Giving the best for our most precious resource.

For today. For tomorrow. For water.
For an efficient and sustainable water industry.

siemens.com/water

SIEMENS

Protecting water as a resource with sustainable solutions

Climate change with its droughts and torrential rains, urbanization with its higher demands for drinking water, water pollution, and stricter laws and regulations are among the massive challenges facing the water industry – challenges that will continue to multiply. Innovations, ideas, and initiatives are required to meet the growing demand for clean water and to sustainably protect water resources.

Get an overview on the Siemens portfolio that is helping the water industry meet these demands.

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Our response to far-reaching global challenges is to connect sustainability and digitalization.

@ Siemens Digital Industries

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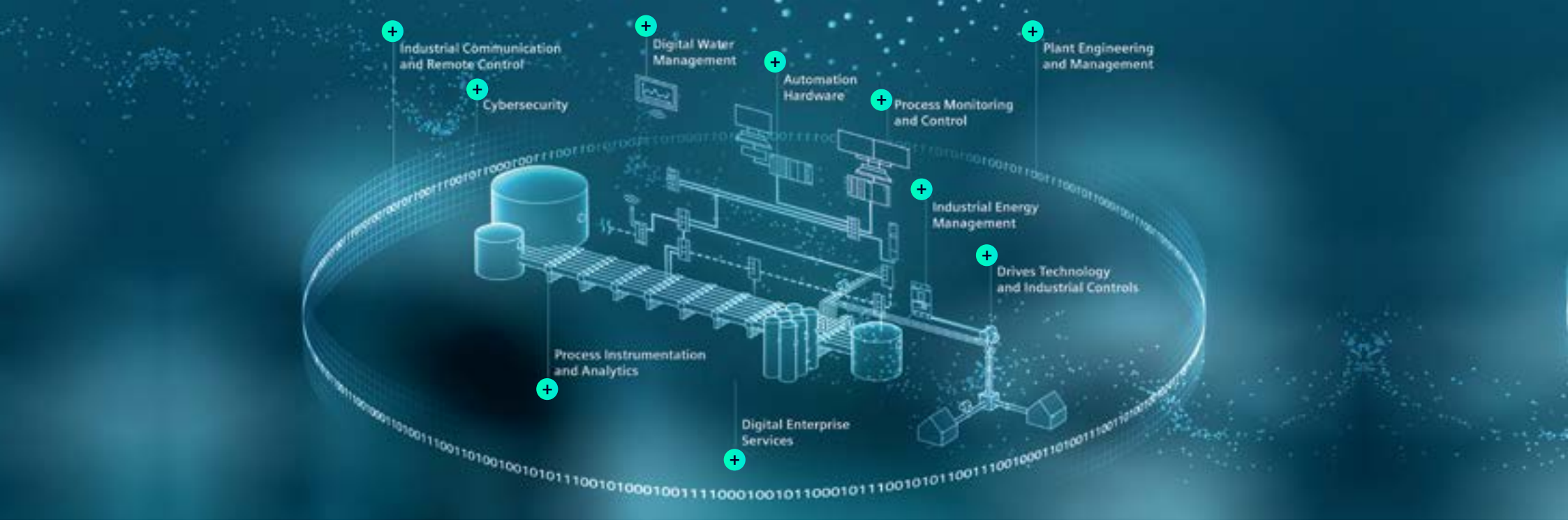
Our mission and strategy: **Digitalization enables sustainability**

As an innovative technology company, Siemens has dedicated itself to overcoming profound global challenges and meeting its social responsibilities ever since the company's founding. According to data from United Nations SDG (Sustainable Development Goals) 6, a third of the world's population is without access to clean drinking water. Unfortunately, population growth and the effects of climate change, such as severe droughts and flooding, ensure that these statistics will continue to worsen.

