



New perspectives
for the water industry ...

Totally Integrated Automation

Answers for industry.

SIEMENS



... for sustained and economical
water supply and treatment.

Answers for Industry: Totally Integrated Automation

Whether for the drinking water treatment, seawater desalination, sewage treatment or irrigation:

Totally Integrated Automation is the answer to all demands associated with the water industry – and covers the complete hydrological cycle. Siemens offers Totally Integrated Automation as a unique and integrated product and system basis for implementing customized automation solutions in all sectors of the water industry. Thus, Totally Integrated Automation provides the prerequisites for reliable and highly efficient water supply and treatment.



Process quality

Reliable and safe plant operation has top priority in the water industry, and all other targets – even cost reduction – are subordinate to this. For only in this manner is it possible to guarantee a reliable supply of premium drinking water and the treatment of wastewater – round the clock and with the desired quality.

Life cycle costs

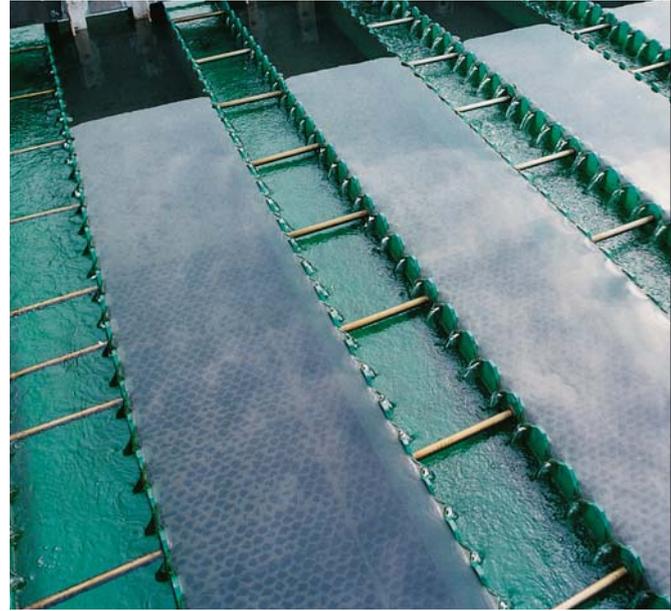
An increasingly important topic in the water industry: the consideration of costs over the complete life cycle of plants – starting with planning and engineering, through installation and commissioning, operation and maintenance, all the way to expansions and modernization. Also of great significance: the safeguarding of investments already made.

Sustainability

Owners of plants for water treatment not only carry the responsibility for water supply and treatment today and in the future, a further central criterion for the design and operation of these plants is the regenerative and efficient use of resources such as energy, additives and chemicals in order to protect the environment against unnecessary burdens.

The decisive levers for success in the water industry

Water is the most important commodity – and a resource endangered almost everywhere by excessive use and environmental pollution. Therefore there can't be any compromise where the sustained provision of a reliable, first-class and economical supply of drinking water and the treatment of wastewater are involved.



Optimization of process quality

The essential prerequisite for a successful water industry: first-class process quality. The perfect conditions for this are provided by Totally Integrated Automation – for example with the SIMATIC® PCS 7 process control system. This innovative process control system controls all processes throughout the plant and provides the basis for effective and safe process management. Widely distributed or remote plants such as pumping stations can be controlled and monitored extremely efficiently using an optional add-on, thus being completely integrated into the plant-wide, uniform optimization of operations management.

Reduction of life cycle costs

Totally Integrated Automation provides numerous advantages already during the initial planning steps and engineering. For example, the unique integration and the common hardware and software based on proven international standards

reduce interfacing requirements to a minimum. In addition, solutions can be perfectly scaled and tailored to the actual requirements and demands. Overdimensioning or underdimensioning is thus eliminated. Since the hardware and software components used are subject to different innovation cycles, we provide partial and total migration solutions which safeguard the investments already made.

Ensuring sustainability

In the context of Totally Integrated Automation, we offer a complete range of products and systems making an active contribution to protecting the environment – in the manner that the emission of CO₂ is significantly reduced by their use. Whether plant owner, system integrator, planning engineer or machine constructor: with its unique integration, Totally Integrated Automation offers a wide range of advantages throughout the complete life cycle of a plant.



Advantages with Totally Integrated Automation

Design and engineering

Intelligent tools provide support in selecting appropriate components and the optimum plant design, thus ensuring maximum planning reliability. System-oriented and integrated engineering minimizes the overhead for configuration and commissioning. Automation solutions can then be implemented significantly faster, safer and more economically.

Installation and commissioning

The consistent use of established standards such as PROFIBUS and PROFINET for plant-wide communication reduces interfacing requirements to a minimum and simplifies installation and commissioning. Even extremely complex plants can be implemented with significantly less effort.

Operation

Integrated communication provides maximum transparency throughout the plant. This means that plant owners can react much faster and more flexibly to changes in requirements and implement extremely effective diagnostics concepts. This is an extremely efficient lever toward minimizing unplanned downtimes. Integration on the basis of Totally Integrated Automation also means: uniform operation for all stations, irrespective of whether directly using the control system or from an operator panel.

Maintenance

Intelligent maintenance strategies allow faster detection, analysis and elimination of potential sources of error, even using remote maintenance. If modules have to

be replaced, this can be carried out during ongoing operation with many of our systems. Servicing engineers benefit from the uniform look and feel of our components.

Modernization and expansions

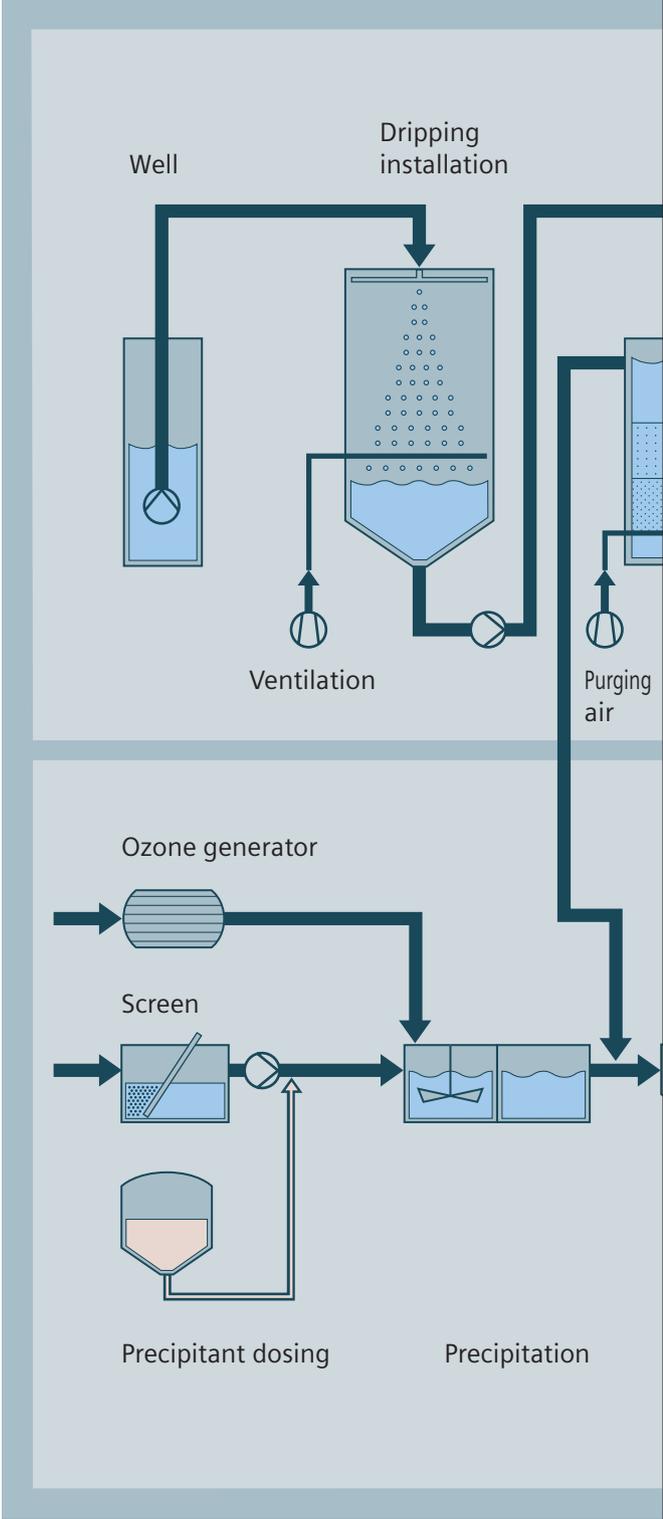
Existing plants can be adapted to changing requirements without problem, often without interrupting operation. The continuity in the further development of our products and systems always ensures a high level of investment security through the avoidance of unnecessary changes in the system.

