

A photograph of a worker in a white hard hat and safety vest standing on a metal walkway at a water treatment plant. The walkway is elevated over a body of water. In the background, there are industrial structures and a cloudy sky. A digital overlay of a network diagram with yellow and blue nodes and lines is visible on the right side of the image.

SIEMENS

Ingenuity for life

Making water work

Solutions for greater efficiency in the
water and wastewater industry

[siemens.com/water](https://www.siemens.com/water)

Optimal use of “blue gold”

No resource is more valuable for humankind than water. But in many places, clean drinking water is becoming increasingly scarce. Due to population growth, urbanization, and climate change, the demand is skyrocketing, and the water industry is facing tremendous challenges. The most important thing is to protect water as a valuable resource and use it as sustainably as possible in order to ensure or create a reliable supply of drinking water. At the same time, more wastewater needs to be treated so that rivers, lakes, and oceans are less polluted by untreated wastewater.

Moreover, water is becoming increasingly important as an economic factor. Over the next few years, experts are predicting that the water industry will grow by 15 to 25 percent. But economic success requires energy-saving, cost-saving, and efficient processes.

Siemens provides the crucial foundation for this with innovative, need-based technical solutions for electrification, automation, and digitalization throughout the water cycle and with comprehensive service – from seawater desalination to the treatment of drinking water, wastewater, and industrial wastewater, all the way to the management of water networks. With Siemens as your partner, you have a significant advantage: our comprehensive experience and expert knowledge across a wide range of sectors in the areas of hardware, software, and processes, from the field to the management level. This knowledge and experience takes you one decisive step further along the overall value chain and throughout the plant lifecycle and ensures that your costs remain under control.



-20%

Engineering time

Saving time – 20% shorter engineering time

Reduce the time you spend planning and designing new installations. Integrated engineering with COMOS and SIMATIC PCS 7 can reduce engineering time by up to 20%.



-15%

Project time

Increasing efficiency – 15% shorter project time

You can significantly shorten your project time by configuring your process control technology more quickly. SIMATIC PCS 7 supplies you with future-proof function block libraries that efficiently support engineering for the SIMATIC PCS 7 process control system and the SIMATIC WinCC visualization system. The tested, standardized components and their intuitive operation help you to reduce your costs and shorten project time by up to 15%.



Up to
-15%

Energy costs

Saving energy – up to 15% lower energy costs

Sustainable use of resources means reduced costs. Optimize the energy requirements of your pumps by using SIWA Optim, and reduce energy consumption by up to 15%.

Gain time and save money in engineering



From integrated engineering to integrated operations: data for the entire lifecycle

The COMOS plant engineering software ensures consistent data storage, from planning all the way to the entire operating phase. It improves engineering quality and also provides plant operators and equipment suppliers with crucial time and cost benefits by allowing many engineering steps to be performed in parallel.

Transferring the automation data generated in COMOS directly to the SIMATIC PCS 7 process control system is extremely easy. This step alone reduces the configuration time for automation by up to 20 percent.

The SIMIT simulation software takes the data directly from the SIMATIC PCS 7 process control system and COMOS. This enables all automation and process control functions to be tested and errors corrected before the real commissioning.

Thanks to 3D VR visualization in COMOS Walkinside, you can also take a virtual walkthrough of the entire plant and already train your personnel to work in the new plant. The seamless interaction between COMOS, SIMATIC PCS 7, and SIMIT permits an integrated solution, from a plant's planning and operation to its maintenance – “from integrated engineering to integrated operations.”

The digital twin pays off

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 permits simulations to be run already during the engineering phase, thereby significantly shortening the commissioning time.

Digitalization is also worthwhile for existing plants

The integration of COMOS and the Bentley ContextCapture system makes it possible to generate a digital model of the real, existing plant that can be linked to imported engineering data in a database structure. Data can thus be verified and plant operators receive an up-to-date, digital image of their plant – the starting point for comprehensive optimization of operation.

Increased efficiency through digitalized planning

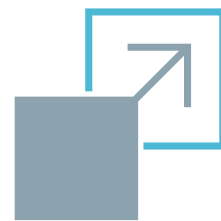
Working with Bentley Systems, it's possible to integrate building information modeling (BIM) and geoinformation systems (GIS) into the digitalization of planning processes. The user-friendly, model-oriented software tools serve as a reliable basis for decision-making when designing water supply systems and enable the forecasting of the wastewater treatment and sewage volume based on population growth and increased demand.



Efficient planning, thanks to the integration of building information modeling



20 percent faster engineering, thanks to consistent integration of data into COMOS and SIMATIC PCS 7



Fast commissioning and process optimization, thanks to real-time simulation with SIMIT

Efficiently design all aspects of operation



Even during ongoing operation, the digital twin offers numerous advantages: It continuously updates itself based on data collected during real operation. In this way, it mirrors the real status throughout the entire value-added process and throughout the plant's lifecycle – forming the ideal basis for optimizations during operation and for predictive plant maintenance.

XHQ Operations Intelligence supplies cross-system data and KPIs in real time, thereby enabling you to continuously optimize operation and compare the performance of multiple plants in different locations.

COMOS MRO ensures optimized maintenance processes. It permits the complete management, planning, and organization of operation and maintenance, including plant documentation, all in a single system. With SIMATIC PCS 7, operators can convey their concerns directly to maintenance personnel during the operating phase.

Optimize processes, save resources

The intelligent control of all plants and of the entire water infrastructure is a key requirement for cost-optimized and sustainable operation. The SIWA modular water management system provides the necessary tools. Using flexibly combinable software modules, you can optimize processes in water and wastewater networks, detect and locate leaks, optimize the energy consumption of drinking water pumps, and improve the flow in wastewater networks, even in the event of heavy rainfall.