Siemens – Technology with purpose

In line with our guiding principle – "Technology with purpose" – we're particularly concerned about all aspects of the water industry, including water treatment, supply, and waste water. With our extensive portfolio that ranges from electrification to automation, we contribute to the sustainable use of water as a vital resource by seamlessly integrating the latest digital technologies. We're among the first to apply pioneering digital requirements to the water industry like cybersecurity, network optimization, and early leak detection. In this context, we're not only able to provide comprehensive technologies that guarantee water's reliable supply and disposal, but are also guiding the water industry as a whole toward greater efficiency and resource saving.

In this way, we're helping our customers in the water industry meet their challenging goals in a sustainable way. That's our mission.



Economical solutions for the water industry

Water is becoming an increasingly important economic factor, making efficiency and the provision of new resources top priorities. Higher costs for producing clean water and rising quality requirements call for innovative energy- and cost-saving processes. A growing number of water utilities are taking these factors into account and opting for the latest technologies, including digitalization and connectivity. In this way, the water industry is making a substantial contribution to sustainability.

Alongside the entire water cycle

Siemens provides a crucial foundation with innovative, tailored technical solutions ranging from electrification and automation to integrated digital technologies and comprehensive services throughout the water cycle – from seawater desalination to water and waste water treatment (industrial waste water), all the way to the management of water networks.

With Siemens as your partner, you benefit from our many years of experience in the water industry, our comprehensive knowledge of processes, and our cross-industry expert knowledge in the areas of hardware and software from the field to the management level. Siemens takes you one decisive step further along the overall value chain and plant lifecycle while your costs remain under control.

Tailored solutions for specific areas of application

Demands in areas like drinking water, waste water, and desalination vary. That's why Siemens offers a range of perfectly tailored solutions for maximum efficiency and sustainability.

Drinking water **Waste water** **Desalination**

Automation solutions – scalable to your requirements

Whether for small, medium-sized, or large plants: As an exclusive control system manufacturer, Siemens offers distributed control system (DCS) and SIMATIC SCADA – two different approaches, both of which are modular, flexibly expandable, and thus fit for the future.
These solutions take into account the relevant industry standards such as ergonomic operation and industrial security for critical infrastructures.

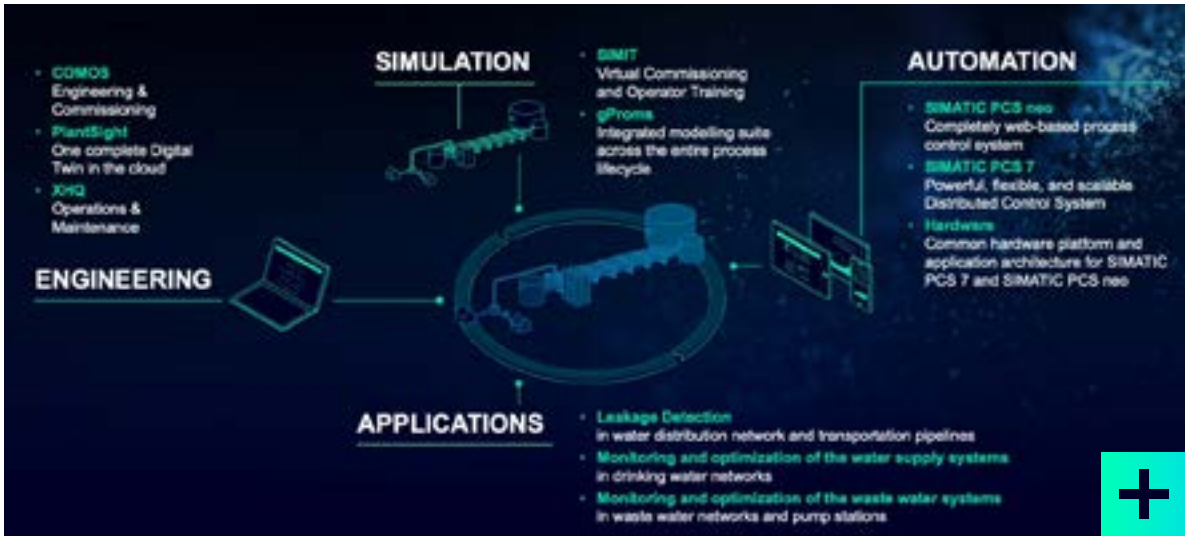
Operation and monitoring using SIMATIC SCADA systems
SIMATIC WinCC Systems and the **TIA Portal** are scalable from autonomous and plant-based operation to distributed control centers. The systems support open library concepts and application standards. WinCC Open Architecture also serves as a platform for developing individualized systems. The innovative **SIMATIC WinCC Unified** system enables use in the edge or cloud environment, including via web technology.

