

Automation in the Water Network for Public Utilities



Advanced Industrial Automation

OMRON



Water treatment

AUTOMATION IN THE WATER NETWORK FOR PUBLIC UTILITIES

Water is vital for all uses - from residential to manufacturing - so, for this reason, everyone who uses it abundantly must ensure its safety. The protection of the bodies of water from excessive use, from pollution and from insufficient regulations is due to the industrial development of water, which, in turn, influences technological development. This new idea has thus led to a change in the way of thinking about water: from a simple water resource to increasingly economic resources for producing, distributing and selling with industrial standards.

The modern management of network services requires the latest technologies in the fields of electronics, information technology and measurement and remote control tools. More specifically, the remote control is a fundamental tool for automation and the remote management of systems used for public services and for the collection and development of data taken from the field.

In fact, it is in this area in which the operating and environmental conditions are often problematic, when the information is taken from and sent to the supervision center to be processed and made available. Therefore, the efficiency of an



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automation and monitoring system is directly linked to how reliable the tools are, such as measurement tools like sensors and transducers. Automation and remote control also provide considerable transparency of information and communications through the possibility of real-time management of information from the larger utility.



Remote Management

REMOTE CONTROL TECHNOLOGY

Modern control systems for water treatment plants are not only designed to meet the general requirements of this process, but must now be easily integrated into a wide variety of architectures, including public utility networks. Management system components of Italian water services have in fact gradually evolved, integrating a number of "unique multi-service providers" who not only embraced the water sector, but also the electricity, gas and telecommunications sectors. Therefore, it is fundamental in producing a remote-control system to favor solutions that could adapt features and performance in order to develop the requested functions and equipment to be integrated.

Only a trusted, experienced partner with up-to-date technology, like Omron can meet these requirements. From the processing of a single field signal to a Web connection, from local control of a substation to the monitoring of a central station, Omron provides a series of key elements based on its own industrial requirements of reliability and strength, which represents the ideal solution for the management, administration and the successive expansion of a water treatment

System, the programmable logic controller, for example, can use a unique series of configurable products ranging from a few to a few thousand I/Os for integrating and managing an entire network.

The peripheral control for the decentralized I/O works through a standard field bus (DeviceNet™, Profibus, CAN and ASI) and directly connects smart measurement and configuration devices. The PID settings can work with the software functions available in the CPU, with the specifications board or with the integrated DCS modules. Communication works through the most varied transmission systems in connection with single application requirements: from twisted-pair cable to coaxial cable, from fiber optics to wireless.



EXTENSIVE PLANTS ON THE TERRITORY

Single stations are connected via an Ethernet network or again with a field bus or via modem, as well as with GSM.

Managing water network systems, as has happened with all other public networks, requires control architectures that meet the ever-stricter requirements of system monitoring and efficiency, quality and certification for the services provided. This means easy access to data, availability of functions to manage and integrate information, and support for operators in the identification and successive management of abnormalities. All this is possible if

products are available, which can peripherally and centrally directly interface with various control systems and share different communications protocols. Omron was among the first companies to develop and use graphic touch-screen terminals in an industrial setting. As well, it has produced a series of programs dedicated to supervising and monitoring plants through synoptics and animation, using the most advanced software technologies (OPC/ActiveX) to simplify, as much as possible, interfacing with all field devices, and direct integration with the most available PC productivity systems.

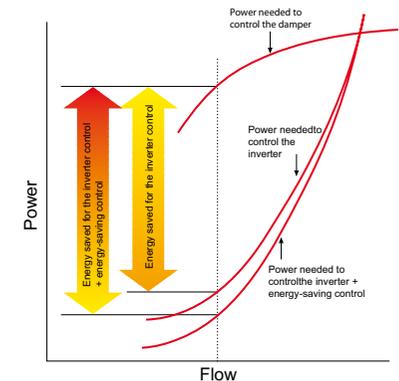


Energy Savings

ENERGY-SAVING PRODUCTS

In Kyoto, agreements for a sensible program to reduce environmental pollution were drawn up. Every country must work to reach this objective. Energy savings is one of the main strategies to work on in order to satisfy these agreements: public utilities have also become involved in this. One of the most common areas deals with the control and activation of fans and pumps.

Omron inverters were developed for this purpose. In fact, they have a number of functions assures the optimization of energy used when running the engines: specific software modules were specially studied in order to meet the need of operators who must carry out specific operations, such as the set-up and management of fans and pumps. The energy-saving function automatically sets the output voltage for the engine based on all minimum instant load conditions – with equivalent performance – the power absorbed by the engine.



ALL OMRON COMPONENTS FOR TREATING WATER

Measurement and control relay



Series K8

- Comprehensive range: 8 models
- Compact dimensions
- Multi-functional models with easy set-up

Digital measuring instruments



Series K3

- Clearly visible display
- Wide connecting setting range
- Remote management via serial communication

Level controllers



61F

- Basic and DIN version
- Models with configurable sensitivity
- Operating delay to prevent inopportune malfunctions

Switching supplies



Series S8

- Compact dimensions
- High reliability
- Diagnostic functions for programmed maintenance

Control systems



Series C

- High-performance PLC used globally
- Ethernet, DeviceNet, PROFIBUS, Asi, open-communication system structures for implementing flexible manufacturing systems

Operator interface



Series NS

- High-performance display touch screen for direct online use
- Simplified integration of production data into Office applications
- Secure monitoring and administration of production processes via a Web browser

Communications network



CQM1/CS1

- Ethernet, DeviceNet, Profibus connections

Monitoring software



V530

- Data can be configured during the process
- Modern technology to store and read data for the most sophisticated productions and logistics uses

Inverter



Series R88

- Integrated energy-saving functions
- Integrated energy-saving functions





Carovilli Aqueduct

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GUARANTEED REGULAR, WATER FLOW

Carovilli is a town located in the province of Isernia located 860 meters in altitude on a charming highland plain. The town extends from a built-up downtown area to Castiglione and Fonte Curelli, with houses sparsely spread throughout.