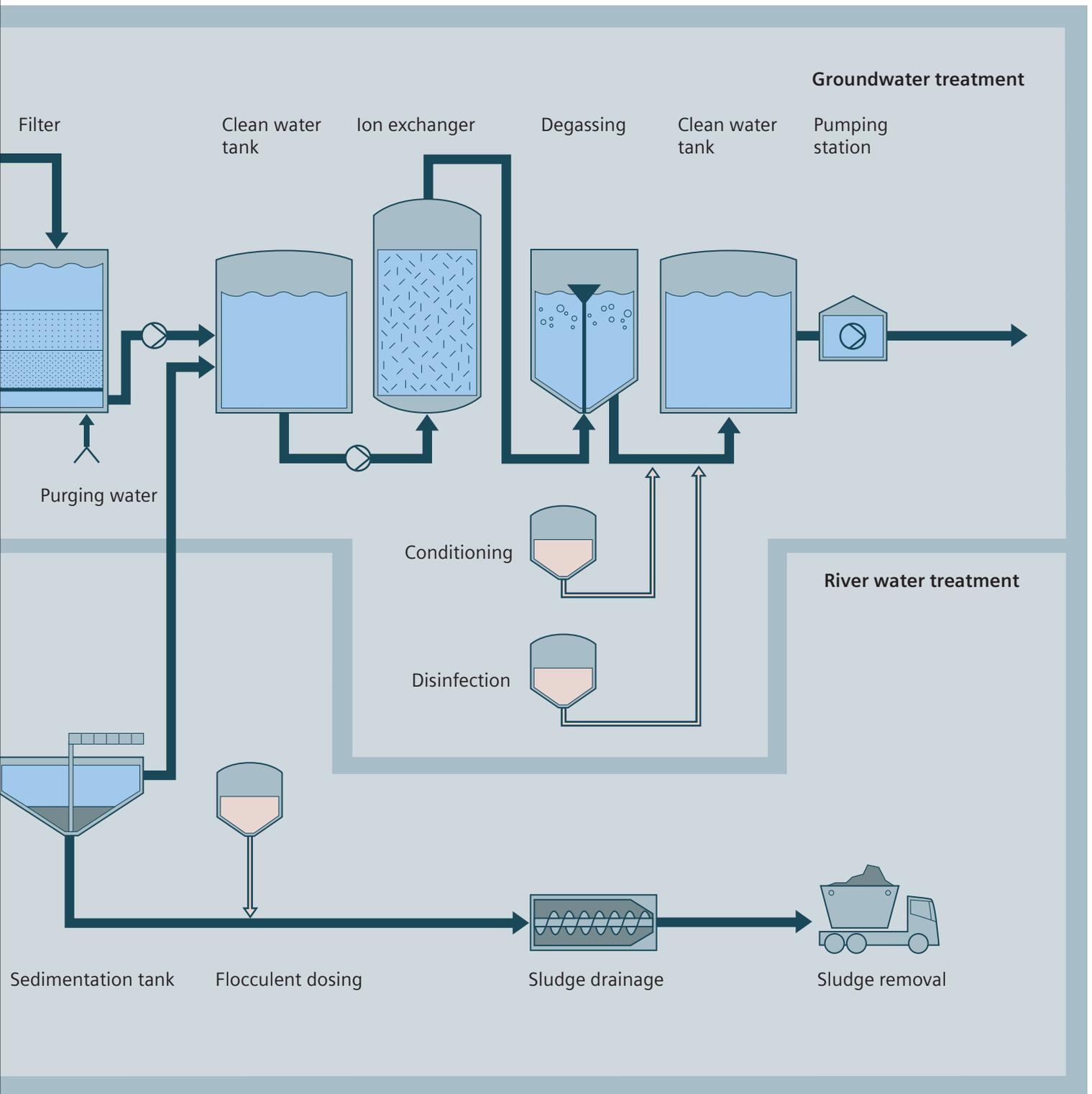
Drinking water treatment – example

Whether the drinking water supply of a metropolis or a rural area is concerned: water which has to be treated is transported via pumping stations and fed into the supply network.

These pumping stations are frequently far apart from one another, and are therefore often un-manned. It is therefore important that the components used feature maximum ruggedness and reliability and also interact perfectly – with regards to the process control technology, the drive and automation engineering, the process instrumentation, the power supply, and the complete networking.

In order to always be up to date on the component status, it is essential to permanently have an overview of all relevant information: pump performance, current flow rate, quality data, etc. And this depends on efficient operator control and monitoring of the plant processes, either using our SCADA solution called SIMATIC WinCC or our SIMATIC PCS 7 process control system. Remote stations can be integrated into the plant-wide automation using our SINAUT telecontrol system, irrespective of how far they are from one another.



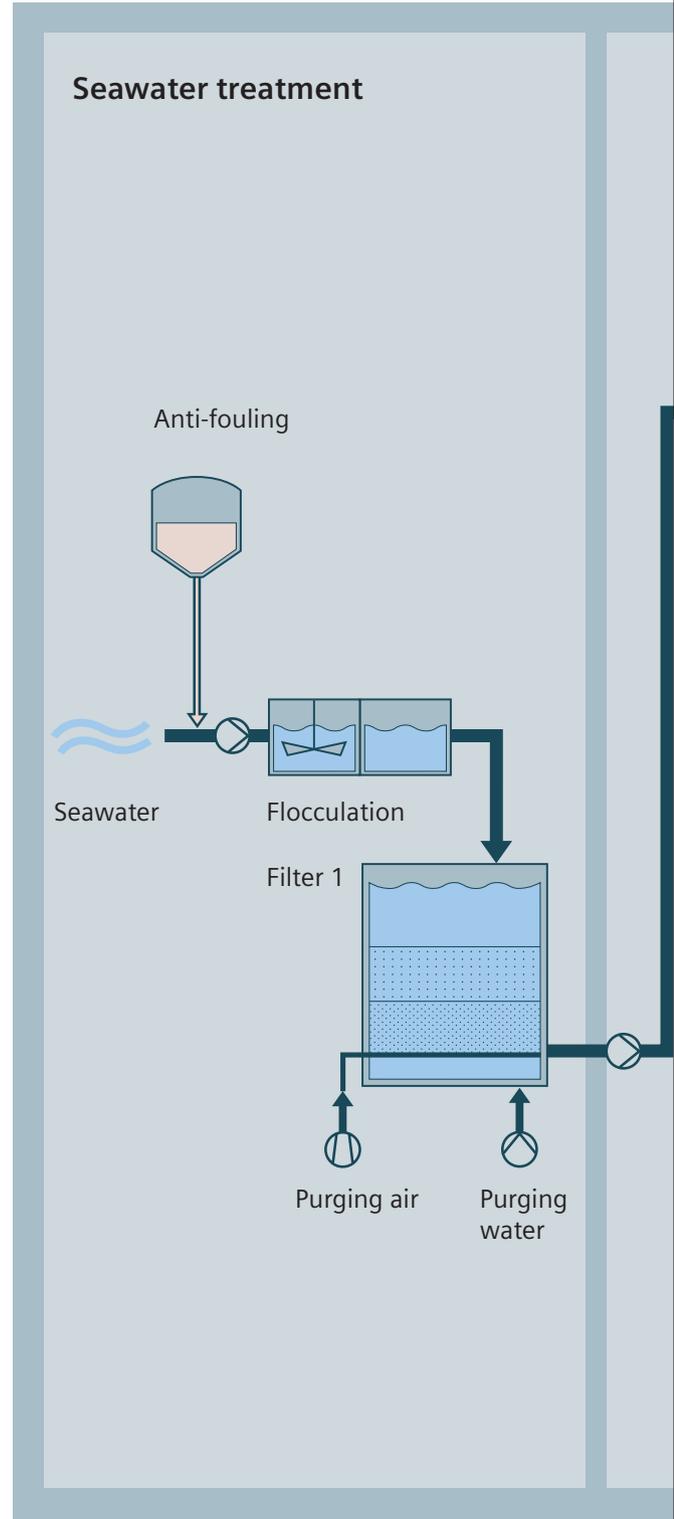


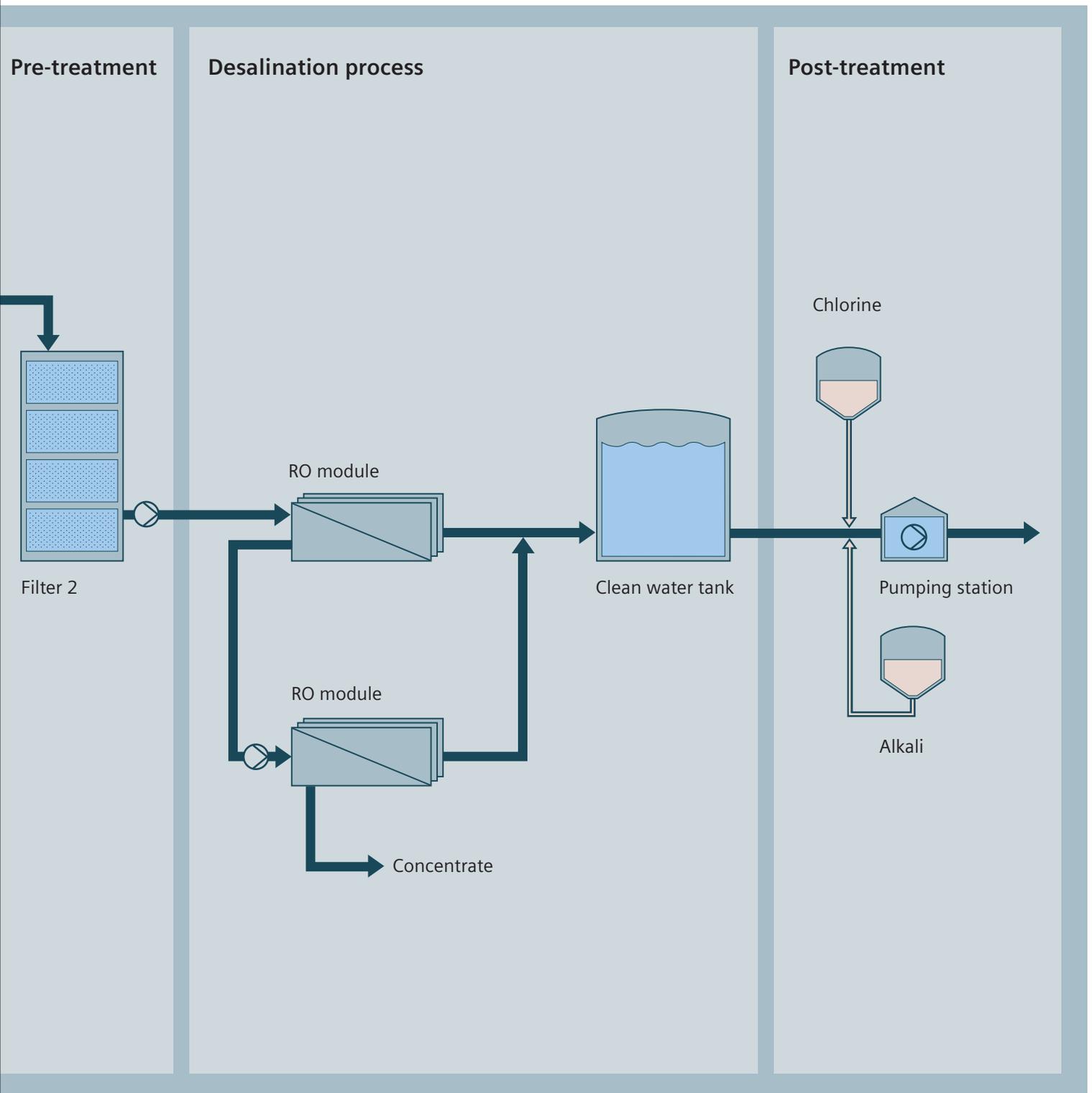
Seawater desalination – example

During the water desalination using reverse osmosis, the plants operate at pressures of up to 100 bar. The pumps used must therefore be able to provide a maximum performance when required. It is just as important that they are controllable to enable perfect adaptation to the respective requirement.

