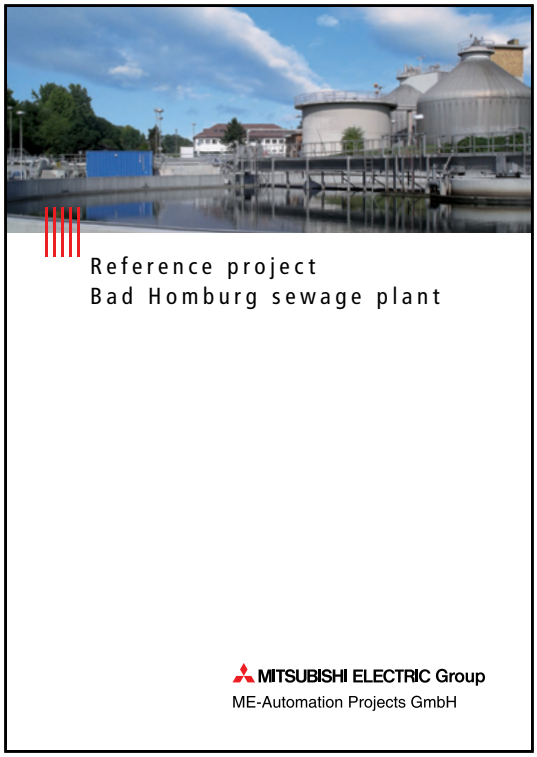
Application Story

Industry: **Water**

Products: **Control Systems**

Bad Homburg sewage plant



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

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Reference project
Bad Homburg sewage plant

MITSUBISHI ELECTRIC Group

ME-Automation Projects GmbH

Customer:	Stadt Bad Homburg v.d.H.
Plant:	Sewage treatment plant Ober Eschbach
Population equivalents:	80 000
Project value:	~ 1.5 million Euro
Project duration:	2005–present (in discrete construction stages)

Description

When the town of Bad Homburg was granted the status of a spa in 1840, it already had a sewer system. The town's first sewage treatment plant was commissioned in 1888. In the course of further development, the first mechanical treatment system was built on the site of today's plant in 1927. In 1954, construction of a new mechanical-biological sewage treatment plant for 35 000 population equivalents was started.

Due to increasing demands on plant throughput, the capacity was increased to 80 000 population equivalents in 1970. During dry weather, the plant treats about 18 000 m³ of waste water every day. On rainy days, plant throughput can increase up to 62 000 m³. With a total volume of some 23 500 m³, the plant's retention and treatment time is about 30 hours.

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 December 2004, the town of Bad Homburg commissioned ME-Automation Projects, formerly known as KH-Automation Projects, to replace the process guidance & automation equipment of the Ober-Eschbach sewage treatment plant. While determining the specifications of the process control system, it became clear that data consistency, distributed system architecture, high reliability, as well as know-how in project implementation were essential requirements.

As with all conversion/upgrading measures of comparable installations, the space available for installing the new automation technology was very limited. All existing automation stations had to be replaced due to outdated equipment. The control cabinets were gutted, and mounting panels were installed for the new Mitsubishi System Q automation stations. Distributed process servers were assigned to all sequence controllers, thereby establishing a clearly structured and hierarchical arrangement of the process control system.

This ensured that expansions had no retroactive effects, and conversion was carried out without interrupting normal operation. By means of redundant data storage and by distributing the process control tasks among several process servers, high levels of availability and reliability were achieved. The conversion/upgrading work was carried out up to the year 2010, and involved integration of the plant's stormwater tank, sludge treatment, flocculant dosing station, and the flocculant system into the process automation system.

In 2012, another stormwater tank was integrated and the sludge digestion was modernized.

Technical requirements

Process management and sequence control of entire plant from a central location

Operation and monitoring of entire plant from distributed operator stations

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

Vertical and horizontal data consistency as well as consistent linking to superordinate hierarchies

Consistent data coupling with office network

Conversion during normal operation without retroactive effects

System-wide engineering from a central engineering workplace

Archiving of all relevant measurement values in appropriate compression stages

Strict data consistency in all software tools

Availability of all process values for further processing

Standardized software tools in accordance with IEC 61131-3

Integration of stormwater tanks

Scope of delivery

- Process management system PMSX®pro
- Automation equipment
- Network using switch technology
- Installation & wiring
- Target specifications / engineering / programming
- Documentation
- Factory tests with plant simulation
- Commissioning / trial operation
- Personnel training

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 5 000
Automation stations	12
Operating stations	10
Process servers	8

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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