



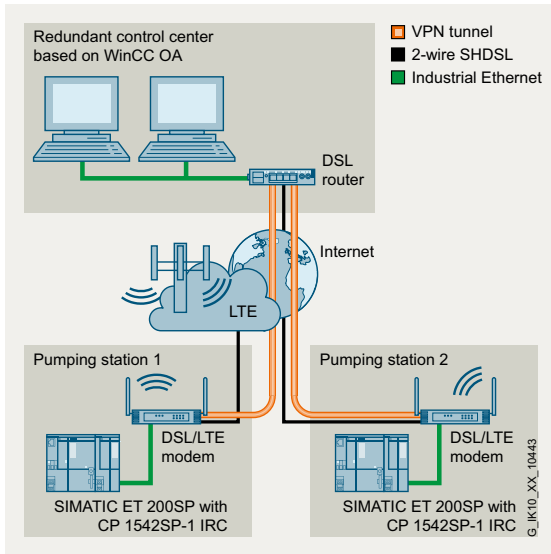
Reference

# Clean water thanks to telecontrol technology

Modernization of the infrastructure of the wastewater treatment plant thanks to latest Siemens technology

A particular feature of potable water and wastewater plants is the wide distribution of outdoor systems such as pumping stations, water towers, or wells that have to be monitored continuously and reliably from a control center. "Telecontrol" means the connection of widely distributed process stations to one or more control centers. Special communication protocols are used for this purpose to guarantee fulfilment of the exacting requirements placed on security of transmission. In the individual stations, "remote terminal units" (RTUs) are used, which add specific telecontrol functions to an automation system such as SIMATIC S7. Whereas the programmable logic controller (PLC) implements local automation, such as the interconnection of control signals, the telecontrol module serves to connect to the remote control system and ensures the secure and reliable monitoring and control of process data.

Water, the natural energy for health and well-being, is a scarce commodity. This makes it all the more important to treat water efficiently and cost-effectively so that it can then be fed back into the water cycle. For this purpose, the Zirl Wastewater Association in the Tyrol region of Austria uses a modern SIMATIC ET 200SP control system from Siemens.



In Zirl, the remote stations based on SIMATIC ET 200SP are connected to the central control room by means of redundant communication paths.

### Zirl plant modernized during operation

A concrete example is provided by the Zirl Water Treatment Association in the Austrian Tyrol. This association of 14 communities was faced with the challenge of adapting the control of the channel system and wastewater treatment plant to the most recent advances in engineering. Modernization of the plant was therefore inevitable, but this had to take place during operation because, for one reason, the purification process of the wastewater treatment plant takes place without any breaks in operation, in other words 24 hours a day. The modernization affected several pumping stations and 50 kilometers of collecting systems. In Zirl, those remote stations, which were to be connected redundantly to a central control room, had to be updated, bringing them up to the state-of-the-art in order to increase operational reliability. For reasons of cost it was necessary to continue using the existing infrastructure cabling to the control center.

The solution for these requirements is based on the SIMATIC ET 200SP automation system from Siemens. Each of the 21 remote stations is connected via separate primary and secondary paths to the SCADA (Supervisory Control and Data Acquisition) master. For the main path, the existing system cabling was used, employing

DSL transmission technology. For the redundant communication path, the concept uses the cellular connections in the LTE network, which are continuously monitored. If the cable connection on the primary route should be interrupted, the data from the affected stations is transmitted securely to the control center via these LTE wireless connections.

### SIMATIC ET 200SP in interaction with CP 1542SP-1 IRC as a space-saving solution

Among other things, the operator was attracted by the compact design of the SIMATIC ET 200SP, which enables up to 50% of space to be saved while retaining the high number of I/O channels. Another advantage is the cabling: the installed infrastructure, originally designed for the SIMATIC S5, was also used for the new solution – with considerable cost savings and a 20% shorter commissioning period.