The town administration required guaranteed regular water flow to the homes of approximately 1,600 inhabitants with adequate pressure and network loss monitoring.

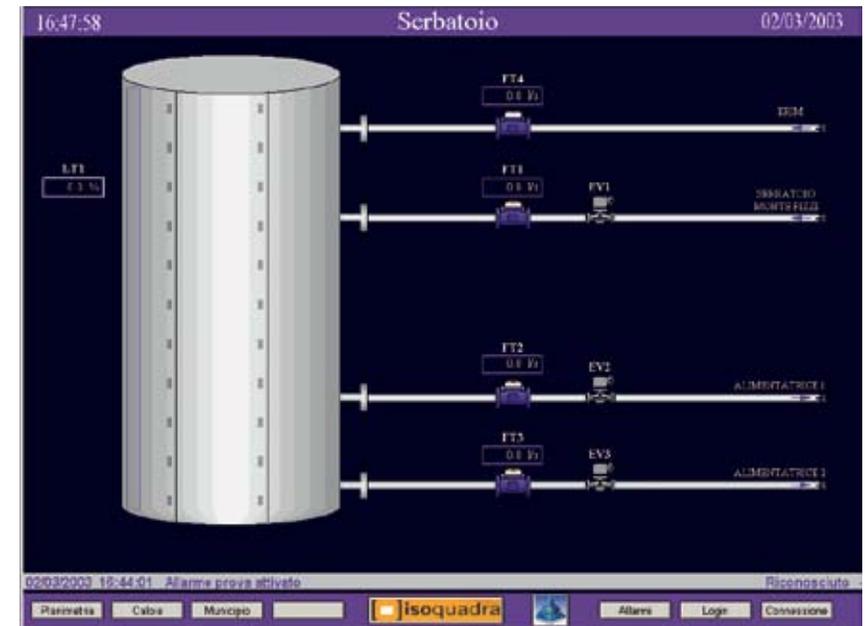
The problem was solved by integrating a remote control system into the aqueduct plant, developed using Omron CX Supervisor software.

The plant is equipped with a tank that stores water located upstream from the system, which flows through pipes to the two branch stations (Piana and Municipio); from these stations, the water is distributed through tanks with solenoid valves to people throughout the area.

The remote control system is structured to constantly control the water in the tank as well as water inflow and outflow. The water is measured in the branch stations to confirm flow and pressure until it arrives at the tanks where the solenoid valves are controlled.

FLOW AND PRESSURE ALWAYS UNDER CONTROL

This application was produced by Piramide Automazione of Pontinia (LT)



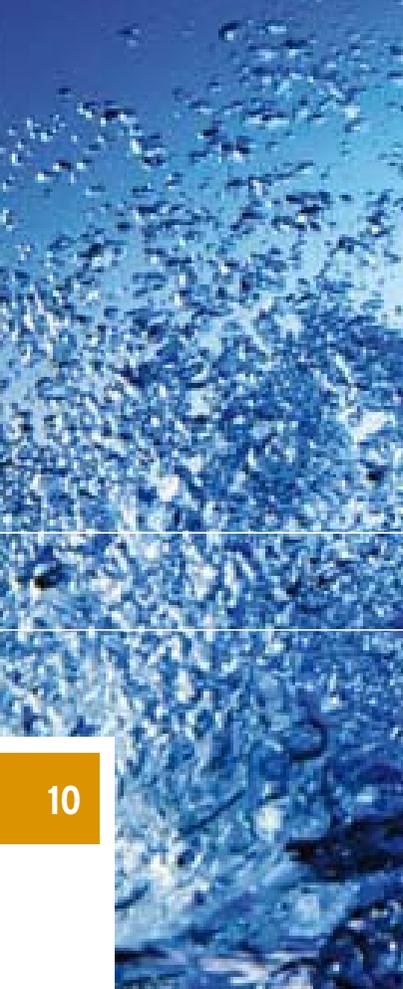
Calculating the difference between the outflow of the water from the tank and the quality of water supplied to inhabitants with plant losses being accurately quantified.

The remote monitoring system was produced by Piramide Automazione of Pontinia (LT), which specializes in developing civil and industrial automated services and systems, specifically management and monitoring control for various manufacturing processes. The system has a dedicated computer near the municipality where the Omron CX Supervisor and Omron CPM2A PLC were installed on branch stations.

Every Omron CPM2A PKC is connected via a traditional modem and is dedicated to receiving information sent by Scada, to check for operating status (solenoid valve opened or closed), to run commands (close solenoid valve/open solenoid valve), and to manage alarms in real time. All points, in addition to being connected to a fixed telephone line, are then available for use with a GSM modem.

