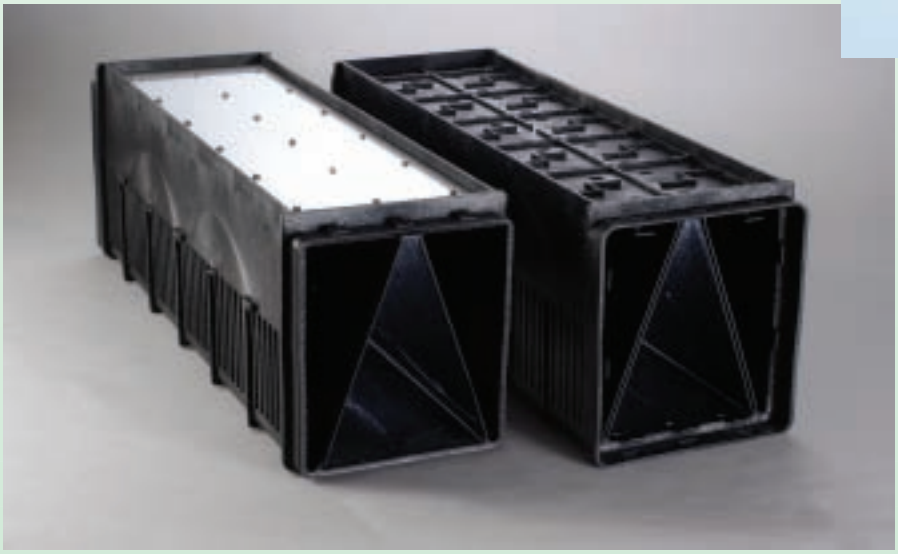
For groundwater systems with flow rates under 1 mgd (3800 m3/day), we recommend Vertical Pressure Filters. They provide granular media treatment in an enclosed pressure vessel and are very economical. The unique MULTICELL® filter design eliminates the need for backwash supply pumps and allows for isolation of individual filtration vessels.

Need a perfect replacement for old clay tile underdrains, or building a new filter system? Then you need MULTIBLOCK® filter underdrains. They can be fitted with the unique Laser Shield™ media retaining system, which eliminates the need for support gravel.

If debris is a problem, the Rex® and Link-Belt® Through Flow traveling water screens will solve it. Through Flow traveling water screens are used to remove floating and suspended debris in raw water intake systems and are ideal for systems with high volume flows and light to heavy debris conditions.

Q: How do I remove arsenic from my drinking water supply?

A: Cost-effective GFH® ferric-based media removes arsenic through an adsorption process. Pre-oxidation is not required and because there are no chemical feeds to adjust, the process maintains performance even with variations in influent quality. Better yet, systems can be easily added or retrofitted into existing plants.



MULTIBLOCK®
Filter Underdrains

Membranes

Membranes provide an absolute physical barrier against viruses, bacteria, turbidity and suspended solids without the need for chemical pretreatment.

MEMECOR® membranes were one of the first membrane systems introduced to treat drinking water in 1987. Siemens continues to lead the industry with a wide variety of membranes that offer more flexibility for customized solutions. Most importantly, working with Siemens ensures that the system designs you have today will be compatible with future technological advancements.

MEMCOR® CS Submerged System

The most convenient and efficient system to treat large flow capacities is the MEMCOR® CS (submerged) membrane system. The system is composed of membrane racks housed in open cells accessible by the optional MemSAP™ (membrane service access platform). The platform moves quietly across the tanks like a traveling bridge to position the operator directly above the membranes. Membrane modules are then lifted through an opening in the floor of the platform. Membrane fibers are cleaned in-place with a combined low-pressure air scour and filtered water backwash.

MemSAP™ (membrane service access platform) eases maintenance and repairs.

MEMCOR® membrane solutions for:

Pre-Engineered Systems

MEMCOR® XS (Submerged)

MEMCOR® XP (Pressurized)

Xpress™ MBR (Membrane Bioreactor)

Large Capacity Systems

MEMCOR® CP (Pressurized)

MEMCOR® CS (Submerged)

MemJet® MBR (Membrane Bioreactor)

Water Reuse and Desalination

MEMCOR® membranes are an ideal solution for pretreatment to RO.

Global water use has tripled since 1950 and is expected to increase by 40 percent in the next 20 years. What does that really mean? By 2050, two-thirds of the world's population will face chronic water shortages! As a result, more municipalities are recycling and reusing treated wastewater to preserve water supplies and save on the cost of clean water.

Siemens serves as an industry leader in testing and recommending the most effective water reuse solutions from a full range of equipment and services.

Spider™ Disc Filter

Water reuse professionals are constantly looking for ways to reliably keep pace with increasing demand. With the Spider™ disc filter, Siemens brings woven filter disc technology to a new level by introducing a new wrinkle-pleated media. Drawing upon 30 years of experience in drum microscreen technology, Siemens' innovative design delivers greater filtration capacity in a highly compact system that minimizes space. To further optimize system capacity, the Spider™ disc filter's increased surface area offers more submerged area than any other woven filter media solution.