In this context, the quality of the drive control is of significant importance – its performance, its response over PROFIBUS or PROFINET, and of course its ruggedness, reliability and longevity. Our drive systems set the standards in all these disciplines. To make sure that component wear is detected sufficiently early – in other words, before a failure occurs –, we use intelligent, innovative diagnostics functionalities in our systems.

One prerequisite that the seawater desalination is economical: efficient utilization of energy. Our solutions for energy management allow the detection and utilization of valuable savings potentials – an extremely effective lever toward increasing the plant's economic efficiency.

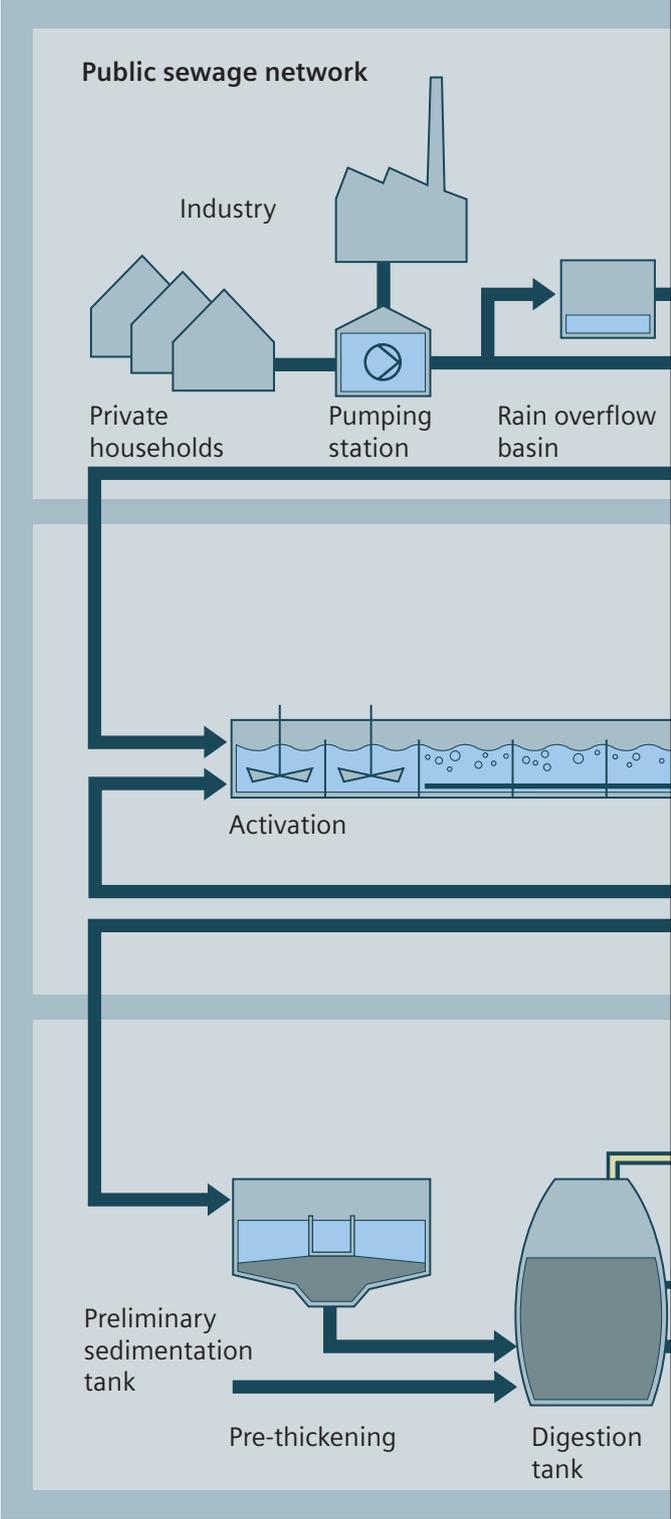


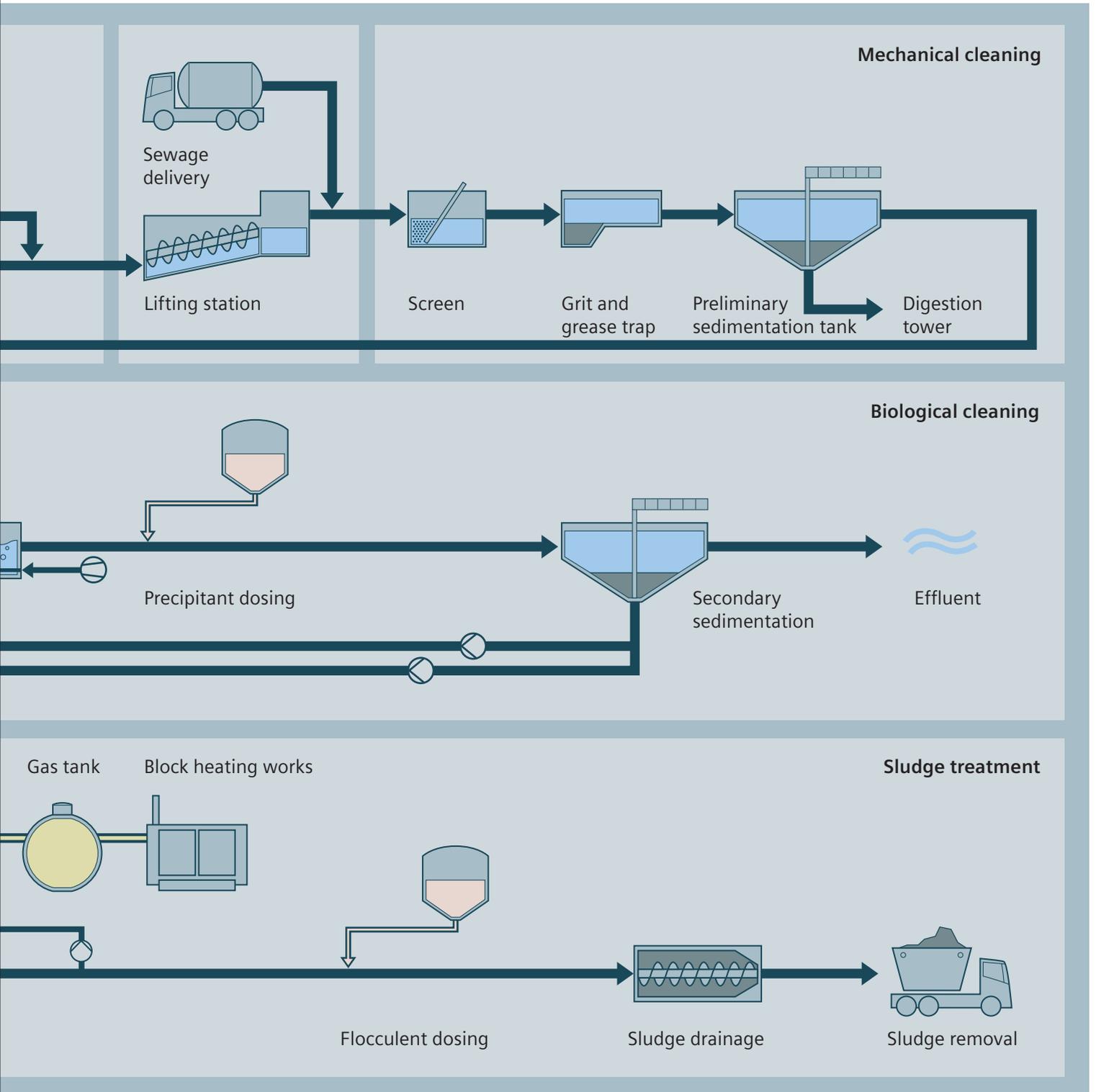


Wastewater treatment – example

The numerous purification steps in a sewage treatment plant – from the screen house up to the clarifier – must match perfectly. Only then is it possible to guarantee a high purification performance with optimum use of the equipment. In this context, the highly precise units from our comprehensive range of process instruments play an important role. They constitute the eyes and ears of the process. The information acquired by them is continuously collected by the SIMATIC PCS 7 system. Our process control system additionally makes this information available for process control and optimization – also with regard to optimized maintenance and repair. Motors are connected via SIMOCODE pro, our multifunctional motor management system.

This transparency can also be achieved if individual plant components such as pumping stations are located far away from one another. In such cases, our SINAUT telecontrol system provides reliable data transmission.





Totally Integrated Automation

With Totally Integrated Automation, Siemens is the only supplier of a comprehensive and integrated range of automation products and systems for plants of any size.