Successfully proven: SIMATIC DCS process control technology
Based on proven hardware, **SIMATIC PCS 7** and the pioneering, web-based **SIMATIC PCS neo** offer water-specific libraries as an integral system component as well as application standards directly from the control system manufacturer. SIMATIC PCS 7 is scalable from smaller operations to large desalination plants and distributed control centers. Based on the R&I scheme, the system permits consistent, end-to-end engineering, including the integration of low and medium voltage.

Digitalization for more transparency and efficiency

Whether it's gathering data, using assistance systems, connecting subsystems, integrating these subsystems into a distributed solution, or automating entire infrastructure systems, digitalization in the water industry enables more efficient and sustainable processes for new as well as existing plants.

Two levers come into play: the generation of digital twins to optimize processes and the use of digital applications.



The digital twin pays off
The digital twin provides a virtual model of the real plant. The full potential of new and existing plants can be exploited by intelligently linking data from a variety of sources and processing this data in a consistent data model

The digital twin in new plants
Consistent data storage and the integrated data model result in the digital twin, an exact virtual model of the entire plant that is always up to date. Among other things, it allows simulations to be run as early as the engineering phase, thereby significantly shortening commissioning time.

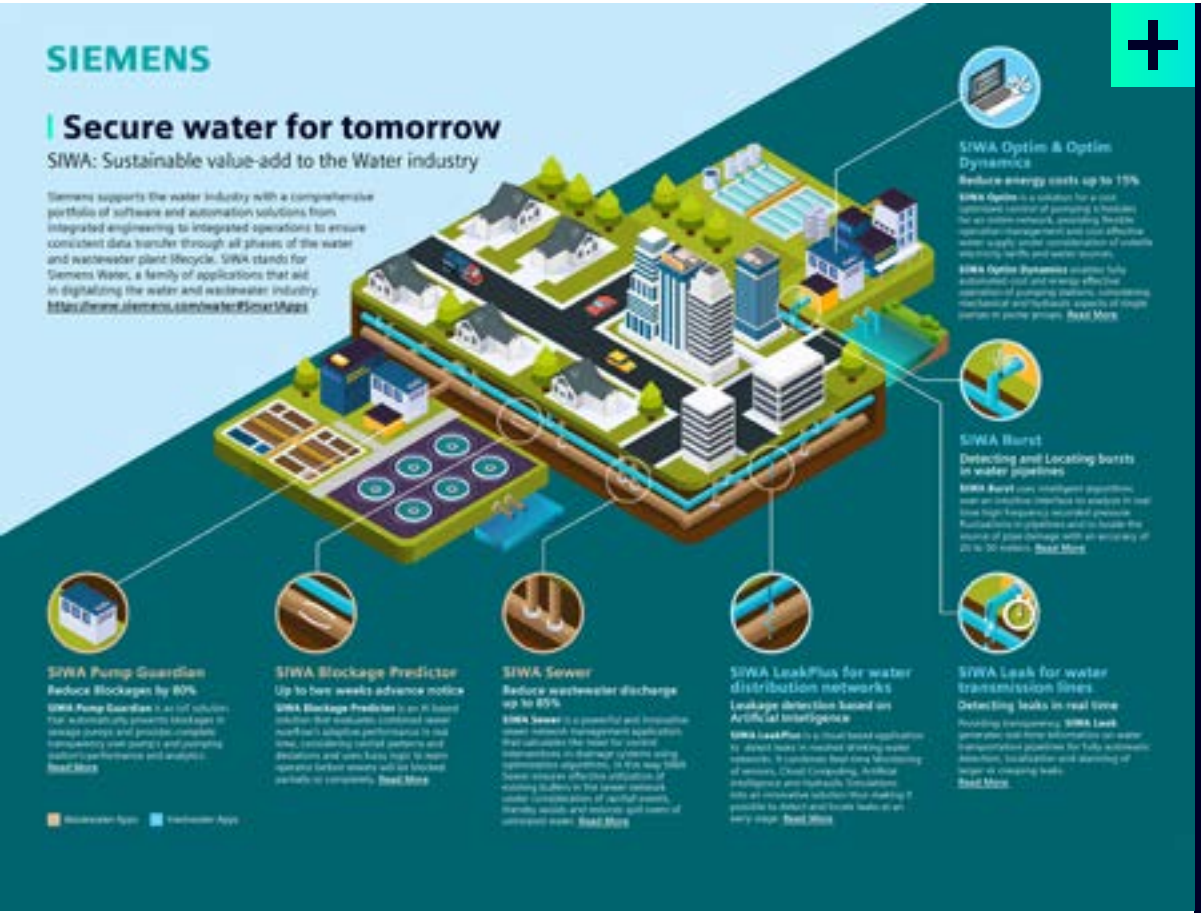
For example, the digital twin enables simulations, comprehensive testing of automation applications, and a realistic training environment for plant operators even before the real startup. This creates opportunities for process optimization and know-how capture, which in turn reduces commissioning times and results in greater efficiency throughout the lifecycle of manufacturing and process plants.

The digital twin in existing plants