Omron SCADA was installed in the municipality to monitor the entire plant via the computer.





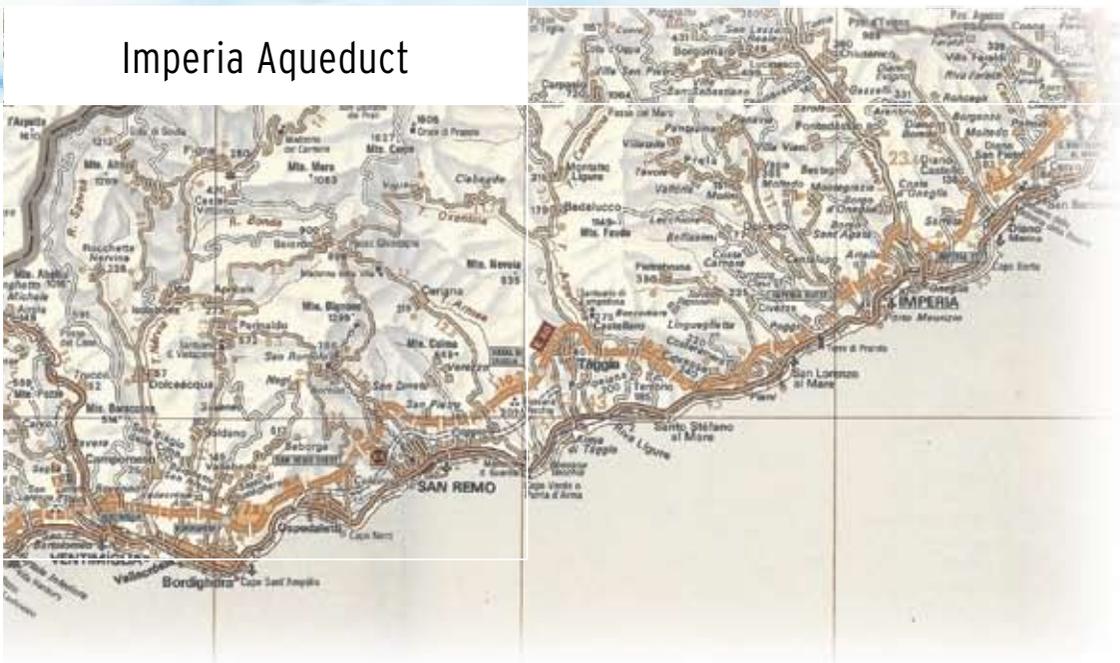
Imperia Aqueduct

The coastline of Imperia up to the French border is equipped with a modern water distribution regulation system due to its recent waterworks system, called the Acquedotto del Roja. This supply system, which supplies approximately 250,000 people, over 50 km of coast, has an average flow of 1,500 m³/h.; the main pipes have branches controlled by 11 monitoring and regulating stations, which supply the distribution networks, integrating several wells found in the towns supplied.

Siac, a company in Imperia specializing in planning and implementing industrial automation and computer networks engineered a remote management and remote control system for the Roja Aqueduct, using Omron CX Supervisor software.

The distributed intelligence system is made up of 11 substations, each managed by an Omron CS1W PLC, and a central computer (PC) connected to the PLC via dedicated telephone lines.

The PLC autonomously manages the local station: it runs the rotation pumps, calculating the work hours and the number of starts, turning off single units (informing the supervisor of a possible breakdown) in the event of a malfunction in the pipes (e.g. blocked pumps), and turning on



IMPROVED ENERGY SAVINGS

These applications are carried out by the System Integrator SIAC of Imperia



ALL STATION SETTINGS CAN BE ACCESSED VIA PALM PC OR CELLULAR

floodgates and control valves by comparing set points and values read by the sensors (always redundant) sampling pressures and flows.

The PC Supervisor, located at AMAT SpA headquarters, which manages the aqueduct, continuously controls the remote PLC stations via a dedicated CDN point-to-multipoint link connected to serial ports over a converter socket.

All station settings are available 24 hours a day via the monitoring station as well as palm PC or cellular. In addition, with the telephone integration of the Omron voice module, made by Siac, alarms are clearly transmitted to available operators, who immediately recognize the type of alarm over the phone line.

Data analysis allows to optimize management in terms of assuring service and saving energy and money. By managing electronic pumps so that they only fill tanks during specific hours results in an approximate savings of 70%.

Another integrated function in the Supervisor compares the total flow in the main pipes and the quantity of tapped single ports to quickly identify any possible losses or malfunctions in the system.