Q: How can I ensure that by reclaiming water I am providing my community with a safe alternative?

A: Siemens can provide a multi-barrier approach for reuse and reclamation. Communities often use our MEMCOR® membrane filtration for pretreatment to RO and add our Barrier® M UV disinfection for a solution that meets strict water demands and decreases operating costs. Wastewater can then be beneficially and safely reused for agricultural, industrial and irrigation purposes.

Service

Siemens offers the broadest line of products and services to meet the needs of municipalities everywhere, whether they involve drinking water, wastewater or environmental remediation. A complete line of turnkey services from Siemens provides reliable, safe and environmentally compliant support for your system and personnel—when and where you need it.

Siemens' strategically located service branches help keep your system running at peak performance and to your specification. With over 80 company-owned local service branches, Siemens provides extensive field experience and a fleet of specialty service vehicles. We offer unmatched service and technology—all from one single supplier.

Siemens offers temporary and emergency mobile water systems.

General Support Services from Siemens

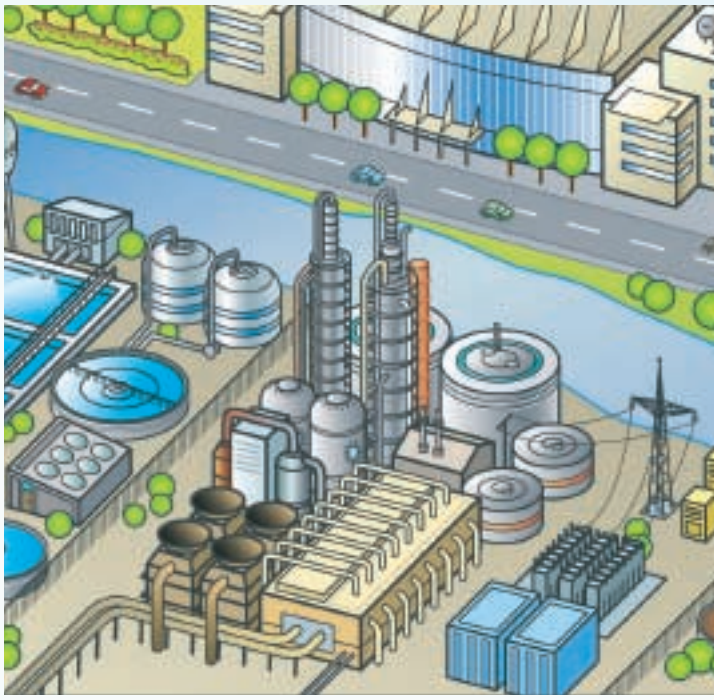
- Preventative maintenance service and emergency response contracts
- Process evaluation and optimization services
- Plant and process control and instrumentation upgrades
- Operator and maintenance training
- Installation assistance
- Upgrade, rehab and retrofit services
- Replacement parts supply and repair
- Activated carbon supply, replacement and reactivation services
- Filter media supply and replacement
- Membrane Care Program
- Ion exchange resin service program
- Laboratory water services
- Unique environmental permits and testing

Total Water Management Solutions

Totally Integrated Power

- Power generation switchgear
- Individual load gears
- Power monitoring and energy management

To help reduce the risk of your project running over budget, under specification and over schedule, Siemens offers integrated treatment process solutions that include the most innovative scope of water and wastewater technologies, financing solutions, totally integrated automation and totally integrated power. Involving the Siemens experts at the project design phase optimizes your plant's performance and lowers installation and life-cycle costs. Working with Siemens for your total water management solution means full accountability and a complete understanding of your treatment process needs and eliminates finger pointing after your project is up and running.



Totally Integrated Automation

- Performance controls
- SCADA systems
- Operator planning tools
- Remote monitoring
- Telemetry systems

Service and
Support Network

- Mobile water systems
- Preventative maintenance and service
- Parts and expendables

Wastewater Systems

- Biosolids and residuals management
- Reuse and reclamation
- Enhanced nutrient removal
- Energy recovery

Financial Services

- 100% project financing
- Customized leases and loans

Drinking Water Systems

- Conventional solutions
- Membrane filtration solutions
- Pre-engineered solutions

Q: How can I increase visibility and control of my existing treatment process?

A: With Siemens, you can optimize the operation of your treatment process. Siemens is the leading supplier and integrator of control and telemetry systems for municipal and industrial water and wastewater facilities. Our experienced engineers custom design solutions for your application. With thousands of telemetry and SCADA systems installed, ranging in complexity from lift stations to complex wide-area wireless monitoring systems, we have the experience to define and implement a solution for you.

Automation Solutions from Siemens

- **Water and wastewater treatment facility automation**
- **Water distribution monitoring and control**
- **Collection system monitoring and control**
- **Wastewater effluent and reuse systems**
- **Control panel manufacturing**
- **Instrumentation**

For further information and to contact someone in your vicinity, please see our web site:

www.siemens.com/water

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