Digitalization also pays off in existing plants because a digital model of the real, existing plant is generated that can be linked to imported engineering data in a database structure. In this way, data can be verified and plant operators can be provided with an up-to-date, digital image of their plant – the starting point for comprehensive optimization of operation.

Increased efficiency through digitalized planning
In cooperation with Bentley Systems, it's possible to integrate Building Information Modeling (BIM) and geoinformation systems (GIS) into the digitalization of planning processes. The user-friendly, model-oriented software tools serve as a reliable basis for decision making when designing water supply systems and enable the forecasting of the waste water treatment and sewage volume based on population growth and increased demand.

Smart apps for greater efficiency and security of supply

The applications and digital services from the Siemens Industry Suite for the water industry provide greater transparency. They help identify optimization and savings potential and guarantee maximum security of supply. With the Siemens Water (SIWA) applications developed specifically for the water and waste water sector, operators can, among other things, optimize energy efficiency, avoid water losses, reduce contamination of water bodies, and take predictive maintenance measures.



More information:

SIWA Burst ›
Locate burst pipes and reduce water loss

SIWA Leak ›
Detect leaks in real time

SIWA LeakPlus ›
Reduce water loss in water distribution networks

SIWA Optim ›
Cost-optimized pump operation in water supply systems

SIWA OptimDynamics ›
Resource-saving water supply

SIWA Pump Guardian ›
Prevent pump blockages

SIWA Blockage Predictor ›
Prevent flooding from sewer networks

SIWA Sewer ›
Centralized sewer network control system

SIWA Whitepaper ›
free download

More **Industry applications ›** from the Siemens Industry Suite

Standardization as an important lever for digitalization

Standardization is the prerequisite for an efficient digital workflow. A modular system comprised of strategically selected components and extensive sample solutions for typical plants and processes paves the way for greater efficiency, productivity, and availability, as well as reliable operation – and guarantees a solid basis for consistent, end-to-end digitalization.

