Wastewater treatment plants in Bad Salzuflen
Automation, I&C, and telecontrol systems modernized

The requirements
The wastewater disposal system operated by the North German town of Bad Salzuflen consists of two wastewater treatment plants and a sewage system with several pumping stations and rain overflow basins distributed throughout the city area. The Process Control System installed in 1993 was based on SIMATIC S5 controllers and IDS telecontrol systems. The obsolete PC technology and the outdated operating philosophy in regard to the graphics and resolution made it necessary to upgrade to the newest high-tech generation. Bad Salzuflen seized this excellent opportunity to introduce system-wide transparency right through to the pumping stations in various parts of the town. At the same time, the local authority was seeking a solution based on recognized industry standards that would not require it to abandon the existing hardware structure at the fieldbus level.

The solution
The new system is built around a central SIMATIC WinCC control system. In addition, WinCC touch panels that conform to the same operating concept are installed in the field cabinets to facilitate local control. The various processes are driven by SIMATIC S7-300 and S7-400 controllers. Communication on the control level takes place over an Industrial Ethernet network with optical fiber ring topology and a connection to Bad Salzuflen’s office system. The field level is connected over PROFIBUS. A WAN comprising GPRS, broadband, and ISDN is used to communicate with the external pumping stations. The modernization of the complete control system was completed in several phases without any operational interruptions to operation, with the old and new system existing alongside one another for six months of the project.
The system in brief
Fully biological wastewater treatment plant with simultaneous nitrification and denitrification, phosphate precipitation, filtration, and separate sludge treatment, connected to a sewage system with 18 external wastewater pumping stations and rain overflow basins.
- Quantity of wastewater: 3.7 million m³/year
- System rated for: 96,000 population
- Dry weather flow: 1532 m³/h

The system integrator
GreyLogix Aqua (www.greylogix.de)

The owner
City of Bad Salzuflen, Germany

The benefits
The decision to upgrade the process control technology propelled Bad Salzuflen from what is meanwhile an obsolescent system with high service and maintenance costs to the very latest high-tech generation, enabling the town to profit from the enormous benefits of Totally Integrated Automation. The entire solution is designed according to recognized industrial standards. The hardware structure already in place at the field level was by and large retained, so that capital expenditure on the modernization project was restricted to a minimum. The city now boasts a transparent system that provides direct access to all components regardless of where they happen to be located. All process data is permanently available as well as automatically documented and archived. A unified operating concept has been implemented for both central and local operation.

Products installed
- 2 redundant control system computers with SIMATIC WinCC
- 5 SIMATIC S7-400 main controllers
- 12 SIMATIC S7-300 controllers
- 2 MP270 Multitouch Panels
- SIMATIC ET 200 stations (5 ET 200 and 30 200S)
- Acron archiving and documentation software
- SINAUT telecontrol system (2x SIMATIC S7-315-2 DP with TIM 3IE/MD740)
- SCALANCE telecontrol system: 4 x 202 IR, 1 x S613 (in the central office)
- Rack PC / IL43 server

Facts and figures
- Modernization without any interruptions to operation or the wastewater treatment process
- More than 10,000 inputs/outputs
- 100 Mbit/s Industrial Ethernet with optical fiber ring topology
- PROFIBUS connection at field level
- WAN comprising of broadband, GPRS, and ISDN

Benefits at a glance
- Lower capital expenditure because the existing field level was retained
- Long-term protection of investments thanks to the use of the very latest automation products based on proven industrial standards
- Increased plant reliability through a unified operating concept across all levels

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