Golfo Aranci Water Purifier

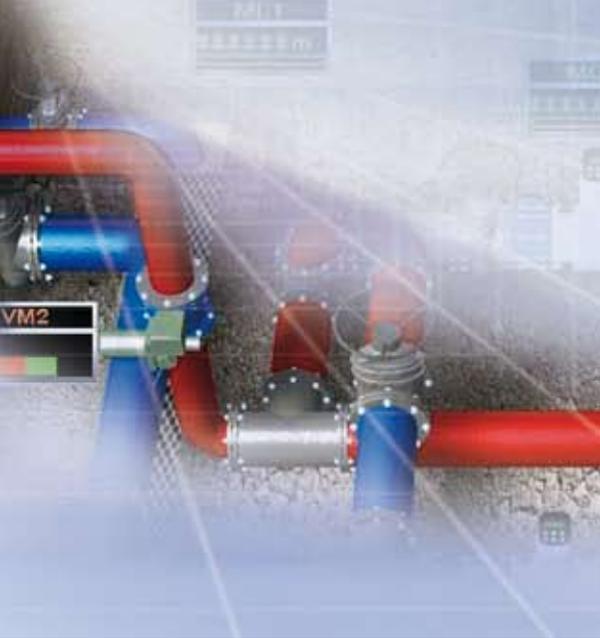
OPTIMIZED SERVICE AND ENERGY SAVINGS

Managing the water purifying system in a tourist area has always been problematic, since the actual number of inhabitants or users vary from season to season. If we add to this the fact that the water purifying system is located in one of the most beautiful places on the Smeralda coast, with its environmental heritage to be saved and promoted, then this information shows the environmental challenges faced by the Golfo Aranci water purifier.

To meet this challenge, on behalf of Zani Acentro Ambiente (CA), we can think of B.M.I. – Bio Mass Impianti di Trezzano s/N (MI), specialized in water treatment

processes, which managed the work in cooperation with B.D. Automazione, a company from Pavia specialized in planning and implementing industrial automation.

The new water purifying system, located on a hill near the Golfo Aranci is there to assure variable capacity for 2,500 inhabitants who live there all year round, as well as the 25,000 people who stay during the summer.



Valderice Aqueduct



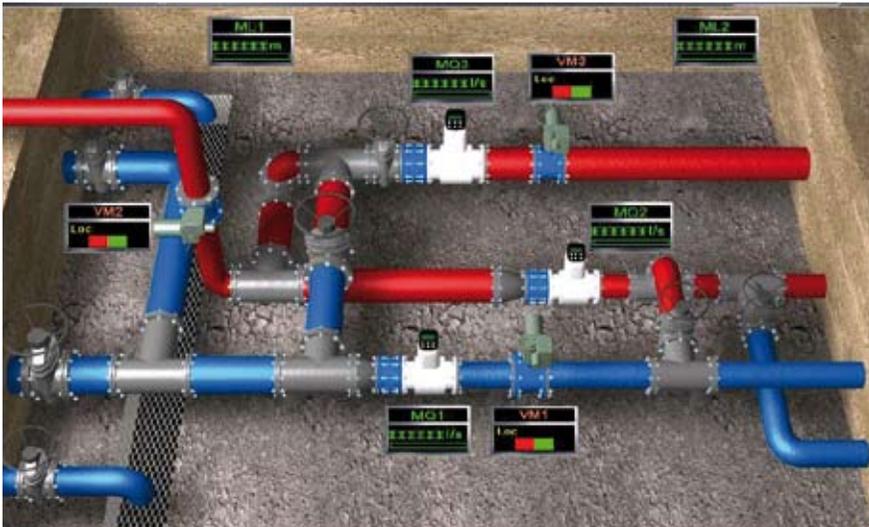
WATER IN ALL HOMES THANKS TO REMOTE CONTROL

In the town of Valderice, the urban water network was recently rebuilt. As part of this project, it was planned that the remote-control plant would control the supply and distribution of potable water.

There are 30 remote-control stations that control and manage the distribution of potable water in Valderice; they are located near a number of accumulation tanks and main branch nodes in an area of approximately 300 km².

The system architecture was designed using an Ethernet backbone with a single-mode fiber-optic star configuration on which are connected, via configurable ATU converters, eight communications gateways created using PLC CS1. As well, connected to the same network is the remote-control center made up of two SCADA in hot back-up, which interfaces with the gateway using the FINS protocol.

Every gateway gives rise to an RS485 twisted pair star, linking the many peripheral nodes as point-to-point or multi-point. Every peripheral node, created using the C200H PLC, controls and sets the related local water distribution system.



This application was produced by Eurat S.r.l. di Gravina of Catania.

170 KM OF PIPES OVER 300 KM² OF TERRITORY

The operating interface for local control of each node is available through the NT2oS operating screens. With the SCADA system, the data received from remote nodes undergo (before saving) several operations to attempt to verify the validity of the queries as well as their integrity and accuracy. The abnormal function status (alarms) are sent to the operator in real time, with messages appearing on video terminals and, at the same time, saved on hard disk and printed on a dedicated printer, specifying the date, hours and minutes, station name, type of alarm, and device concerned.

The remote control system was also programmed to carry out the following operations based on the plant variables:

- calculating the instant and total flows;
- calculating the instant and average levels;
- calculating the water volume in the tanks;
- daily, monthly and yearly balances.

In this way, the urban water system is constantly remotely assisted and monitored optimally by the remote control system.

At the moment, the primary fiber-optic backbone (Ethernet network) is active between PLC CS1 and

SCADA, and the RS485 point-to-point connections via the CS1 and C200H PLCs of the peripheral nodes. In the near future, the secondary backbone will be active between the CS1 and C200H PLCs in multi-point RS485.

The remote-control system for the Valderice Aqueduct is a good example of integration between high-tech components, which, even in a structured industrial setting, require specific systematic efforts to use and run a public utility application like the one developed in Valderice.

