Application Story

Industry: Power / Process
Products: Control Systems

Cogenerative waste incineration plant Frankfurt-Nordweststadt

Reference project
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MITSUBISHI ELECTRIC Group
ME-Automation Projects GmbH
The waste incineration plant in Frankfurt-Nordweststadt was built in the 1960s with four parallel combustion lines. So the need for a complete overhaul and revamp of the plant had been recognized for a number of years.

MHKW GmbH (50% FES GmbH, 50% Mainova AG) operates a cogenerative waste incineration plant that generates electric power and supplies district heating for Frankfurt’s Nordweststadt suburb. The plant was a merger of the former waste incineration plant and the combined heat & power plant (CHP) in Nordweststadt. Also the CHP plant needed an urgent upgrade to ensure continued efficient operation. So the city of Frankfurt and Mainova AG decided to modernize both plants to meet the latest standards of efficiency, environmental compatibility, and economy. Hereby, particular attention was given to increased plant efficiency and maximizing the synergy effects. An important aim of the project was to reduce the operating costs by combining the control functions of both plants. Therefore, consultants Dr. Born & Dr. Ermel also planned a superordinate control system in a joint control room.

In 2004, the general contractor Lurgi Energie und Entsorgung GmbH (then called AE&E Lentjes GmbH) placed an order with ME-Automation Projects, formerly known as KH-Automation Projects, for supply, installation, and commissioning of the overall process control and automation systems for the incineration plant and the CHP plant.

Two fully independent systems provide operation, monitoring, and process control of the two plants from a central control room, but are presented to the operators as a single plant. Consequently, the availability of the control systems has a direct influence on overall plant availability.

The process management system PMSX®pro selected for this purpose is designed, structured, and configured in such a way that the high-availability demands placed on the plant are fulfilled completely. All components, equipment, and the software meet the technical state-of-the-art and comply with the relevant industrial standards. By means of active and passive redundancies in particular, and by avoiding “single points of failure” in the architecture, it was possible to achieve the high availability demanded for the control system.

Moreover, the system’s distributed architecture, and the use of modern switch technology prevents overloading the system bus. Similarly, highly efficient plant and maintenance management is ensured by system-wide configuration and parameter setting from a central point. Also in critical situations, the operators are supported by a transparent display of the process, which enables them to make the necessary decisions quickly and confidently. What’s more, the integrated Help function plus powerful tools for diagnostics, simulation, and quality assurance assist the personnel in efficient plant operation.
Technical requirements

Process management of entire plant from a central point
Vertical and horizontal data consistency
Automation stations in redundant architecture
Redundant and highly available process servers
Data acquisition via distributed I/O modules
Time stamping in distributed modules
Plant-wide redundant fieldbus using optic fiber technology
Consistent data coupling with office network
System-wide engineering from a central engineering workplace
Archiving of all incoming alarms & 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
Function plan documentation acc. to VGB-R 170 C
Standardized software tools

Scope of delivery

- Process management system PMSX pro
- Automation technology – highly available
- Combustion control
- Fail-safe boiler protection system
- Network using switch technology
- Central control room with large-screen display
- Installation & wiring
- Target specifications / engineering / programming
- Factory test / documentation
- Commissioning / trial operation / training

Process management characteristics

- Process management system PMSX pro
- Topology distributed system
- Network Ethernet fiber optic – single-fault tolerant
- Automation system Mitsubishi System Q (redundant)
- Data points about 25,000
- Automation stations 18
- Operating stations 6
- Process servers 11
- Large-screen display 18 video cubes
Excerpt from our reference list

**GERMANY**
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