Siemens Water Portal

Our Water Portal provides you with an extensive and freely available collection of sample solutions and configurations, engineering standards and tools for automation, process instrumentation, drive technology, and the electrotechnical equipment for water and waste water systems. It also provides you with information on industrial safety and communication.

Discover the Siemens Water Portal >

Water templates for simpler engineering

The freely available water templates are customized for system integrators, plant builders, and operators. They enable standardized engineering of the control system application. This reduces costs and risks during planning, project engineering, commissioning, ongoing maintenance, and servicing, and even for future modernizations of the plant.

Find out more:

Standard SIMATIC PCS 7 and WinCC/STEP 7 water templates >

Standard SIMATIC PCS 7 and SIMIT water templates >

Library for Basic Processes (LBP) for standardization

Plant builders and system integrators are required to create more and more powerful automation solutions at ever lower costs. At the same time, end customers are demanding the further improvement of process stability and plant availability without increasing their engineering workload. They're supported by the Library of Basic Processes (LBP), a design-oriented block library for TIA Portal V15. This library can be used to perform a wide variety of automation tasks extremely efficiently and to significantly reduce the engineering workload, configuration costs, and the project duration.

Find out more >

Industrial Security:
security on the highest level

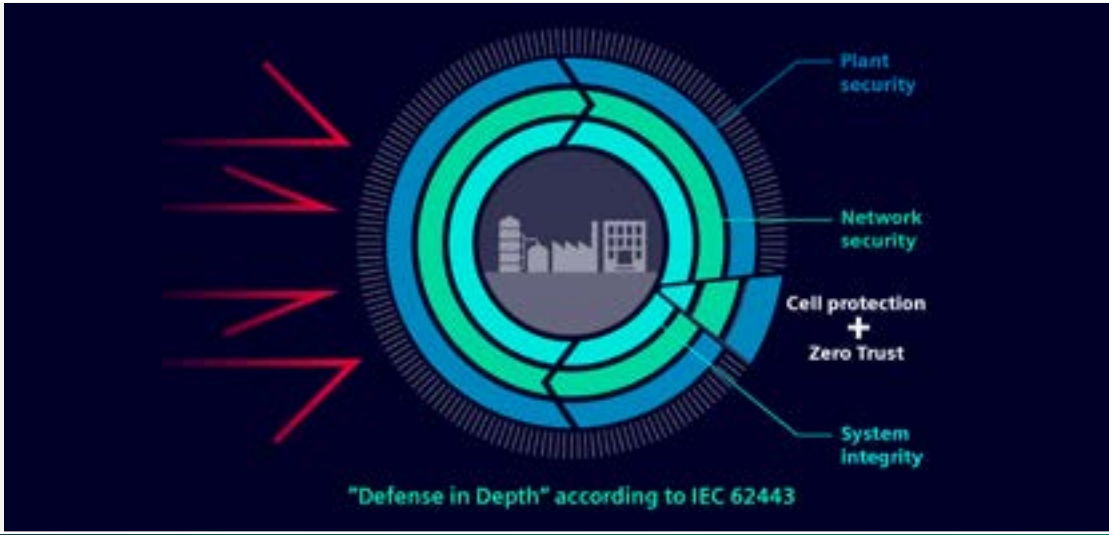
Critical infrastructures like drinking water supply must be fully and reliably protected against cyberattacks.
The comprehensive and practice-oriented security concepts from Siemens lay the groundwork for the secure operation of water management facilities based on certified products, systems, and processes according to IEC 62443, the leading international standard for security in industrial automation

As one of the first system and solution providers, Siemens also offers reference architectures (blueprints) certified by TÜV-Süd › that are tailored specifically to the needs of the water/waste water/desalination industry.

