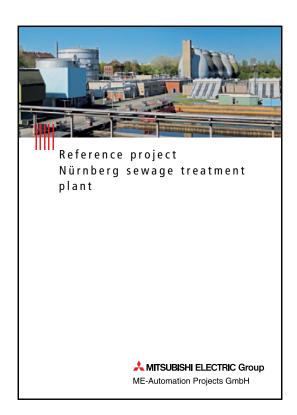
Application Story



Industry: **Water** Products: **Control Systems**

Nürnberg sewage treatment plant



Project of ME-Automation Projects GmbH, a member of the Mitsubishi Electric Group. First published in June 2014.



Reference project Nürnberg sewage treatment plant



Customer:	Stadtentwässerung Nürnberg	
Plant:	Sewage plants 1 and 2	
Population equivalents:	1.6 million	
Project value:	~ 16.5 million Euro	
Project duration:	2000-present (in discrete construction stages)	

Description

Nürnberg's sewage plants 1 and 2 are the large central treatment systems for the city. With a capacity of 1.4 million population equivalents, plant 1 is a two-stage biological sewage plant with a downstream waste water filter. The smaller plant 2 is designed for 230 000 population equivalents. Together, both treatment plants prevent pollution of the rivers Pegnitz and Regnitz, and ensure a lasting high water quality of the two rivers.

During daytime operation, control of each sewage treatment plant is handled from an own control room. Because the control room of plant 2 is not manned during the night, its operation is switched to the central control room of plant 1. Of course, it is also possible to control and monitor both sewage treatment plants from any one of the distributed operating stations of the combined system. Such widely distributed plant layouts place high demands on the topology of the process management system. Without comprehensive process control and automation equipment, plant management and process technology of such complex installations is practically impossible. In the early 90's, the two plants were initially equipped with the distributed process management system PMS 68000 from ME-Automation Projects, formerly known as KH-Automation Projects.



Because some of the plant's most important automation equipment had reached its end of life or was obsolescent, adequate maintenance – and therefore plant reliability – could no longer be ensured. Consequently, there was urgent need to renew the process guidance & automation system. In addition, overall plant efficiency was to be increased by installing modern technology.

In 2004, Nürnberg's municipal water authority commissioned ME-Automation Projects, previously KH-Automation Projects, to upgrade the existing control & automation systems by means of modern, powerful and innovative technology that was to be installed with the help of an efficient migration concept. During assessment of the new process management system, the distributed architecture of PMSX[®]pro, its data consistency, and its high availability and reliability were decisive factors.

The required high levels of availability and reliability were achieved by means of redundant data storage and by distributing the process control tasks among 37 process servers. Full access to all of the plant's process data is provided by each of the 38 operating stations. Active redundancies, and the avoidance of "single points of failure" in the architecture permit plant reliability to be increased significantly. Hereby, redundancies in the process technology equipment are not cancelled by the process management system.

Thanks to the distributed architecture of PMSX[®]pro, plant conversion was possible without interrupting normal operation In such large plants, the analysis of weak points and tracing the causes of faults are significant factors for efficient and reliable operation. Therefore, a particularly powerful archive server provides long-term storage of all messages and process values. Consistent data coupling to the office network gives the process engineers access to all relevant data for further processing and analysis using the office PCs.



Technical requirements

Process management and sequence control of entire plant from a central control room Operation and monitoring of entire plant from all distributed operator stations Stepwise migration from the existing control & automation system to PMSX[®]pro Combining six independent data networks via a gigabit backbone 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 Long-term storage of data and messages Archiving of all relevant measurement values in appropriate compression stages Strict data consistency in all software tools Access to all process values from the office environment Standardized software tools in accordance with IEC 61131-3

Scope of delivery

- Process management system PMSX[®]pro
- Automation equipment
- Network using switch technology
- Target specifications / engineering
- Programming according to IEC 61131-3
- Documentation
- Factory tests with plant simulation (FAT)
- Commissioning / trial operation
- Personnel training

Process management characteristics

Process management system	PMSX [®] pro
Тороlоду	distributed system
Network	optic fiber
	Ethernet TCP/IP
Automation system	Mitsubishi System Q
Data points	about 80 000
Automation stations	56
Operating stations	38
Process servers	37

Excerpt from our reference list



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