Application Story

Industry: Water
Products: Control Systems

Wuppertal sewer system

Reference project
Wuppertal sewer system
Description

Every year, some 30 million cubic meters of wastewater from households and industry pass through the Wuppertal sewer system. That equals more than 2 m³ water per second – and up to 5 m³ per second during rainy weather. In November 2001, the “Wupper Relief Sewer” was completed, with an inside diameter of up to 2.6 m, and a length of about 10 km.

The sewage treatment department of the municipal Wuppertaler Stadtwerke (WSW) contracted ME-Automation Projects, formerly known as KH-Automation Projects, to supply the process control equipment and install a telecontrol network for the Wupper Relief Sewer.

Initially, the external structures were fitted with conventional telecontrol stations. Hereby, the data transmission speed of max. 9.6 kbit/s in the WSW’s proprietary communication network was very low. Although slow, this transmission speed was adequate for normal, undisturbed operation. However, problems occurred as soon as the network was out of operation for a longer period. Admittedly, no data was lost, but the volume of information to be transmitted when the network went online again resulted in disturbances during operation.

At the start of the new millennium, the far more powerful DSL technology was introduced. Nowadays, transmission speeds up to 2.3 Mbit/s are achieved with this modern equipment. Moreover, it was also possible to install standard automation equipment in the telecontrol stations – economically a far better solution.

The complex structure of the sewer system, with widely distributed external structures, also meant that a distributed topology was required for the process control & management system. For an optimum design, the process control & automation equipment had to match the structure of the sewer system. This permitted a clearly structured and hierarchical topology to be implemented.

The demands placed by the distributed plant layout and the resulting amounts of data traffic were fulfilled completely with the PMSX® pro process management system and the subordinate telecontrol stations. Centralized operation and monitoring, as well as plant-wide programming and configuration are essential for the economical operation of the sewer system.
**Technical requirements**

Monitoring and sequence control of the Wupper Relief Sewer from a central workstation in the control room

Process management of entire plant from a central point

Operation and monitoring of entire plant by means of mobile operator stations

Vertical and horizontal data consistency

Consistent data coupling with office network

Conversion and expansion during normal operation without retroactive effects

System-wide engineering from a central engineering workplace

Archiving of all relevant measurement values in appropriate compression stages

Long-term storage of data and messages

Strict data consistency in all software tools

Availability of all process values for further processing

Standardized software tools in accordance with IEC 61131-3

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**Scope of delivery**

- Process management system PMSX® pro
- Automation equipment
- Network using switch technology
- Telecontrol system using DSL technology
- Installation & wiring
- Target specifications / engineering / programming
- Documentation
- Commissioning / trial operation
- Personnel training

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**Process management characteristics**

- Process management system: PMSX® pro
- Topology: distributed system
- Network: optic fiber Ethernet TCP/IP
- Automation system: Mitsubishi System Q
- Data points: about 9000
- Automation stations: 54
- Operating stations: 2
- Process servers: 2 (redundant)
Excerpt from our reference list

www.me-ap.de

GERMANY
ME-Automation Projects GmbH
Kasseler Straßen 62
34277 Fuldabrück
phone +49 (0) 561 58540
fax +49 (0) 561 5854530
e-mail: info@me-ap.de
www.me-ap.de

NETHERLANDS
ME-Automation Projects
Science Park Eindhoven 5008 A
5692 EA Son
phone +31 (0) 40 26 79 900
fax +31 (0) 40 26 79 919
e-mail: secretariaat@me-ap.eu
www.me-ap.eu

MITSUBISHI ELECTRIC Group
ME-Automation Projects GmbH