Water Purifiers at Taormina South and Taormina North



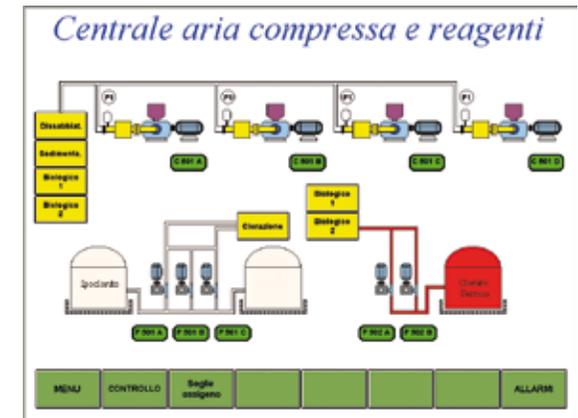
INCREASED EFFICIENCY AND ENVIRONMENT PROTECTION

Magnificently positioned atop a rocky plain, 200 meters in altitude, Taormina overlooks the sea and faces Etna. One of the municipal administration's main tasks is to maintain the entire length of the beautiful seaside coastline, eliminating any sources of pollution and thus preserving the local tourist-based economy. The problem was solved through the two water purifiers: the first called "Taormina South" is supervised from a SCADA Omron

CX-Supervisor station connected over a suitable network to an Omron C200HW-CPU63 PLC, equipped with approximately 250 I/O, half digital, half analog. The second, known as Taormina North, is controlled from an HMI Omron NT31C station, connected over a suitable network to an Omron C200HW-CPU63 PLC, equipped with approximately 200 I/O, half digital and analog.

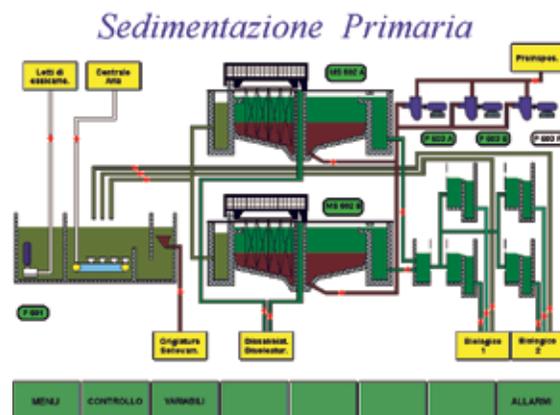
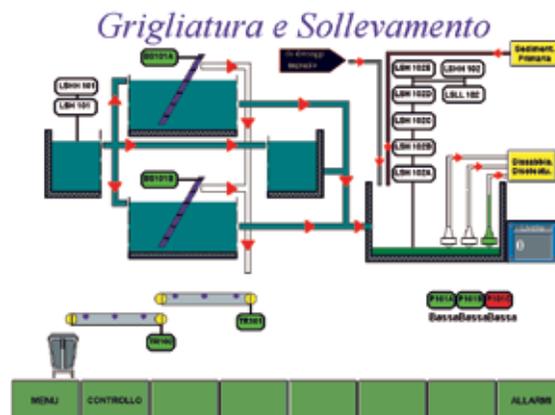
The plants have several screening and lifting stations, which separate sewage from the solid material, and subsequently moves to the dumping conveyor. The fluid, through the degritting and oil/grease removal stations, reaches the two primary sedimentation tanks, where the drying beds are oxygenated or biologically treated, through the compressed air unit, using reagents with a chlorine hypochlorite and iron chloride base. The entire process is controlled by an operator through various synoptics, which, in addition to the processes described above, also monitors the anaerobic digestion of waste and alarm management.

The local monitoring system for the purifying plant was produced by Pulvirenti Salvatore of Belpasso (CT), specializing in developing civil and industrial automation systems. By developing software to integrate Omron products, and adapt Omron products to these management processes, Taormina administration solved the immediate problem of efficiency and local control of the water purifier, building the bases for a future remote control through the use of advanced technology.



This application was produced by System Integrator Pulvirenti Salvatore of Belpasso.

TREATING WASTEWATER AT ZERO IMPACT



Griglia Generale	Grigliatura	Disidratazione Dissolvente	Sedimentazione Primaria	Biologica 1	Biologica 2	Clorinatore	Aria compressa e Reagenti
Ripresam. e Distribuzione	Digestione Anaerobica	Carbide attivo Fanghi	Motore GAS	Alberi	Riciclo	Misure	ESC



AGRO PONTINO DRAINAGE SYSTEM

CONTROLLING FLOODS AND IRRIGATION NETWORKS

To better understand what the Consorzio di Bonifica (Draining Consortium) in Agro Pontino does, we need to describe the area's geography. Since prehistoric times, this land had the Monte Circeo as a separate piece of land from the actual ridge. Over the centuries, because of the activities of the Latium volcano, the level of this region rose, and subsequently fell, creating the large Quartuccio depression and Pantani Litoranei, known as the Pontine Marshes.

Benedict monks, after 1,000 A.D., were the first to drain the area, but the turning point was the work commissioned by Pope Leo X that Leonardo da Vinci did.

In 1918, the Rome Civil Engineering Association divided the Pontine Marshes between the Consorzio della Bonificazione Pontina and the Consorzio di Bonifica di Piscinara (later „di Latina“), to which the government of the day mandated them to complete the draining of the marshes. The waterworks was carried out in 1928 and the following years. The current Consorzio di Bonifica dell'Agro Pontino was created in 1996 after the merger of the two aforementioned bodies and is located on 1,690 km² of land, extending over three provinces for a total of 25 municipalities.



