

## Application Story

Industry: **Water**

Products: **Control Systems**

# Wuppertal sewer system

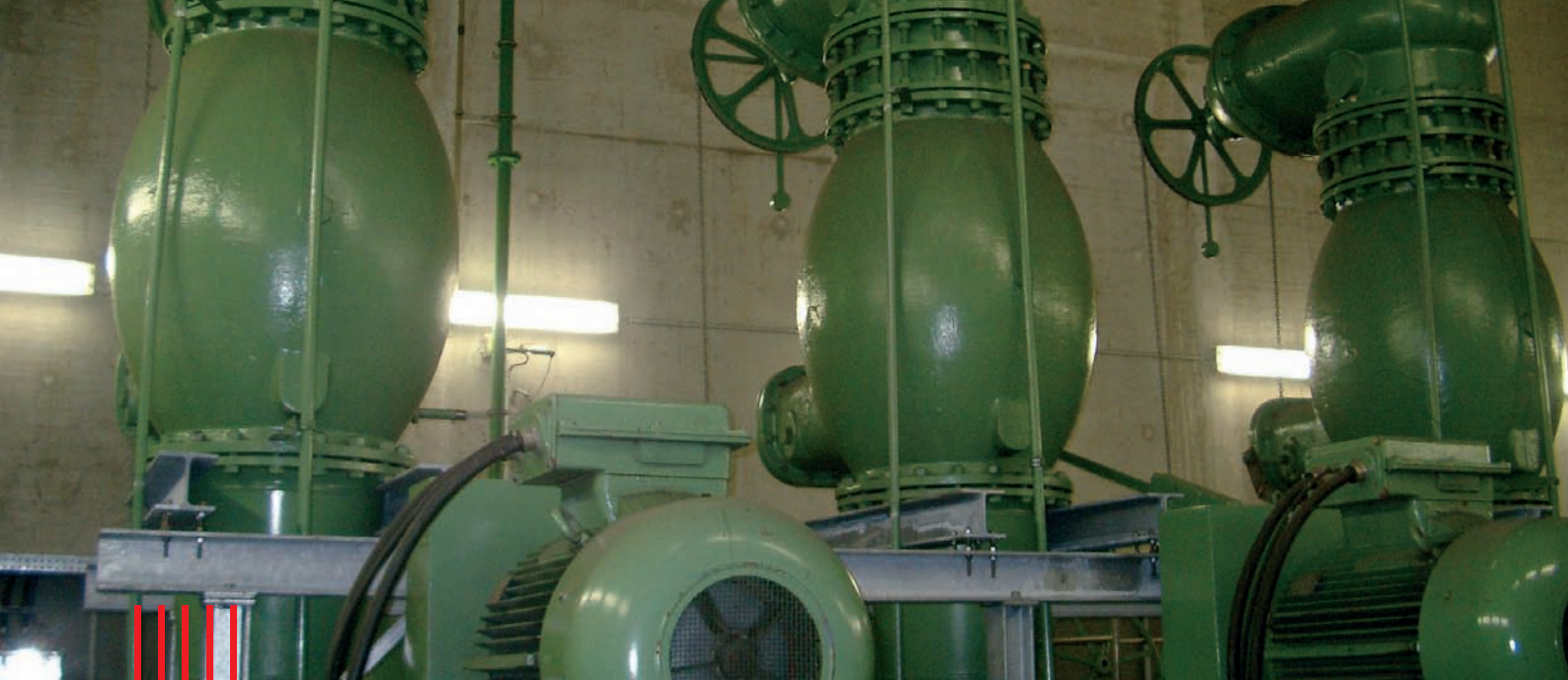


Reference project  
Wuppertal sewer system

 **MITSUBISHI ELECTRIC Group**  
ME-Automation Projects GmbH

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Reference project  
Wuppertal sewer system

Customer:	WSW Energie & Wasser AG
Plant:	Wuppertal sewer system
Population equivalents:	400 000
Project value:	~ 1.6 million Euro
Project duration:	1997–present (in discrete construction stages)

## 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 m<sup>3</sup> water per second – and up to 5 m<sup>3</sup> 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.

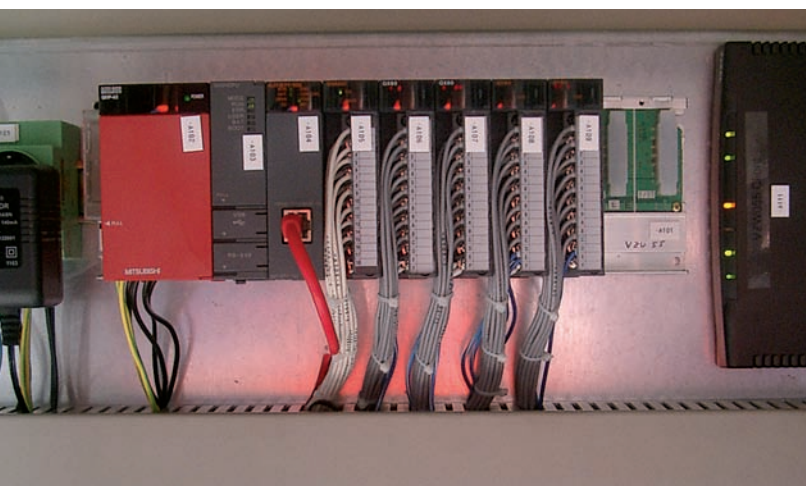
The sewage treatment department of the municipal Wuppertaler Stadtwerke (WSW) contracted ME-Automation Projects, formerly known as KH-Automation Projects, to supply the process control equipment and install a telecontrol network for the Wupper Relief Sewer.

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<sup>®</sup>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

## Scope of delivery

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

## Process management characteristics

- |                             |                                |
|-----------------------------|--------------------------------|
| ▮ Process management system | PMSX <sup>®</sup> pro          |
| ▮ Topology                  | distributed system             |
| ▮ Network                   | optic fiber<br>Ethernet TCP/IP |
| ▮ Automation system         | Mitsubishi System Q            |
| ▮ Data points               | about 9 000                    |
| ▮ Automation stations       | 54                             |
| ▮ Operating stations        | 2                              |
| ▮ Process servers           | 2 (redundant)                  |

# Excerpt from our reference list

				
Waste incineration plant Frankfurt	Waste incineration plant Iserlohn	Waste incineration plant Weißenhorn	Wastewater treatment plant Erdinger Moos	Wastewater treatment plant Bad Homburg Ober-Eschbach
				
Milk production Regensburg	Energy supply center Dresden	Energy supply center Oberhausen	Pellet production plant Offenbach	Biomass CHP plant Wiesbaden
				
Energy supply center Munich Airport	Waste incineration plant Frankfurt	Drinking water plant Haltern	Sewage network and wastewater treatment plant Hamburg	Pellet production plant Dotternhausen
				
Wastewater treatment plant Düsseldorf-Nord	Waste incineration plant Frankfurt	Waste incineration plant Hamm	Waste incineration plant Frankfurt	Facility Management Control System Dresden
				
Facility Management Control System Nijmegen	Tank terminals Rotterdam	Barthel Pauls Söhne AG Biomass CHP plant	Wastewater treatment plant Stuttgart-Mühlhausen	Wastewater treatment plant Nuremberg
				
Wastewater treatment plant Nidderau	Wastewater treatment plant Landshut	Drinking water plant Friesland		
				
Tank terminal Botlek	Sewage network Wuppertal			

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