Find out more on the **Cybersecurity for the water industry** ›

How Siemens covers the entire field of **industrial security** ›

What components contribute to **network security** ›



Increase energy and cost efficiency in plant operation

Rising energy costs and stricter environmental regulations make companies' energy consumption a priority. Energy consumption represents one of the largest cost factors in water and waste water plants. Energy efficiency reduces costs, gives companies a competitive edge, and is a sign of environmental awareness. In some European countries, government-funded programs provide further incentives for saving energy. In many cases, this requires the introduction of processes according to ISO 50001.

Realize savings potential

Thanks to the acquisition of consumption data on the field level, plant operators are able to obtain a complete overview of the relevant energy consumers in the process. Using suitable analysis tools, they can also identify and realize potential savings quickly and efficiently.

Saving energy with data transparency

SIMATIC Energy Manager › allows you to keep a constant watch on consumption data throughout your company – from energy data acquisition on the field level to company-wide energy analysis on the management level.

Cost-optimized pump operation in drinking water supply systems

SIWA Optim › is a solution for the intelligent, energy-optimized control of pumps and valves. It reduces energy consumption by up to 15 percent while ensuring optimal security of supply.

SIWA OptimDynamics › uses hydraulic modeling of the pump station to calculate the most efficient solution for transporting drinking water, based on the specific load curves and efficiency factors of the available pumps. This makes it possible to minimize energy consumption when distributing drinking water.

Energy-optimized operation of desalination plants

Desalination is one of the most energy-intensive methods for acquiring drinking water. Making this process as efficient as possible is a top priority. Siemens offers two complementary solutions. The first is the plant management system, which allows greater transparency and improved plant operation with only a modest investment. The other solution is model-based optimization software that improves the plant's process performance and can result in long-term cost savings.

Digital Services:
for optimal plant operation

With our services, covering everything from the digital transformation and reliable commissioning and maintenance of field devices to fast support in the event of failures, you can ensure optimal operation of your plant throughout its entire lifecycle.

Digitalization Consulting

Thanks to our strong expertise, our unique technology portfolio, and our methodical consulting, we're able to accompany you on your way to the digital enterprise with our **Digitalization Consulting services ›**. Together, we can identify your deficits, classify them according to your business objectives, and create a neutral digitalization roadmap for you that corresponds to your needs, your business model, and your existing infrastructure (IT and OT).

Real added value through virtualization

SIMATIC Virtualization as a Service › allows you to efficiently maintain, service, and modernize the system components used. For example, you can easily and economically implement SIMATIC PCS 7 and WinCC projects using prefabricated, configured, tested, and ready-to-run systems.

Remote Services

The engineering, commissioning, and maintenance of automation systems can be optimally supported and performed via remote access using powerful, state-of-the-art communication media. Our offering of platform-based **Remote Services ›** provides you with central access to the available expertise of the product manufacturer or solution provider at all times and from anywhere in the world.

More Industry Services ›

Financing solutions for **sustainable water infrastructure**

Siemens Financial Services (SFS) – the financing arm of Siemens – offers financing solutions to corporate clients. Thanks to exceptional combination of financial expertise, risk management, and sector know-how, SFS can offer tailored, innovative financing solutions.

With its services, SFS supports growth, creates value-added, enhances competitiveness, and opens the door to new technologies for customers in the water industry.

SFS supports your investment projects with equipment and technology financing, leasing, company financing, equity investments, and project-specific and structured financing. With an international network, SFS offers financing solutions that fulfill country-specific legal requirements everywhere in the world. SFS provides capital to customers in the water industry to help them install innovative technologies in new and existing plants. This support makes it possible for you to realize your projects and seize growth opportunities whenever they arise.

Find out more ›

Case Studies: tailor-made solutions in real-life applications

Discover how powerful and innovative technical solutions from Siemens are contributing to the smooth, reliably, and totally sustainable operation of water supply and waste water systems worldwide.