Every pumping station is made up of 2/3 pumps, a sensor for measuring the water level, and electric panels equipped with PLCs, analog card and modem



This application was produced by Consorzio di bonifica in Agro Pontino.

SAFE HYDROGEOLOGICAL POSITIONING

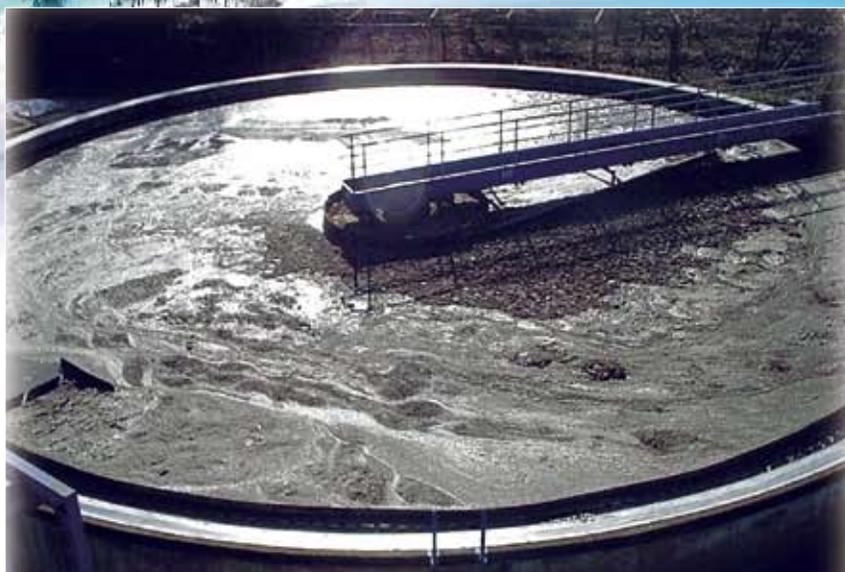
In the area, there are 240 kilometers of natural fresh-water and 1,820 kilometers of artificial channels. The Consortium operates 1,060 kilometers², 864 of which are undergoing gravity drainage and 197 mechanical drainage. In the Consortium's operating center, a system of alarms has been installed for six of the 23 water plants in the network.

Every pumping station is made up of 2/3 pumps, a sensor for measuring the water level, and electric pan

els equipped with Omron C200HE PLC C200H-AD002 analog card, digital I/O modules and serial modem.

Should there be an alarm from the operating center of the Consortium, pumping stations are automatically activated, which, with a hoist flow capacity of 114.000 l/s and total power of 9,650 HP, take up the excess water beyond the depression, making the water flow to the sea, and thus preventing this area from expanding.

The Consortium also controls a water network that extends for 976 km, over an area of 141 km² and a plant flow of 11.740 l/s. Another example of local administration that solved the problems of efficiency and land control thanks to the Consortium being in the area, and through the fact that Omron products can be adapted to these management processes.



Cisterna di Latina Water Purifier

A MORE EFFICIENT AND RELIABLE PLANT

Located south of Rome, in the Department of Circeo, Cisterna di Latina is a town rich in history, with an environmental heritage to defend and put to good use.

The water purifier, built several years ago in the neighboring countryside and that provides approximately 40,000 residents in the area, was controlled by an old electromechanical panel that was recently replaced by more modern technology in expectation of implementing remote management.

The new board is equipped with a PLC Omron CS1 – CPU43 PLC, which, via the 250 digital-analog I/Os, commands and controls the entire fluid waste disposal.

The water purifier is supervised by an Omron NS10 graphic terminal, mounted on the panel. This operating terminal with its touch screen technology has various plant synoptics that load, which allows the local operator to keep control of screening and



The control system includes a PLC with 250 digital/analog I/Os and controls the entire fluid disposal management.



This application was produced by System Integrator MP ELETTOIMPIANTI di Marino of Cisterna di Latina.

LAYING THE FOUNDATIONS FOR FUTURE REMOTE CONTROL

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lifting stations, sedimentation tanks and drying beds. Specific attention was paid to the development of synoptics, which also monitors the anaerobic digestion of waste and alarm management.

The local supervision system of the water purification plant was produced by MP Elettroimpianti di Protani Mariano in Cisterna di Latina (LT), specializing in developing civil and industrial automation system.

With the software developed by this Omron partner, and adaptability of Omron products to these management processes, Cisterna's local administration solved the urgent problem of efficiency and the local control of the water purifier, laying the foundations for future remote control using state-of-the-art board.



Sanremo Water Purifier

The Ecological Service for the City of Sanremo aims to assure the proper functioning of the network for the collection of sewage, which, after going through stringent water purifying treatment, flow out to the sea several kilometers from the sandy shore.

To improve the efficiency off the Ecological Service, the City of Sanremo mandated the planning and production of a remote-controlled monitoring system for the collection, lifting and conveyor stations of city waste for the communal water purifier.

The remote control is managed by a water purifying panel via Omron CX Supervisor software, which also monitors alarms for eight of the 28 pumping station-whereas C200H PLCs and NT11S function key terminals were mounted the electric panels.