... in all sectors

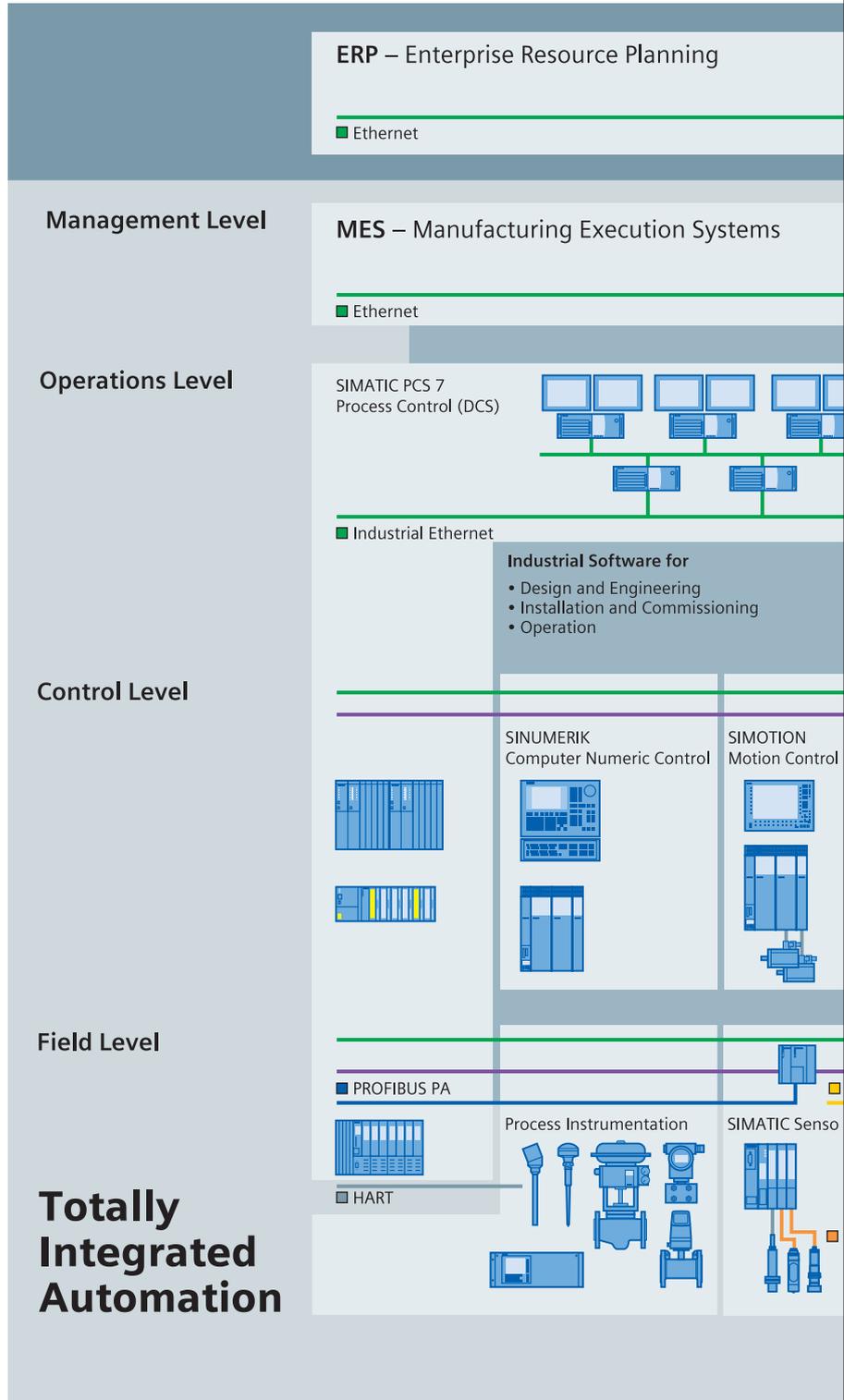
Whether for the process or production industry: Totally Integrated Automation is the unique basis for implementing automation solutions perfectly matched to the specific requirements, whatever the sector. The experiences gained from the cross-industry applications of our tried and tested products flow directly into our development work – which in turn benefits the water industry.

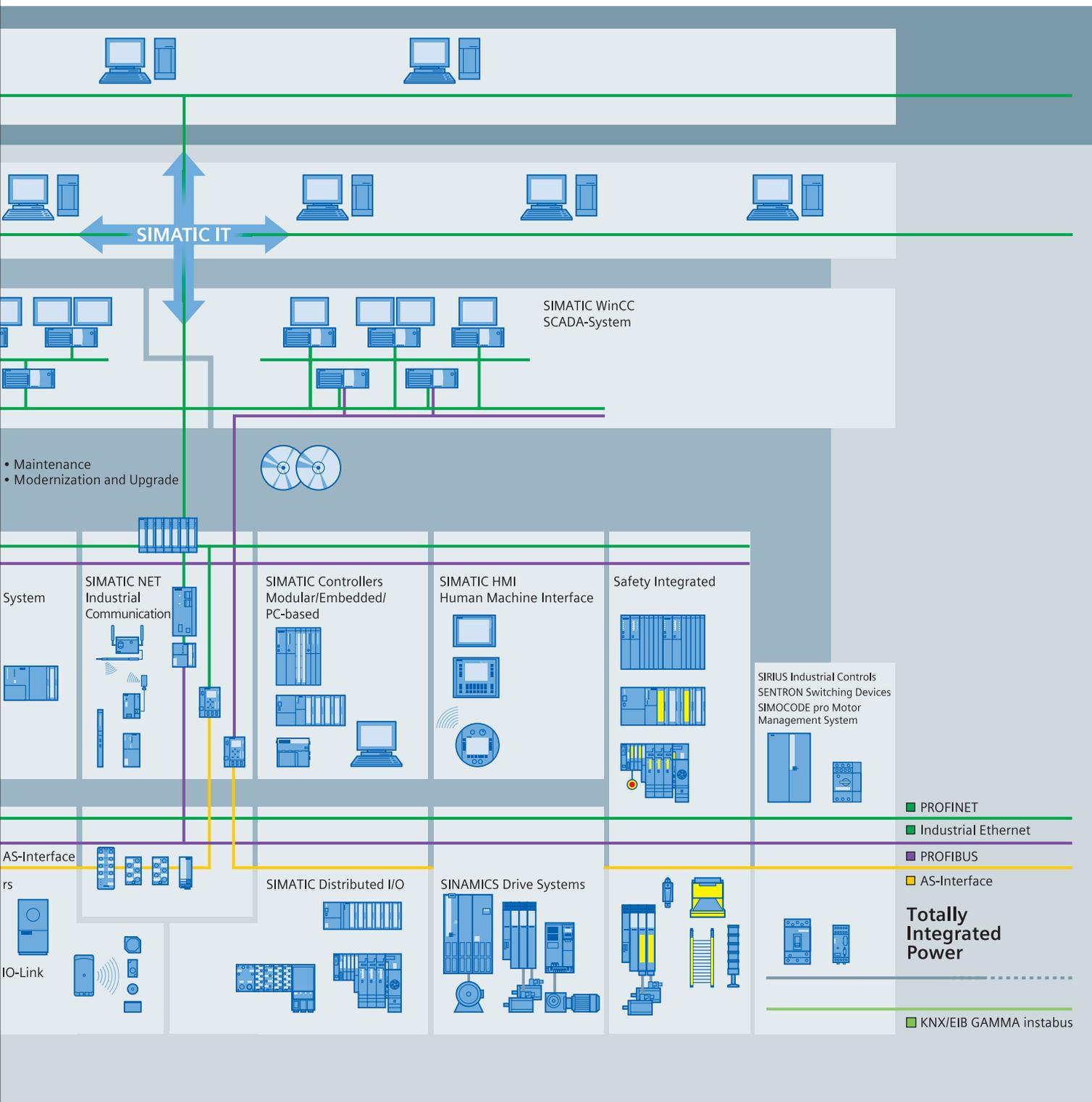
... across the entire process chain

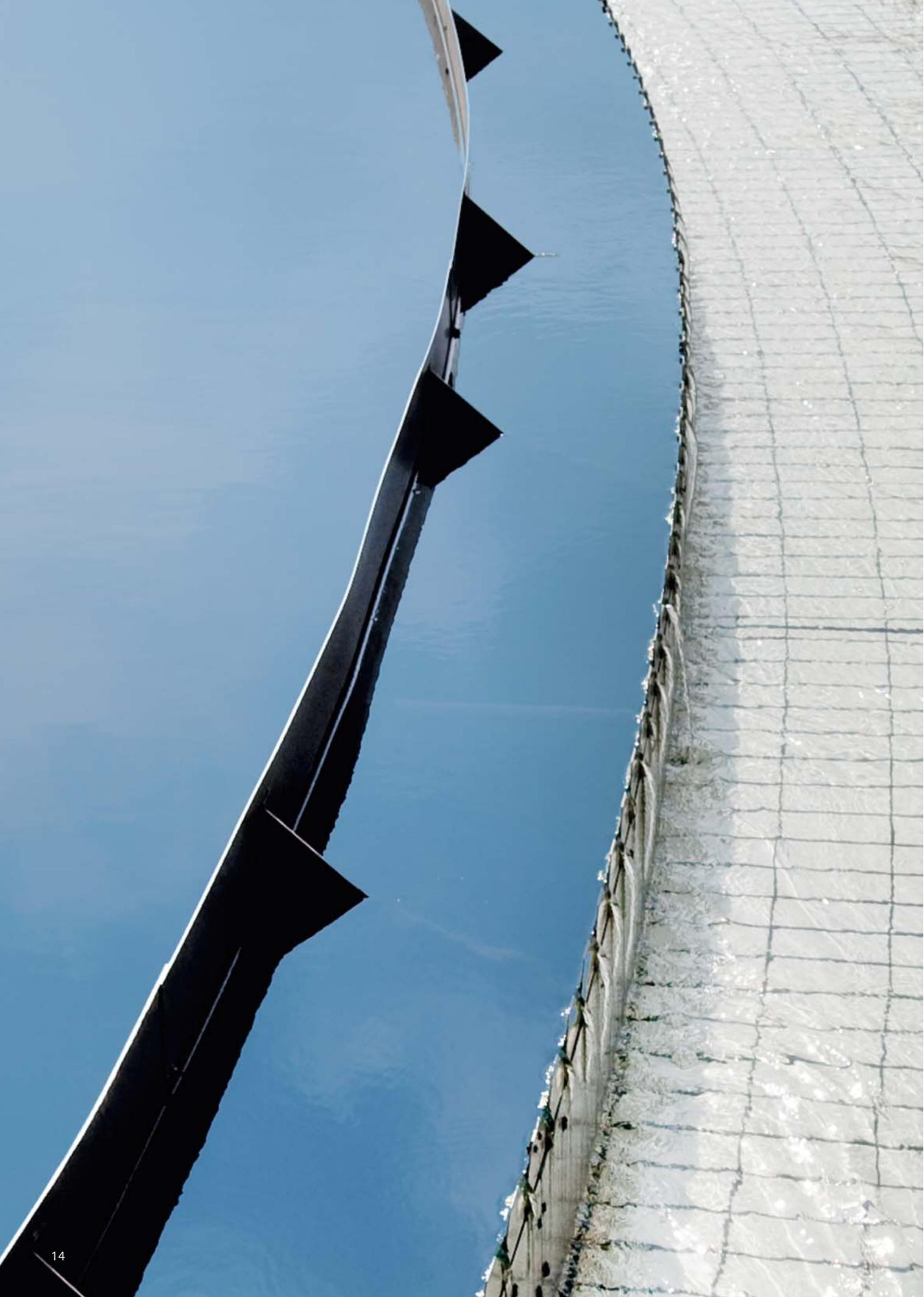
A complete plant can be automated uniformly and extremely efficiently on the basis of Totally Integrated Automation. In the case of sewage treatment plants: from the lifting station via the activation tanks all the way up to the effluent station.

... for the complete plant life cycle

Totally Integrated Automation provides advantages during the complete life cycle of a machine or plant – from the initial planning steps, through installation and commissioning, operation and maintenance, up to expansions and modernization.







Systematic process control

Independent of the plant type and size: we offer everything you need for the process automation with maximum efficiency. Our product range extends from the powerful SCADA system up to an extremely scalable process control system. With our solutions, you can integrate the widely distributed outstations which are typical for the sector perfectly into the overall plant automation system – and implement intelligent maintenance strategies without problem.



