Redundant automation technology increases the availability

Reliable Network

The community of Adelsdorf in Southern Germany has newly automated and uniformly visualized the operation of the sewage plant and water works including all the remote buildings. Multiple redundant automation and control technology makes the operation transparent, the system highly available and relieves the strain on the community treasury.

In view of a shortage of funds, cities and local communities have to be creative when it comes to ensuring and financing the operation of communal facilities in the long term. The community of Adelsdorf has combined the standby service for the sewage plant and water works which was very expensive because of the many remote buildings. And when the time came to renew the control technology of the sewage plant, set up a new control system in the water works and integrate the associated remote buildings, a homogeneous and as highly available as possible a solution had to be found.

Uniform and failsafe control system

The new control system had to match the existing Simatic controllers of several units.K+S Richter Schaltanlagenbau GmbH has found a partner who specializes in SCADA systems in Hermos AG from Mistelgau.
The solution developed together: a redundant Simatic WinCC-based control system, i.e. running on a server each in the sewage plant and the water works, with several operating clients and a common user interface for all connected units. The two servers are connected by the close-knit Ethernet FOC network of the Adelsdorf community. The servers adjust automatically after failures; the WinCC option "Redundancy" is installed on both sides for this.
One Simatic S7-400 each serves as a head controller forthe local devices in the sewage plant and water works. Both of them are connected with each other and with the WinCC servers for "normal" data exchange via Profibus fiber optic cables. Eleven subordinate Simatic S7-300 controllers of local units are also connected to it by an optical Profibus ring and Optical Link Modules (OLM)

Remote stations with high availability

Sinaut ST7 remote control technology was used to integrate the various remote buildings such as wells, pumps stations, high tanks or rain overflow reservoirs in the automation network. There are two TIM (Telecontrol Interface Module) telecontrol head stations for every location: one for the data exchange with the remote buildings by radio in the low-cost time slot method and one for communication via dedicated community lines. Since the TIMs installed decentralized at the remote buildings can save messages and measured values internally and transfer them to the control system later, failures of a telecontrol module can be bridged for up to two days.
Due to the redundancy through all levels from the control system and the automation technology to the bus systems, all the remote buildings can be operated autarchically and controlled locally when all the transmission paths fail. This achieved a very high availability of the entire system.

Fresh water from three high tanks and six wells Is delivered ..

by the Adelsdorf water works to three communities in the neighborhood

Each of the 11 local and 14 decentralized units is equipped with a Simatic controller and an operator interface

Solution Partner
Automation
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Hermos AG
The Hermos AG develops automation and integration solutions for machines, plants and buildings. The services comprise consulting, engineering and software development as well as installation and service.

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Operating states at a glance

Hermos, a Siemens Solution Partner Automation specializing in qualified SCADA solutions, developed a simple operating concept with identical processes for both sites and all connected units. This applies both for the permanently installed operator stations in the control rooms and in the sewage plant lab and for any Web operator stations. With the "WebNavigator" WinCC option via the Ethernet network, these offer the community a simple, low-cost access to the control system. In this way the maintenance personnel can log into the system even outside working hours and operate and monitor it in the same way as if they were on site.
A topographical overview shows the current state of all the remote buildings at a glance after switching on. After selecting a station its most important process data and operating states are displayed. The last fault messages for the respective site with date, time, place and cause are always visible in the bottom section of the screen.

According to Michael Denk, Head of the Adelsdorf community building yard, the display of detailed fault messages is a particular advantage at night to enable the standby service to decide whether, where and how it needs to intervene. Thousands of data are entered, processed, edited and saved every day. All the processes can be analyzed over a longer period and continuously improved based on these data and the versatile visualization and evaluation possibilities.

Expandable automation

The advantage of the Siemens technology is obvious according to Dipl.-Ing. Volker Eberth, signatory of Hermos AG: "The homogeneous configuration and programming, communication and data storage over all central and distributed controllers, close-to-machine operating units and the distributed master visualization system save multiple inputs and also simplify the system maintenance and future modifications.

The community of Adelsdorf will soon be able to confirm especially the latter when they extend the new visualization system to include specific data and messages for the community's flood management and winter service.

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