VA SYD,
Sweden
AI for leakage detection

Leaks in the pipeline network are responsible for the fact that around 10 percent of the water supplied by the Swedish water company VA SYD never reaches consumers. With SIWA LeakPlus, VA SYD now relies on artificial intelligence (AI) to detect and repair leaks in water distribution networks.

Find out more ›

Canal de Isabel II,
Spain
Reduction of energy costs in Treatment Plant 4.0

The water utility Canal de Isabel II is responsible for all areas of the municipal water industry for the city of Madrid. The company was looking for a solution that would improve the efficiency and sustainability of water treatment in its waste water treatment plants. With digital power management solutions from Siemens and Acciona, the company reduced its power consumption by more than 15 percent and its carbon emissions by over 10 percent.

Find out more ›

Changi Newater,
Singapore
Innovation in water: from waste to tap

No city can survive without a reliable water supply. The new NEWater waste water treatment plant in Changi produces up to 190 million liters of fresh water from waste water every day. This requires that the whole plant be fully available around 90 percent of the time. The foundation is a redundant automation solution from Siemens.

Al Khafji,
Saudi Arabia
Desalination powered by sun

One of the major solar-powered, reverse-osmosis desalinization plants is located in Al Khafji, Saudi Arabia. Thanks to the vertical and horizontal integration of all electrical components, it has been possible to reduce operational costs and shorten maintenance times. Centralized process monitoring and automation guarantee a sustainable water supply with maximum efficiency.

Find out more >

Taweelah, UAE
Water from the world's biggest reverse osmosis system

The Taweelah desalination plant, which is slated for completion in 2022, will supply 909,200 cubic meters of water per day (m^3/day), 44% more than the world's currently biggest reverse osmosis system, which produces 624,000 m3/day, and will satisfy the water needs of 350,000 households. For this major infrastructure project, Siemens is not only delivering automation and digitalization technologies, but is also handling most of the financing for this USD 869 million project, thanks to the role played by Siemens Financial Services (SFS) in arranging senior project financing loans from six lenders

Find out more >

Thune Dam,
South Africa
Dam project for supplying water in Botswana

The new water treatment plant at the Thune Dam delivers 11 million liters of clean drinking water to the people of Botswana every day. The Siemens solution partner Moreflow participated in the project. Headquartered in Francistown, Botswana, Moreflow supplied the automation and electrical equipment and additional services, as well as ensuring plant monitoring. As a result, residents of the rural Bobirwa District have a constant water supply.

Find out more >

Find out more

Shaping the sustainable water industry together

Partner Management: expertise directly on site
Siemens works closely with selected partners from the water industry around the world, including EPCs, system integrators, and wholesalers. Each of these partners is a proven expert in their field, with comprehensive product and system expertise in all aspects of Siemens' extensive portfolio for the water industry. This means that the comprehensive offering for digitalization as well as automation and drive technology can be optimally adapted to the individual requirements of customers on site anywhere in the world.

Partners near you ›

Research and Development
Siemens is actively involved in numerous German and European professional associations and committees. The company supports research (for example, at the **Technical University of Berlin ›** and contributes its knowledge and expertise to further the development of a sustainable water industry.

Collaborations: teaming up for success
In line with our pledge to be an agile and active market leader, we go beyond traditional distributorships and increasingly rely on collaboration in different areas. Consequently, we have signed specific cooperation agreements with component manufacturers like Hach Analytics, as well as with global players like **Acciona ›** (desalination) and young entrepreneurs like **BuntPlanet ›** (digital portfolio). In this way, we will be able to meet our customers' requirements and offer them a comprehensive, innovative product and system portfolio, a local presence worldwide, and high quality, while also remaining cost-effective.

Published by
Siemens AG

Digital Industries
Process Automation
Östliche Rheinbrückenstr. 50
76187 Karlsruhe, Germany

For the U.S. published by
Siemens Industry Inc.

100 Technology Drive
Alpharetta, GA 30005
United States

Article No.:
Dispo 10001
WS 09210.0
Printed in Germany

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