The versatile process control system: SIMATIC PCS 7

As a DCS (Distributed Control System) SIMATIC PCS 7 sets new standards. The innovative process control system is the first choice for larger applications, but also for small applications in which integrated control technology is to be used. It handles the complete automation of all processes in the water industry. Integration with regard to data management, communication and configuration as well as high performance make SIMATIC PCS 7 the core of highly efficient facilities. The range of functions of our process control system can be expanded by SIMATIC PCS 7 TeleControl for seamless integration of telecontrol technology.

For the recording and archiving functions, which are important in the water industry, we offer an extremely efficient add-on: ACRON – for reporting in accordance with ATV-DVWK-M 260.

Flexible and future-oriented

During the configuration of the plant, SIMATIC PCS 7 can be flexibly adapted to different plant sizes and customer requirements, or be upgraded at any time following an expansion or technical modifications. The system can be scaled flexibly from a small individual system with approx. 150 device list up to more than 60,000 device list. Thanks to well thought-out and proven migration strategies, existing control systems – even

from other vendors – can be migrated without any problems to SIMATIC PCS 7 stepwise, graded and of course also during operation.

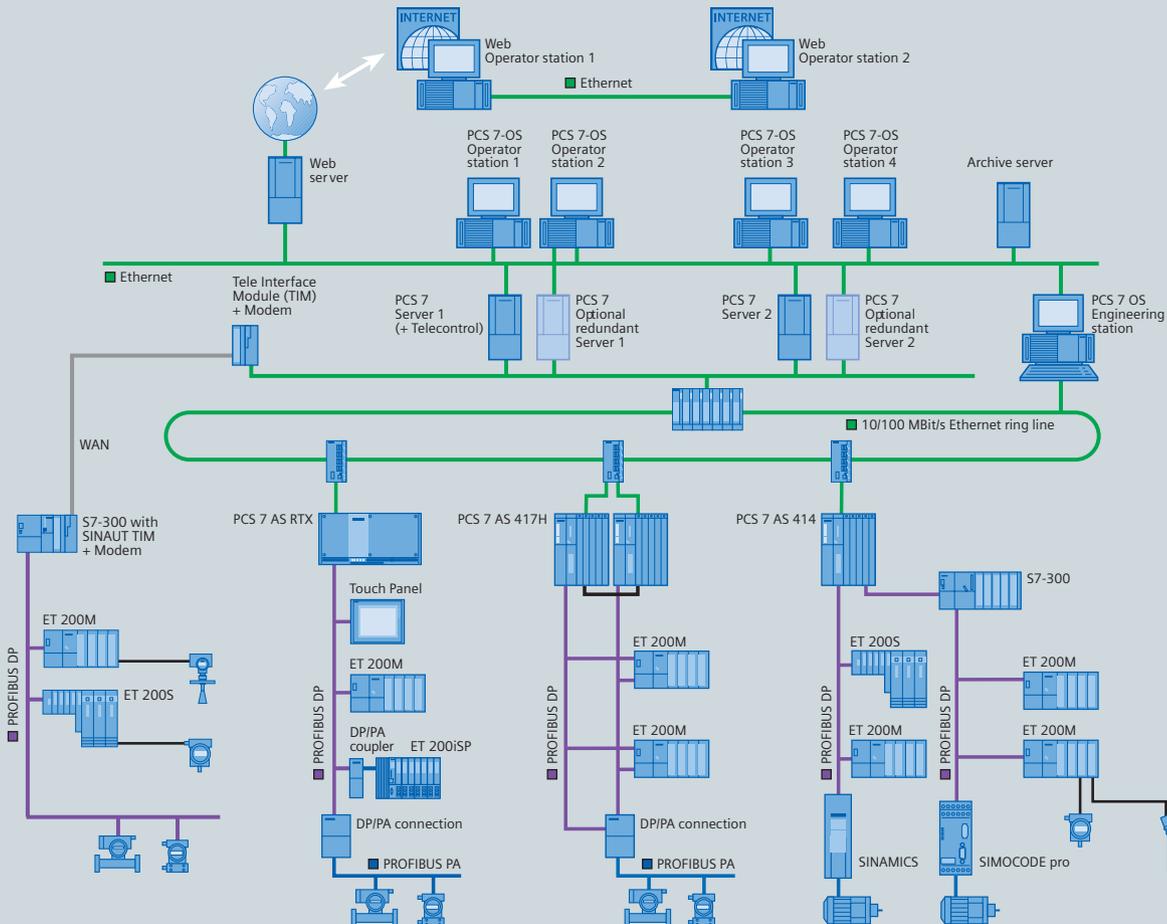
Compact solution for smaller plant sections and package units

SIMATIC PCS 7 BOX is a compact, PC-based solution containing all the advantages of a classic process control system and is perfectly suitable for small applications with separate plant sections and package units.



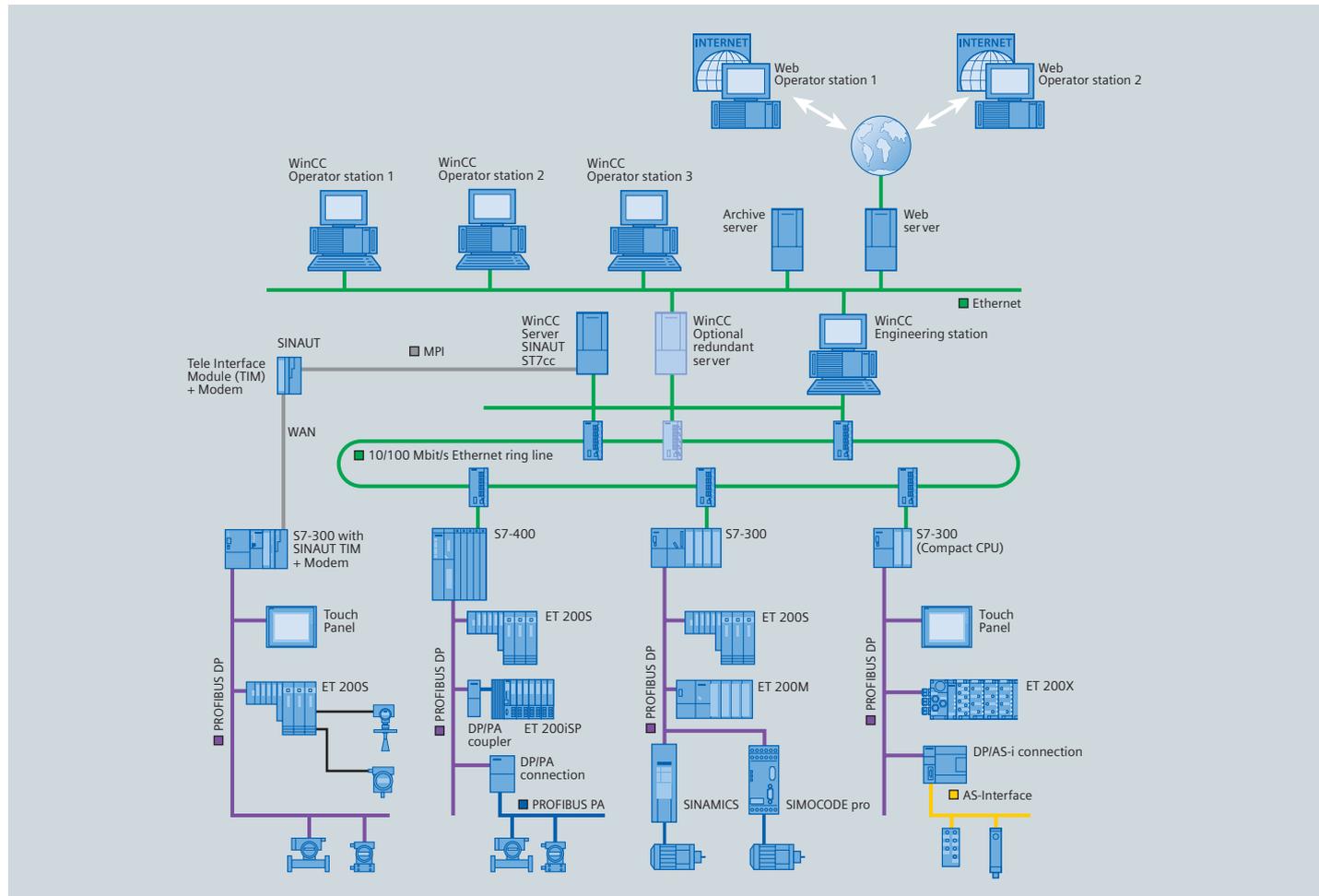
Plant-level asset management

Whether for SIMATIC PCS 7 or SIMATIC WinCC: we offer innovative solutions for plant-level asset management which allow the implementation of intelligent strategies for preventive diagnostics and maintenance. These solutions allow the complete maintenance to be planned, thus saving time and costs and avoiding faults and plant downtimes. All these advantages result in a significant improvement in plant availability.



SCADA system for process visualization: SIMATIC WinCC

SIMATIC WinCC (Windows Control Center) is the SCADA system from Siemens with maximum flexibility and scalability, and ideal for cost-sensitive applications. It provides all functions for operation and monitoring and can be expanded at any time by sector-specific options – for example for telecontrol technology or for the specific archiving and reporting functions associated with the water industry. In this manner, levers for complete plant optimization can be identified and implemented. The openness of SIMATIC WinCC can be optimally utilized to modernize existing plants and make them technologically state of the art.





Reliable telecontrol technology for the integration of outstations

The individual plant components in the water industry are frequently wide apart – for example wells, water towers, pumping stations and storm-water tanks. Telecontrol is therefore very important, because data transfer must be carried out extremely reliably over sometimes very large distances.