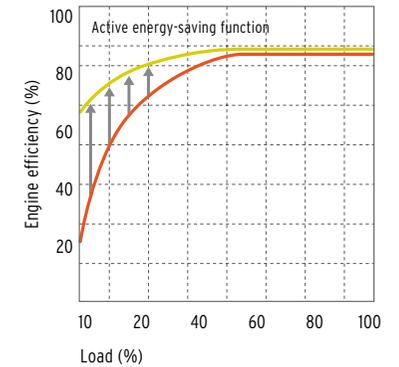


**TIMELY OPERATIONS
THROUGH GSM MESSAGES**

This application was produced by System Integrator S.C.T. of Loano, using Omron products.



The alarm signals come via modem from the monitoring system and is sent to maintenance via the GSM network.



The energy-saving function in the Omron Yaskawa Varispeed E7 inverter

CENTRALIZED CONTROL OF FLUID WATER AND ALARM MANAGEMENT

This specific technology adopted allowed to integrate the communications functions with the requirements of automated management of electromechanical equipment installed near the pumping stations. Specific attention was paid to the handling of alarms received by the monitoring station via modem connected to the PLC C200HS and divided among the available technicians via the GSM telephone network.

Currently, development studies of the system have introduced improvements in terms of flow

optimization and automatic treatment of fluids through physical, chemical and biological agents.

In particular, if the Omron inverter is inserted with integrated energy-saving functions into an additional PLC CS1 near the monitoring central station to further improve communication via modem, and other touch screen terminals to simply and intuitively manage the electric panel.





Osona Water Purifying Network (E)

Automation of the entire water purification network in the province of Osona, north of Catalonia, was carried out by Adasa SA using Omron products. The plant has 35 connected pumping stations, with the control center located in the central offices of Vic. The area concerned for the project has an approximate extension of 1,200 km².

The purpose of this project was to develop an automation and control system that could collect information from the station networks for both purification and pumping, and forward it to the main control center in Vic, to have real time control and to optimally use the plants.

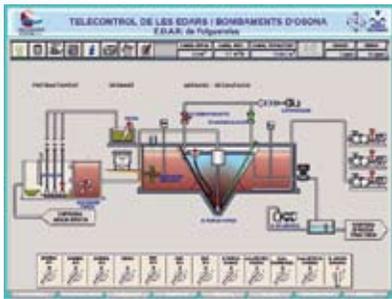
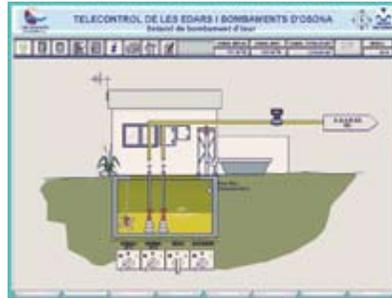
To carry out this project, Adasa had to face many problems:

- Different kinds of facilities, with highly extensive stations where the work was based on the existence of many people working and other small facilities located in dispersed and difficult-to-access villages, working independently.

- Different types of control. Some stations worked locally with their own control system, since more than 70% of other stations already use Omron control equipment.
- Problems with orographical position. Osona is very mountainous and has many stations that are difficult to access; therefore we had to carefully and extensively plan out the communications system. The priority was to ensure that the system worked, since the territory has many pig farms and the risk of contamination is very high.

In the purifying stations controlled by the PLC CQM1 a CPU 51 was installed that can manage the SCB41 communications board with the RS232C and RS422/485 interface. In the stations controlled by PLC C200H, a COMo6 communications board was installed using the Macro protocol to support the driver developed for communications

**INFORMATION IN REAL TIME
THROUGH REMOTE CONTROL**



Although the project was large in scope of the project, management was very intuitive and the operators found it easy to use

This application was produced by Adasa S.A.



CENTRALIZED MANAGEMENT FOR WATER PURIFICATION

via radio. In these purifying stations, which had to be automated from zero, a CJ1 programmable controller was installed along with SCU41.

For the pumping stations, control is carried out in three ways:

- Stations controlled via the PLC, which manages the corresponding purifying station, and sends data to the Vic control center via its communications board;
- Stations controlled via a local PLC, which directly communicates data to the Vic control center;
- Stations that easily run the control logic with electromechanical functions and with a remote station set up, which has modules to connect the control system to the on-site equipment using a communications system via radio.

Each new PLC was equipped with a programmable NT631 or NT31C terminal touch screen, which allows operators to access different parameters, monitor alarms, view graphs of the last 24 hours, etc. Although the project was large in scope, the application is very intuitive in the practical setting. It had been designed to be easily used by the operators working at the purifying station.

Vic has a centralized computer that is connected to all stations via a radio communications interface. Via Ethernet and Internet, it is possible to display the progress of all analog system values, such the functional status of all equipment.





Porvoo Water Purifier (FI)

BETTER QUALITY WATER

Porvoo is a town in southern Finland, approximately 40 kilometers from Helsinki. Porvoo extends over nearly 650 km² and is home to 46,000 people. The first wastewater purification project was carried out in 1993, but, given the construction and subdivision of the area into six lots, it officially did not begin until 1999.

The larger and more complicated project involved the sewage treatment plant on Herman Island. Instrumentointi Oy in Tampere was mandated to take care of the automation and equipping of the plant.

Stricter control of the different purification components means less polluted water flowing into the sea. The entire biological water purifying process is very sensitive to variations in conditions. For example, if, during aerobic treatment, the quantity of oxygen drops under acceptable levels, the whole process could be disrupted and the bacterial action of the sludge will stop.

