



Wastewater treatment plant Lüneburg, Germany

Modern control and telecontrol technology allow efficient operation down to the substations in the Lüneburger Heide

The requirements

The wastewater treatment facility of the Abwassergesellschaft Lüneburg mbH (AGL) serves the northern German city of Lüneburg and six additional nearby towns. Daily, up to 25,000 m³ of wastewater from approx. 110,000 area residents and industrial and commercial customers are fed to the plant through a widely branching pipeline network. The facility not only treats the wastewater in a series of process steps, but also reuses the resulting waste materials, such as sludge and biogas, and improves the water quality of the Ilmenau River, the largest of the small rivers that flow through the Lüneburger Heide (Lüneburg Heath). An efficient operation of such a complicated water management process requires a reliable automation system. When Siemens announced that it would discontinue the SIMATIC S5 controllers used in the facility, AGL decided on a complete replacement of its control technology.

The solution

Since the beginning of 2011, the distributed control system SIMATIC PCS 7 using SIMATIC S7 automation components, has been deployed. While the system was being modernized, the plant ran in parallel operation. To accomplish this, the system integrator GreyLogix Aqua first set up the new client/server architecture in the central control center and then installed a central automation system for data exchange between the old and new process control systems. When the individual parts of the plant were retrofitted, even the reporting system ran in parallel: A continuous supply of relevant operations data to the logging system was assured until switchover. Thus, AGL could meet legal requirements for seamless data logging, long-term data storage, and report generation. An important part of the new control concept is the integration of 34 widely distributed remote plant sites: pumps, pumping stations,

and gauging wells. Actuators are still controlled using existing hardware; data exchange is managed by SIMATIC S7-1200 automation units. All large substations are equipped so that continuous monitoring of operations over an encrypted DSL connection is possible. Smaller substations communicate using GSM. The telecontrol technology used in the central control center enables the communication of the substations with the centralized SIMATIC PCS 7 system and seamlessly merges the automation of centralized and distributed process areas into one system. The data collected in the stations, the operating status of the aggregates, and the measured values from the pump stations are integrated into process screens, as well as message and alarm lists. This creates a consistent “look & feel” across the entire network with all its substations, in a familiar operating environment, making process control easier.



End customer

Abwassergesellschaft Lüneburg mbH

System integrator

GreyLogix Aqua GmbH

Solution
Partner

SIEMENS

The benefits

The modernization brought the central plant, as well as the remote stations up to a state-of-the-art level of technology. The selected control system was chosen for its ability to optimize plant performance and made a more flexible process control possible. The new plant and process technology saves energy during aerating of the aeration tanks and is more stable during abrupt weather changes. The connection of widely-distributed pump stations, the ability to access detailed information from the stations and their integration into operations offers clear benefits in efficiency and diagnostic tools. The data communicated about power usage and flow rate allows operators to draw conclusions about the status of individual pumps. Above all, the addition of more detailed monitoring and the seamless integration of the external stations using telecontrol assures more reliability in wastewater treatment and a more efficient operation of the entire facility.

System brief

- Biological wastewater treatment, utilization of sewage sludge, block heating works and laboratory
- Total capacity: 325,000 PE
- Wastewater quantity: 11 million m³ annually
- Pipeline network with more than 450 kilometers of sewers and 24 pumping stations
- Planning time until contract award: nine months
- Total duration of project: 14 months

Scope of supply

- Control system: SIMATIC PCS 7 with three SIMATIC PCS 7 OS Servers and ten SIMATIC PCS 7 OS Clients
- Automation system: 12 SIMATIC S7-400 and three SIMATIC S7-300
- Telecontrol technology stations: 36 stations with SIMATIC S7-1200 automation, data exchange via DSL or GSM
- Reporting software: ACRON
- SCALANCE network components

Benefits at a glance

- Increased plant reliability through consistent operation at all levels, including remote stations
- Improved diagnostic tools and integrated runtime monitoring of pumps via expansion of data exchange and integration into the control system
- Easier operations control through additional operator stations in the plant and remote access through secure VPN connection