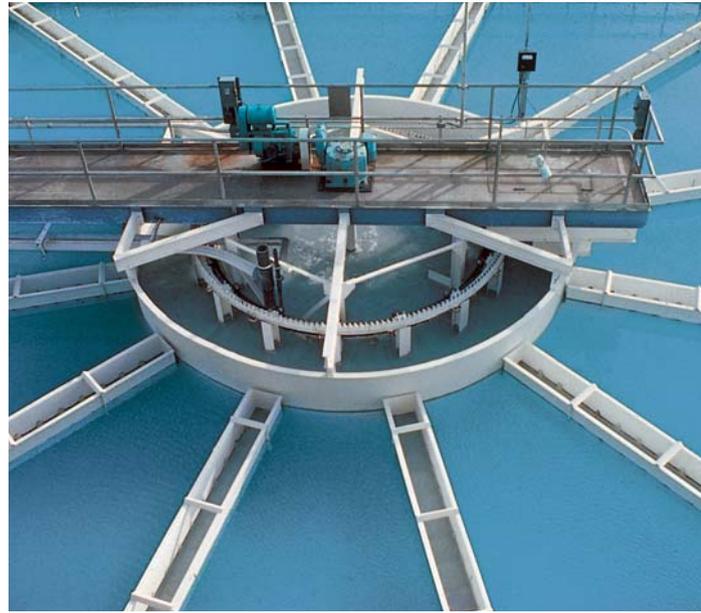
Flexible and efficient: SINAUT

SINAUT Telecontrol is based on SIMATIC, and in conjunction with the corresponding hardware and software it permits reliable and efficient networking of individual controllers and control systems over a WAN (Wide Area Network). Data transmission can take place over classic networks or Internet-based networks. In order to cover different requirements, SINAUT Telecontrol comprises two independent systems: the simple SINAUT MICRO for monitoring and control in distributed plants using mobile radio communication (GPRS), and SINAUT ST7, the multi-functional telecontrol system for fully automatic monitoring and control of distributed process stations

which exchange data with each other and with one or more control centers using a wide range of WAN media.

Plant automation and telecontrol together in one system: SIMATIC PCS 7 TeleControl

SIMATIC PCS 7 TeleControl is a new solution for integrating the outstations into the control system: plant automation and the monitoring of distributed process areas are joined together in one control station. The advantages: joint operator prompting, user-friendly and simple data management, and integrated engineering. The standardized GUI minimizes the risk of errors and the uniform software platform minimizes the configuration and maintenance overhead. SIMATIC PCS 7 TeleControl supports both classic and Internet-based communication links and can also be provided with a redundant design if there are increased availability demands.



Industrial communication for plant-wide automation: SIMATIC NET

The basis for process optimization in all industries is the efficient linking of information and automation technologies. The key to this is called industrial communication. Our proposal for this requirement is SIMATIC NET, which comprises everything required to implement a communications infrastructure for plant-wide data transfer.

Innovative and future-orientated

The SIMATIC NET offered by Siemens comprises innovative technology based on proven standards – ranging from AS-Interface, PROFIBUS, HART interfacing, up to Industrial Ethernet with integrated IT technology.

Examples of the many SIMATIC NET highlights: integrated communication even in hazardous areas with PROFIBUS PA, unlimited TCP/IP communication, and real-time applications with a previously unknown dimension – using PROFINET, the open Industrial Ethernet standard.

SIMATIC NET defines the direction for innovative networks. For example using the SCALANCE range of components for networks with high-performance, state-of-the-art management, Industrial Wireless LAN and matched with industrial security. SIMATIC NET therefore already secures the future of your plant-wide data networks today.



The comprehensive range of controllers: SIMATIC S7

Our controller families SIMATIC S7-300 and S7-400 offer you top-quality and field-tested control systems for all tasks associated with the water industry: they are reliable, powerful, rugged and scalable and equipped with all the required functionalities.

All-rounder for all processes: SIMATIC S7-300

The SIMATIC S7-300 range includes modular controllers for versatile applications which feature extremely high user friendliness and a high performance. Further characteristic features: integrated engineering minimizes the overhead for operation, maintenance and documentation, and their compact design saves valuable space in the control cabinet.

High performance for systems solutions: SIMATIC S7-400

The modular controllers from the SIMATIC S7-400 range feature a large memory, numerous inputs and outputs, and an extremely high processing rate. With state-of-the-art technology and maximum efficiency, they are ideal for system solutions in water treatment plants and can also be used for fault-tolerant and safety-related applications.

The fault-tolerant SIMATIC S7-400H offers hardware redundancy (hot standby) for uninterruptable processes such as frequently required with desalination plants or important pumping stations.

Safety and fault-tolerant functionality in one system: SIMATIC S7-400FH safely stops the process in the event of critical faults, and ensures that it is not interrupted in the case of non-critical ones.



Distributed field devices for all requirements: SIMATIC ET 200

SIMATIC ET 200 provides a complete range of distributed I/O systems: versions for use in the control cabinet, directly on equipment, or in hazardous areas. The powerful and flexible systems result in a significant reduction in the cabling overhead for plants.

Modular, economical and multi-functional

SIMATIC ET 200 systems can be easily scaled and expanded due to their modular design. Integral supplementary modules reduce costs and provide a comprehensive range of possible applications. Just one example: motor starters with communications capability for SIMATIC ET 200S. The units are prewired ready for connection, their parameters can be set from a remote position, and they are suitable for motors with a power of up to 7.5 kW, as used, for example, in many auxiliary units in the water

industry. They provide integral safety and diagnostics functions in just one device and pass on all diagnostics data to the controller over PROFIBUS or PROFINET. Using the software motor starter ES, they can be parameterized in the simplest possible manner, monitored during operation, and provide comprehensive diagnostics information when servicing.

SIMATIC ET 200 is a complete product range for all requirements. It includes multi-functional and bit-modular versions as well as multi-channel versions (both with degree of protection IP20), plus intrinsically-safe versions for direct installation in hazardous areas (in Zones 1 and 2 as well as 21 and 22). The SIMATIC ET 200 range also includes compact versions for use without control cabinets (with high IP65 degree of protection): as multi-functional or particularly low-cost versions.



Extremely precise and reliable: process instrumentation for the water industry

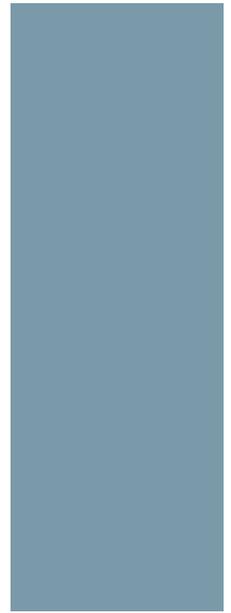
In order to satisfy the permanently increasing demands on the reliability and quality of the water supply and wastewater disposal safely and dependably, all relevant process information must be recorded exactly and reliably – even under harsh conditions. Siemens offers the matching product for every application.

Level

Our level meters – for example SITRANS Probe LU, SITRANS Probe LR and Hydro-ranger – provide extremely precise, cost-efficient and continuous measurement of levels, limit levels and interfaces. We provide the right technology for every medium: radar for measurements under difficult conditions, e.g. in the digestion tower of a sewage treatment plant, low-maintenance ultrasonic devices for contactless measurement as an all-rounder for almost all measuring tasks in the water industry, capacitive instruments with a high chemical resistance, or hydrostatic solutions.

Flow

Our flow meters measure the flow velocities of liquids of different consistencies, and of gases and vapors – electromagnetically, with ultrasound, with differential pressure, or according to the Coriolis mass flow principle.



Our battery-operated, electromagnetic SITRANS FM MAG 8000 water meter should be particularly emphasized. Thanks to its rugged and compact design, the unit can be used anywhere. It works with one single battery for up to six years, and is thus independent of a power supply. If you want to upgrade the flow meter without problem, we recommend our SITRANS F US ultrasonic devices, which are also available as clamp-on versions.

Pressure

SITRANS P is a complete, modular range of instruments for measuring relative, differential and absolute pressures. Their convincing features in addition to measuring precision, ruggedness and user-friendliness include the fact that they are easy to adapt to different plant conditions thanks to their modular design.

Temperature

Whether in hot, cold or hazardous environments: the SITRANS T range comprises field and control room devices as well as head-mounted transmitters which work extremely precisely and intrinsically safely and which can be connected to a wide range of different sensors.

Software

The SIMATIC PDM (Process Device Manager) allows extremely efficient operation, parameterization, maintenance and diagnostics of intelligent field devices. The uniform and multi-vendor software tool is based on the leading global standard EDD. It can be used independent of the automation system by means of a PC or programming device, and integrated in SIMATIC PCS 7.



Industrial switchgear systems with communications capability

Industrial switchgear systems from our comprehensive

SIRIUS range provide trouble-free and economical operation in numerous applications in the water industry.

Multi-functional motor management: SIMOCODE pro

SIMOCODE pro is the flexible and modular motor management system for low-voltage constant-speed motors. It is preferentially used to protect and control pumps, slides or valves. It can be easily and directly connected to higher-level automation systems via a PROFIBUS DP interface. Its functions cover all requirements between motor feeder and automation system. In just one compact system, SIMOCODE pro includes all protection, monitoring and control functions required for any motor feeder. The functional bandwidth extends from simple current, voltage or power detection through detection of the direction of rotation or drive belt slipping or tearing, up to monitoring for dry running of pumps, filter contamination or flow and level. In addition, the system can be flexibly expanded by digital ground fault and temperature modules, and can automatically monitor the torque and limit switches of slides.

SIMOCODE pro provides user-friendly software tools for integrated and time-saving solutions. For example, SIMOCODE ES allows fast parameterization, configuration and diagnostics – either from a central position over PROFIBUS or directly on the control cabinet. The integral SIMOCODE ES Graphic editor supports ergonomic parameterization by means of drag & drop. To allow central parameterization or plant-wide diagnostics, SIMOCODE pro can be conveniently integrated into the SIMATIC PCS 7 process control system or into SIMATIC S7. The function blocks required are also included in our SIMATIC water library. Important data can then be provided not only for process control but also to central maintenance or power management systems.

Soft starting and ramp-down: SIRIUS soft starters 3RW44

In numerous applications, soft starting and ramp-down are a real alternative to direct or star/delta starting, both technically and economically. Unpleasant side



effects such as mechanical shocks in the machine or voltage dips in the power supply can be specifically avoided by using soft starters. The complete range of SIRIUS soft starters covers all standard and high-feature applications of motor starting.

The SIRIUS soft starter 3RW44 is perfectly suitable for the high demands in the water industry. The wide range of functions of the compact all-rounder helps solve even difficult starting and ramping-down procedures, e. g. of high-performance compressors. SIRIUS 3RW44 unifies all functions of a modern motor feeder: from an integral bridging contact system to an electronic overload relay up to device overload and thermistor motor protection. By using a PROFIBUS DP module, the SIRIUS 3RW44 can be integrated easily into higher-level controllers. Communication can be conveniently established over PROFIBUS using the Soft Starter ES software, which supports simple parameterization, monitoring and diagnostics of the soft starter.