What ultimately swung the decision in favor of SIMATIC was the CP 1542SP-1 IRC module for the SIMATIC ET 200SP system, which, among other things, supports the standardized IEC 60870-5-104 telecontrol protocol. This IEC protocol is used in numerous European water treatment plants and is therefore regarded as an industry standard. The CP 1542SP-1 IRC communications processor can be commissioned quickly by means of easy and convenient engineering in the TIA Portal, the engineering framework for the integration of automation components. The cyclic or event-controlled transfer of data enabled the telecontrol communication to be matched optimally to the process.



The compact dimensions of the SIMATIC ET 200SP allow a high channel density without taking up much space.

## Security information

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept. For more information about industrial security, please visit [siemens.com/industrialsecurity](https://www.siemens.com/industrialsecurity)

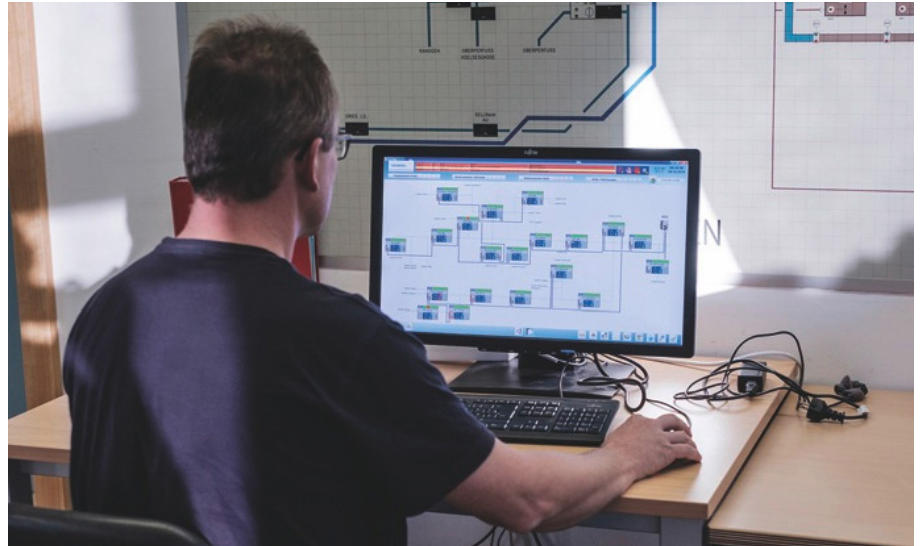
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All necessary operating and diagnostics data comes together in the control center.

In this way, the seamless storage of all measured values with a time stamp prevents the loss of data if a connection should fail. In the control system, based on a redundant installation of WinCC OA, the data is displayed and used, for example, for initiating maintenance measures. A further decisive advantage is offered by the extensive diagnostics options available to the user locally by means of the LED indicators provided in the modules or in the TIA Portal. This helps the operators to promptly rectify any faults and thus shorten any downtimes in the plant. The possibility of performing the programming, diagnostics, control, and monitoring via the Internet saves additional time and money, as the automation components in the remote stations can be accessed directly from the central control room in the event of a service call.

### All automation components interact

Staff at the Zirl Wastewater Association are extremely satisfied with the solution offered by Siemens. The SIMATIC ET 200SP controller used in combination with the CP 1542SP-1 IRC communications processor allowed seamless integration into the existing infrastructure cabling. The SIMATIC ET 200SP series of controllers has considerably optimized the processes and is ideally suited for the various monitoring and control tasks that are on the agenda for the Zirl Wastewater Association. The professional consultation and advice from the nearby Siemens office in Innsbruck is also a major plus for the Wastewater Association.

Once again, the SIMATIC automation system has proved to be the optimum platform for modernizing existing plants at low cost and without halting the ongoing operation. Plant operators like the Zirl Wastewater Association can thus benefit from the latest technology and at the same time continue to make use of their existing capital investments in the future.