With the cloud-based SIWA Optim application, you can tap into tremendous savings potential in terms of your pumps: Optimized pump schedules based on the latest plant data, demand forecasts, and daily updated energy prices enable you to reduce energy consumption by up to 15 percent.



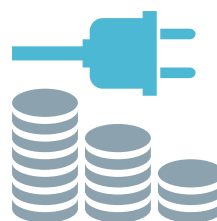
Optimized plant management and increased plant availability, thanks to the digital twin



Reduced operating costs and improved plant performance with XHQ Operations Intelligence software



Fewer downtimes and failures plus predictive maintenance with COMOS MRO



Up to 15 percent lower energy costs with SIWA Optim

Reduce energy consumption, exploit optimization potential



Save energy with data transparency

Keeping energy costs under control requires keeping a constant watch on all consumption data throughout the company. This is exactly what SIMATIC Energy Management enables you to do. The ISO-50001-certified, scalable product and solution portfolio offers you everything you need to make the right decisions at the right time, all from a single source – from energy data acquisition on the field level to company-wide energy analysis on the management level.

Nevertheless, the most economical, sustainable, and cost-effective use of energy starts with the hardware. With products, solutions, and services from Siemens, you are always on the safe side. Totally Integrated Power stands for an efficient, reliable, and flexible power supply across all voltage levels, while energy-efficient motors and frequency converters for low- and medium-voltage drives ensure that plant operation is more economical.

The path to the customized power supply concept

The water industry is also subject to increasing competition and rising cost pressure. With EnergyIP applications and services, you can use the wealth of available data to exploit additional value creation potential. The applications combine device and water data reliably and essentially in real time and fully support the complex processes in the modern water industry. They thus open up a brand-new dimension of transparency and optimization opportunities and permit problem-solving solutions, such as locating leaks.

Real added value, thanks to virtualization

Many other services also help to increase the productivity of your water and wastewater plants. For example, SIMATIC Virtualization as a Service permits the extremely simple and economical implementation of SIMATIC PCS 7 and WinCC projects using prefabricated, configured, tested, and ready-to-run systems.

You can also digitally optimize the commissioning and maintenance of field devices. Siemens experts at the Service Center support on-site technicians through secure remote access and thereby effectively reduce commissioning and maintenance costs.



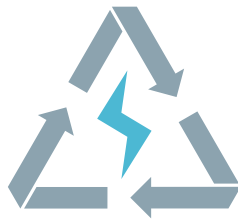
Improved cost situation and increased transparency with SIMATIC Energy Management



100 percent transparent energy consumption with EnergyIP application



Minimal downtimes, optimal use of equipment, and efficient maintenance with SIMATIC Virtualization as a Service



20 to 30 percent lower energy consumption, thanks to energy management systems

Ensure comprehensive protection



Best possible protection for critical infrastructures

The water industry is a critical infrastructure and is therefore subject to especially high security requirements. This makes it absolutely essential that the plant and all its subsections be suitably monitored, while also taking into account the entire plant lifecycle.

A comprehensive view of security

With 30 years of experience in the field of cybersecurity, Siemens is the ideal partner for the digital protection of your water and wastewater plants.

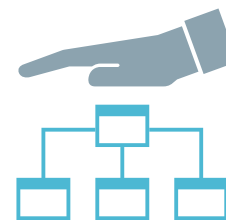
Siemens' Industrial Security concept is based on defense throughout all levels – "Defense in depth" – and offers a comprehensive protection concept based on the recommendations of IEC 62443, the leading standard for security in industrial automation. The cybersecurity concept protects all the relevant levels simultaneously – ranging from the plant management level to the field level and from access control to communications security. It includes plant security as well as network security and system integrity, and thus permits a consistent reduction in security risks.

Staying secure means remaining vigilant

Cyber threats are constantly changing and becoming faster. That's why the protection of water plants against external attacks must be an ongoing process. With Industrial Security Services from Siemens, you are equal to the task – from analyses of the current security situation and the set-up of protective measures such as firewalls and antivirus programs to the continuous monitoring of plants by Managed Security Services. And another important point: As soon as the Siemens experts detect an increased risk, you receive a warning as well as recommendations for proactive countermeasures.



Plant security



Network security



System integrity



A strong partner throughout the entire water cycle

As your partner, Siemens provides you with comprehensive solutions from a single source: hardware and software for the entire lifecycle and for all levels of your plant – from process instrumentation, industrial communication, and power supply systems to drive and protection technology as well as automation and process control technology.

Numerous successful projects around the world demonstrate Siemens' capabilities. Here are some brief excerpts:

Desalination plants

Australia: An integrated automation concept for the Water Corporation of Western Australia's first seawater desalination plant ensures increased performance, availability, and cost-effectiveness, particularly in the areas of process automation and energy efficiency.

Water treatment plants

Germany: For Wasserwerke Westfalen GmbH, the SIMATIC PCS 7 process control system enables the standardized, efficient management of six plants – spread over a distance of 80 kilometers – from a central control room, thereby guaranteeing a reliable water supply to about 1.5 million people in the Ruhr region.

Wastewater treatment

Austria: Each day, the wastewater treatment plants of the Zirl and District Wastewater Union treat around three million cubic meters of wastewater. Siemens modernized the plants with COMOS and WinCC OA without interrupting plant operation.

Water transport and pumping stations

Germany: K + S Kali GmbH uses SIWA Leak to detect and locate even the smallest leaks in their plant, which disposes of about 700,000 cubic meters of salt wastewater annually via a long-distance pipeline.

Research and development

Siemens is actively involved in numerous German and European professional associations and committees. The company supports research and contributes its knowledge and expertise to further the development of a sustainable water industry.