Integrated power distribution

With Totally Integrated Power, we offer you integrated solutions for power distribution – from medium-high voltage down to the socket outlet. Since Totally Integrated Power and Totally Integrated Automation use the same communications and visualization standards, all equipment for automation, power distribution, power management and building automation can be integrated completely, and cross-system solutions can be implemented easier. Intelligent components with communications capability as well as innovative power management systems provide innovative and efficient energy concepts.

Power distribution and power management

A close connection between process control and power management is particularly important in the case of water supply and treatment with its highly distributed and frequently unmanned plant areas.

Modular and compact power distribution components with communications capability

As part of Totally Integrated Power, we offer our SIVACON S8 switchboard and busbar trunking system 8PS as well as the SENTRON switching, protection and measuring units at the low-voltage level.

The type-tested SIVACON systems ensure safe operation with a high degree of plant and operator protection. In addition, the SIVACON busbar trunking system LR has been proven as an optimum and safe means of power conveyance in corrosive wastewater atmospheres. Further positive features of the SIVACON busbar trunking systems are high short-circuit resistance and the modular design of the tap-off units.

The modular and compact SENTRON circuit-breakers 3WL (open) or 3VL (compact) handle the switching and protection functions in the SIVACON systems. Consistent modularity and a comprehensive range of accessories allow high flexibility during planning, configuration and assembly. Switching statuses and triggering can be conveniently integrated into the total power distribution and automation

concepts via PROFIBUS DP or Ethernet. With the innovative SENTRON PAC3200 Power Monitoring Device with integrated Ethernet interface standard, which can be connected to a wide range of different loads, it is possible to measure electrical parameters and energy extremely precisely. By using an optional expansion module, the device can be integrated into any power management system or into PROFIBUS-based automation systems for further processing of the data.

Our efficient SIMOCODE pro motor management system is particularly suitable for motor feeders, and can be seamlessly integrated over PROFIBUS DP into power distribution and automation systems.

Reduced costs, very high availability

Increasing energy prices and increased sensitivity for environmental aspects mean that the topic of energy saving is also becoming additionally important in the water industry.

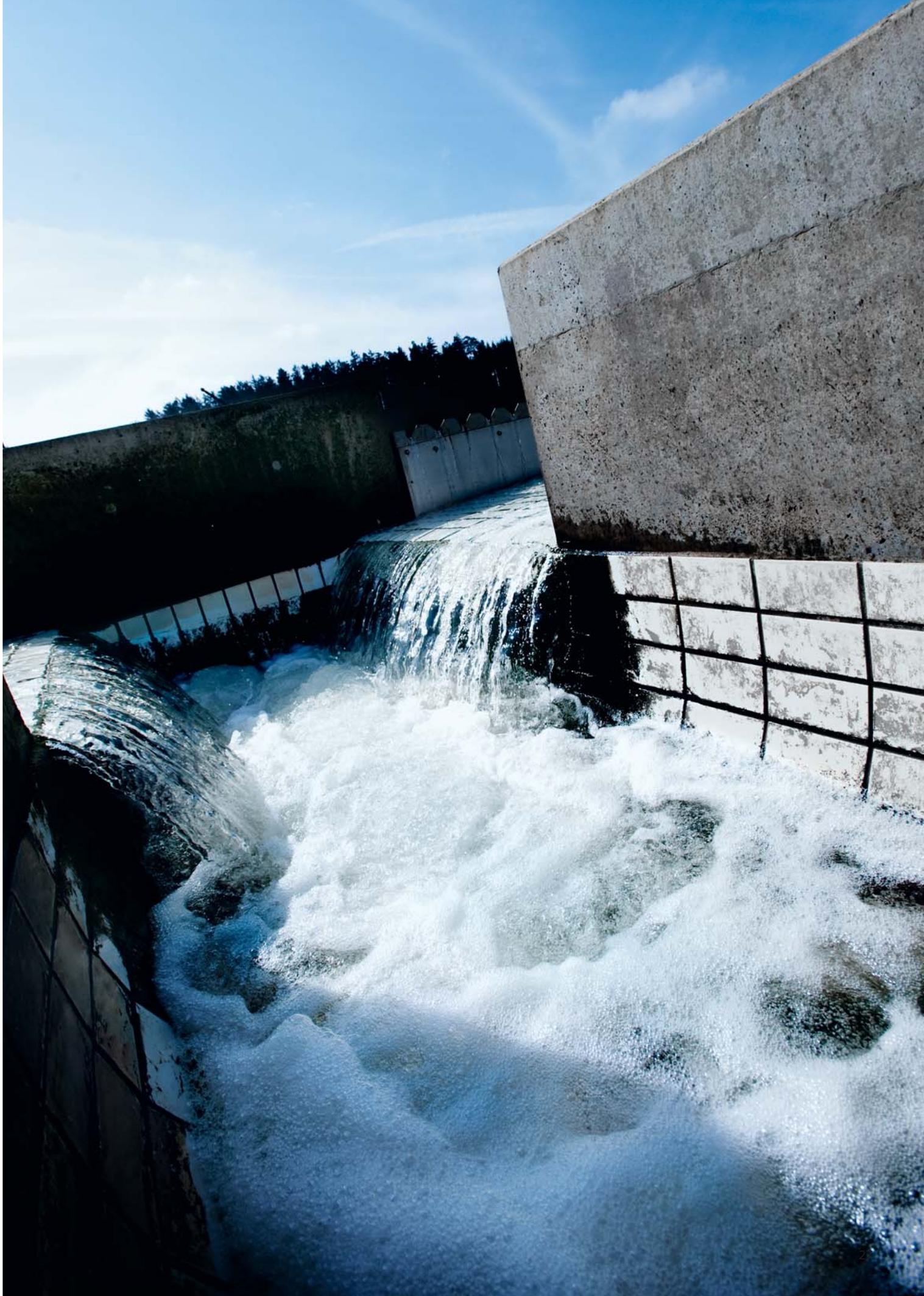
Powerful software packages for the matched components provide efficient data management in higher-level power distribution and automation systems.



Some of the functions provided by the user-friendly ES Power software switch include simple parameterization, commissioning, monitoring during operation and preventive maintenance of the SENTRON circuit-breakers, and it helps to already avoid faults in advance. The software switch can be used as a stand-alone program or integrated via an object manager into STEP 7 V 5.1 SP5 or higher.

For cost-conscious operation, SIMATIC PCS 7 powerrate and SIMATIC WinCC powerrate add-ons are available for intelligent power management. They can be integrated into higher-level automation and power distribution systems. The measured values of the load feeders can also be integrated by SIMOCODE pro into SIMATIC PCS 7 powerrate and SIMATIC WinCC powerrate.

All these features make a decisive contribution toward keeping the power consumption transparent, and toward permanently improving the energy quality and the availability of the power distribution – at the same time reducing the power requirements and associated costs.





Reliable, precise and efficient: drive technology

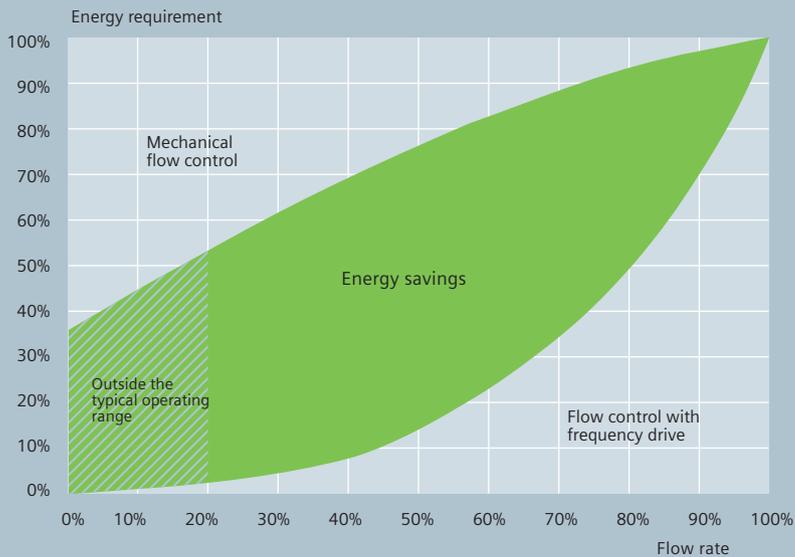
With the product families SINAMICS, MICROMASTER and ROBICON Perfect Harmony, Siemens offers perfectly matched drive systems for the water and wastewater industries – with power from a few kilowatts up to the two-digit megawatt range. Our systems make a decisive contribution toward the optimization of process quality. They are characterized by low operating costs and high economic efficiency.

Powerful and economical: energy-saving motors

Typical features of our motors: rugged design, long service life as well as low-maintenance and reliable operation. All these features contribute toward improvement of the complete plant availability. In addition, the compact design and low weight simplify integration of the motors into systems. High efficiencies improve the energy balance, thus reducing operating costs.

Intelligent and future-oriented: variable-speed operation

By using variable-speed motors with frequency converters, it is possible to save a significant amount of energy since they only consume the power which is actually required. Thus, the energy consumption is significantly lower than with constant-speed drives of the same power – particu-



larly with flow machines such as pumps or blower compressors. The starting performance of a variable-speed drive also saves energy – about 2 to 4% – since there are no current peaks during start-up when using a converter. The drive never requires more than the rated current. The torque surges associated with current peaks are also absent. The soft starting and ramp-down stresses the mechanical system of the complete drive train less and increases its service life. Further advantages resulting from the use of a frequency converter include omission of mechanical control, improved power factor, and optimized control quality with regards to the mechanical response.

Significantly faster and more exact: controlling of delivery rates

Compared to mechanical control strategies such as throttling, it is possible to control flows significantly more precisely

using variable-speed drives, and with shorter response times. The pump system can therefore adapt the delivery volume faster and more accurately to the actual requirements when changes occur. The advantage: increased safety and quality for the water supply and treatment.

Significantly less overhead: operation, diagnostics and maintenance

Fast commissioning and simple operation on the device itself or from a control room save time and costs. If servicing is necessary, the modules can be replaced by means of a few simple operations. This reduces the duration of any downtimes. The space-saving cabinet installation with low-noise operation down to 69 dB makes further protective measures superfluous.

Simple calculation of savings potential: SinaSave

The investment made in our drives with frequency converters frequently pays for itself after a few months. And from then on, everything else is pure profit. Our software tool SinaSave shows how quickly the investment in a low-energy motor or a frequency converter will pay for itself. Using specific plant features, the program determines how much energy can be saved in the respective application. The amortization period is calculated on the basis of the total monthly energy savings, further cost-reducing effects of variable-speed operation such as smoother machine running, and the purchase price. The software can be downloaded free of charge at the following Internet link:

www.siemens.com/energy-saving

Useful tools for automation in the water industry

As one of the global leaders for automation and drives and a reliable partner of the water industry, Siemens has developed numerous tools with one objective: to support you in fulfilling all industry-specific requirements more simply and safer.