This has a direct influence over water quality.

Porvoo's water plant is now equipped with an automated system to control water quality with dozens of tools for measuring various settings, including flow, solids, temperature levels, etc., which are very important to ensure that all sections are homogenous.

The valves had to be constantly opened and closed, the pumps had to be set and the chemical substances had to be added to the water so that the environment was conducive for the biological process.

The Omron CS1 and CQM1H PLCs are the brains of the purification processes, which receive data from the instruments and check the equipment accordingly. With the new system, it is not necessary to take many manual measurements to see how a single variation will affect the purification process.



This application was produced by Insta Automation, formerly Instrumentointi Oy.



ACCURATE CONTROL OF ALL PARAMETERS

The PLCs automatically maintain the process flow and functioning within the acceptable limits. In Porvoo's plant, CX-Supervisor SCADA software and Omron NT terminals are used, as well as optimization and simulation software from Instrumentointi Oy.

The alarm system is required to assure that the system works as it was programmed to, and for signaling any potentially abnormal situation. The system sends SMS messages to the cellular telephone of the service operator when it cannot handle the process appropriately itself.

The protocol for GSM text messages is programmed using an Omron protocol macro based on standard SMS technology. This system differs from most other ones, since the message is sent directly by the PLC through Omron's protocol macro used to program this function, according to Jyri Stenberg (Group Leader).

The computer only has to provide the user interface so that the service operator can choose the right telephone numbers, to which specific alarm signals will be sent at the appropriate times. The recipient will receive messages in the form of general SMS text messages over his cellular phone.

QUALITY

Guaranteed quality reliability

Omron is synonymous with quality through the proven high reliability of its products.

A control system is reliable when its components are reliable: this concept Omron knows well.

Therefore, all products are thoroughly tested for reliability and operating life in order to assure that the specified performance indeed corresponds to that obtained.



The philosophy of quality

Many companies require supplier guarantees. "Quality above all" is one of Omron's main principles. In fact, Omron ensures that its 30 plants are in compliance with international ISO 9000 quality standards and ISO14001 environmental standards. The use of lead-free solder products and cadmium-free electrical contacts are just some examples of Omron's concern for the environment.

Over 100,000 products

Omron produces over 100,000 high-quality, reliable products, from traditional industrial parts (sensors, timers, relays, counters, remote control switches, etc.) to automation systems (programmable controllers, inverters, MMI devices, artificial recognition systems) and instruments (temperature controllers, digital instruments)



Omron decided to adjust all its major products and those under development to RoHS standards as of April 1, 2006, a few months ahead of time in order to meet the July 1, 2006, date specified in the standard.

OMRON IN ITALY

Omron Electronics has had a presence on the Italian market for 30 years, 15 of which has been directly on the market with a joint structure of three regional offices: Milan, Bologna and Central Italy. The technical manager, along with the application engineer, work on site to meeting application requirements by recommending state-of-the-art automation solutions and providing customers with on-site technical support.

To assure prompt, extensive product availability over its entire national territory, Omron counts on a network of authorized distributors, as well as its national electronics distributor ZF Italie SpA, and three national distributors.

GLOBAL PRESENCE

Omron is active world-wide, and has approximately 25,000 employees in 75 countries. Through Omron's large distribution network, immediate product availability can be assured as necessary.

The **European research and development centers** are headquartered in, s-Hertogenbosh (The Netherlands), Fareham (United Kingdom) and Nufringen (Germany). Working closely with subsidiaries and customers, technicians and designers develop avant-garde products that will better meet local requirements.



Training Center, Milan



II SAC (Sensors Application Center) of Nufringen



II MAC (Mechatronics Application Center), Barcelona

OMRON IN EUROPE

There are three factories in Europe: one for PLCs in the Netherlands (s-Hertogenbosch), one for sensors in Germany (Nufringen) and one for security components in Italy (near Turin). Omron meets customers' requirements in terms of special designs, small batches and specific delivery terms and conditions.

Mechanronics and Sensor Application Centers, located in Barcelona (Spain) and Nufringen (Germany) respectively, offer specific application support for customers and Omron sales firms. These centers provide a wide range of support from technical problem-solving to giving specific courses and seminars on products. The technicians at the centers also provide on-site assistance to customers that are setting up and using Omron products.

The Training Center for Milan's head office offers product training given by qualified Omron employees, providing five training rooms, 16 types of courses and 70 sessions in the curriculum every year.

The European Logistics Center in s-Hertogenbosch (Netherlands) is a vital component in the international supply chain, since it is in charge of purchasing, warehousing and distributing products in Europe. Orders and deliveries to all business branches are carried out within 24 hours.

The European Repair Center is located near the Dutch production site, Omron Manufacturing of the Netherlands, and fills all requests for Omron component repairs. More than 90% of repairs take under three days.

Customer Service and Technical Support

The customer service and support offered by Omron adds value to the line of high-quality, reliable and quickly available products. Designers place great importance on the availability of product technical data. In the Product section of Omron's European Web site, found at www.europe.omron.com, technical documents, manuals and CAD drawings are available. Omron also provides a team of technicians to provide support in the case of doubt, for example, regarding the choice of product or how it is used. These experts would be happy to listen to suggestions for improving and developing products. Lastly, Omron provides prompt post-sales service with quick repair turnaround, reducing downtime to a minimum.

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