The configuration tool for SIMATIC PCS 7: ProTime PCS 7

ProTime PCS 7 can be used to rapidly and reliably convert individual automation tasks into orders for SIMATIC PCS 7 system configurations. The result provided to users is a detailed parts list with order numbers and prices for all components required. This improves the configuration quality and significantly reduces the time required for this. The most recent program versions and user information for ProTime are available for downloading free of charge from the Internet.

www.siemens.com/pcs7protime

The selection guide for field instruments: PIA-Selector

PIA-Selector provides you with active support for optimum selection and fault-free configuration of the field instrumentation – so that you can use all advantages of our comprehensive range of products. Depending on the task, the approach can be based on applications or measuring procedures. The result provided to users is a complete order number for the desired device – rapidly and simply. The PIA-Selector is available free of charge as a web application – and always right up to date.

www.siemens.com/pia-selector

Configuration tool for drives: Sizer

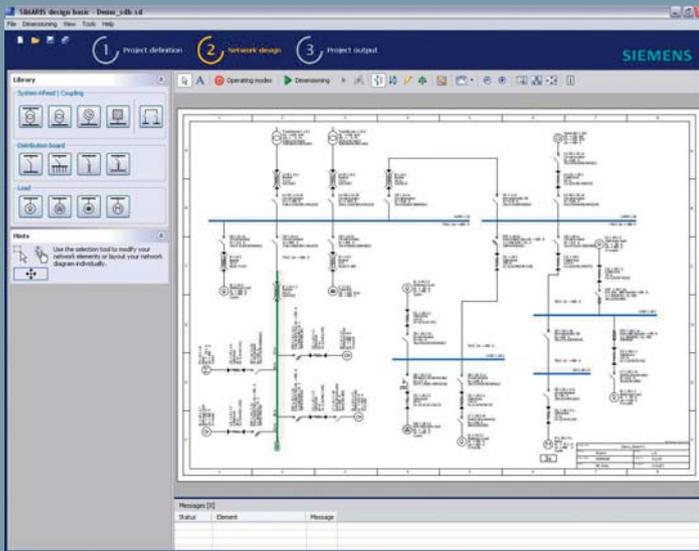
Sizer makes the configuration of our drive systems from the SINAMICS, MICROMASTER and SIMATIC ET 200 FC ranges extremely simple and leads to the correct device with just a few mouse clicks. Sizer is available free of charge as an independent tool.

www.siemens.com/sizer

Dimensioning of the power distribution: SIMARIS design

SIMARIS design reduces the overhead for the overall planning of power distribution systems and thus also the time required to select the products to be used. The software provides support when determining the optimum dimensioning and enables fast and simple response to changes. This ensures high reliability and planning quality and also that all technical directives and standards for dimensioning and installation are complied with.

www.siemens.com/simarisdesign



Calculation of the amortization period: SinaSave

It is extremely easy with SinaSave to calculate how fast an investment in our drives with frequency converters will pay for itself. Our software tool determines the amortization period on the basis of the total monthly energy savings, further cost-reducing effects of the variable-speed operation such as smoother machine running, and the purchase price.

SinaSave can be downloaded free of charge from the Internet at www.siemens.com/energy-saving

Efficient engineering support: SIMATIC water library

Our free water library provides extremely efficient engineering support for the SIMATIC PCS 7 process control system. It contains more than 100 tested function blocks including sector-specific face-plates. Together with the powerful and intuitive configuration tools, the water library accelerates engineering and minimizes the commissioning overhead. Since it also executes on SIMATIC S7-300 PLCs and SIMATIC WinCC, it is also suitable for use in smaller plants with SCADA systems and for complete integration of package units in SIMATIC PCS 7.

Following previous registration, the water library is available from your regional sales representative or send an e-mail to water.automation@siemens.com

Material collection for planning engineers: Consultant-DVD

The free Consultant-DVD supports engineering companies in their everyday work: it contains completely configured application examples for all planning processes in the automation and energy technology for plants in the water industry. Approx. 1,400 text modules for quotations are available in Microsoft Word and GAEB D81 formats for simple generation of specifications. Currently available are examples for medium-sized and large sewage treatment plants; waterworks, pumping stations and reverse osmosis systems will be available soon.

Following registration, the consultant DVD is available from your regional sales representative or send an e-mail to water.automation@siemens.com

Competent and reliable: global service and support



As your partner, we offer far more than just products and systems: our comprehensive and innovative range of services is available to you worldwide.

E-business

Regardless of where you are currently located: you can have online access to our complete portfolio round the clock. We have created a comprehensive information and ordering platform for our complete range of products and systems. You can therefore obtain detailed information on our offerings online, select and order products, track their delivery status, and much more. You can also find information online concerning service, support and training. All that you require: a PC with Internet access.

Life cycle support

For planning, commissioning, maintenance or upgrading: our experienced service specialists are there for you in all phases of your project. In addition to technical support, our range of services includes the fast and reliable delivery of spare parts and also field service. We can of course also handle your repair orders – for every single product from our portfolio. Our target in everything we do: maximum productivity and economic efficiency of your plants.

Training

Whether you wish to extend or refresh your current knowledge: our comprehensive range of SITRAIN courses comprises more than 250 specially tailored training courses with a high practical content and experienced teachers. You can extend your expertise in one of our global Training Centers, or learn directly on your PC – with our time- and cost-saving online courses or by using our teach-yourself software. SITRAIN provides a significant prerequisite for reduced costs and increased efficiency.

Well looked after locally: Siemens Solution Partners

In addition to our own competence in the field of system integration, we cooperate closely with our Siemens Solution Partners. These selected partner companies are highly qualified in the automation engineering and power distribution sectors and offer you – under the designation „Siemens Solution Partner Automation“ or „Siemens Solution Partner Power Distribution“ – professional consulting and active support for all relevant aspects of your projects. You can find more details on our Solution Partners on the Internet:

www.siemens.com/automation/solutionpartner

Best Practice

Desalination plant in Valdelentisco, Murcia, Spain



Requirements

In order to provide agricultural irrigation and to supply excellent drinking water in the region, the state-owned company Aguas de la Cuenca del Segura S.A., which is part of the department of the environment, planned the building of a new desalination plant. The plant in Valdelentisco was to have a capacity of 200,000 m³/d, thereby being one of the largest of its type worldwide. The company Cadagua, internationally renowned in the desalination plant sector, was commissioned with the implementation.

Siemens solution

Cadagua selected Siemens for the contract. SIMATIC PCS 7 is used for automation of the plant operation according to the principle of remote osmosis. To achieve maximum availability, all components of the process control system are of redundant design. Also from Siemens: flow and level meters as

well as frequency converters. The distributed data exchange takes place over a redundant PROFIBUS DP system, digital process instruments are connected over PROFIBUS PA. The SIMATIC S7-400 controllers communicate with the engineering system and operator stations over Industrial Fast Ethernet, which can be operated at 100 Mbit/s. A client/server configuration was installed in the control center for the complete process monitoring. This configuration comprises two server stations (OS) to which two clients (OS) are connected, and a central engineering station (ES).

Customer benefits

With the help of Totally Integrated Automation, the customer has been able to combine maximum supply reliability and exceptional drinking water quality with high economic efficiency. A reduction in power consumption by 20–30% is expected for the project, and thus a reduction in costs for the desalinated water by 10–15%.

Best Practice

Mannheim waterworks, Germany



Requirements

The Mannheim waterworks not only supply the city of Mannheim with drinking water, but also the city of Viernheim and the municipalities of Ilvesheim and Brühl. The owner, MVV Energie AG, handles the distribution and is therefore responsible for maintenance of the complete pipeline network in the supplied area. In order to be able to react to brief variations rapidly and precisely in the future, the Schwetzingen Hardt waterworks had to be modernized.

Siemens solution

For modernization of the plant, the customer selected products and systems from Siemens, including variable-speed drives with SINAMICS G150 frequency converters and high-quality process instrumentation – for example SITRANS P DS III for pressure measurements, SITRANS FM for flow measurements and SITRANS LU for level measurements. These devices trans-

fer the measured data to the control system over PROFIBUS PA and PROFIBUS DP. The SIMATIC WinCC process visualization system permits clear representation of all processes in the waterworks.

Customer benefits

The drive technology used is completely convincing, and not only due to its high control accuracy for the delivery volume. During operation, the combination of rugged three-phase asynchronous motors and the latest generation of frequency converters also saves maintenance costs and energy – and reduces loading on the mechanical pump systems at the same time. The drive technology is perfectly tailored to the actual requirements. This „slimmed down“ scope of functions is also worthwhile: parameterization and operation have become significantly simpler. Furthermore, the modules can be replaced using just a few operations when servicing.

Best Practice

Shanghai sewage treatment plant, China



Requirements

By means of a new sewage treatment plant in the northeast of Shanghai, the water quality in the upper course of the River Huangpu was to be improved and the wastewater from the 320,000 inhabitants of the Songjiang district treated. At the same time, the plant was to increase the treatment capacities for industrial wastewater.

Siemens solution

Siemens was awarded the contract. The solution convinced due to the exceptional SIMATIC technology and the outstanding price-performance ratio. The processes in the sewage treatment plant are controlled by a total of three SIMATIC PCS 7 systems. These are networked with the operator stations over Industrial Ethernet. The I/O systems are connected to the control system over PROFIBUS DP. The sewage treatment plant also includes an

external pumping station which is controlled by radio using the SINAUT telecontrol system and is also integrated into SIMATIC PCS 7.

Customer benefits

SIMATIC PCS 7 convinced right from the beginning, especially due to its reliability and stability and the facility for implementing all functions of the control and automation system on one integrated platform. Further advantages of the automation solution: rugged technology, guaranteed provision of spare parts, and flexible expandability.

Further information:

www.siemens.com/water

Siemens AG
Industry Sector
Industry Automation
P.O. Box 48 48
90327 NÜRNBERG
GERMANY

www.siemens.com/automation

Subject to change without prior notice 04/08
Order No.: E20001-A820-P200-X-7600
Dispo 06303
21/11092 MK.GC.LT.YTIA.52.8.05 WS 04083.
Printed in Germany
© Siemens AG, 2008

The information provided in this brochure contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.