Water supply systems and sewage works are critical infrastructure for cities and environmental projects. Cities, municipalities and municipal associations all have an interest in advancing water/waste water technologies. One of the companies dealing with the automation of waste water treatment equipment is Wates GmbH in Germany.

Waste water engineering: CX1000 demonstrates its versatility

All-clear with PC Control

Wates handles almost all aspects relating to the construction of water and waste water systems, including design and full electrical engineering services such as switchgear engineering, PLC programming, telecontrol and process control systems, process visualization and testing of mobile devices.
For automating the Brück water supply and sewage system (20,000 population equivalent), Wates GmbH used the CX1000 Embedded PC from Beckhoff for the first time. According to Henry Sander, managing director of Wates GmbH, this decision was based on a market analysis carried out by the HST head office at Meschede/Germany: "The aim was to achieve an optimum price/performance ratio. Our analysis led us to Beckhoff. The flexible and expandable control concept from Beckhoff met our expectations spot-on."

Diverse process requirements

The Brück sewage works is a two-line plant with separate treatment and final settling tanks. In the first pass, the waste water is cleaned mechanically and then subjected to biological treatment. The treated effluent is discharged into local watercourses. The plant is now controlled using a CX1000 Embedded PC from Beckhoff.
For integrating various process elements at Brück sewage works, digital or binary signals, e.g. from position indicators, final position sensors or control units have to be recorded. Outputs also mainly consist of binary signals, e.g. for switching actuators and starting motors. In addition to binary I/O signals, analog measuring signals from process equipment such as flow meters, fill level sensors or measuring devices, or actual operating parameters of variable-speed devices have to be dealt with. Accordingly, analog process signals have to be issued, e.g. for set value control of process actuators or as target speed values for controlled drives. The CX1000 deals with all calculations associated with the actual value/set value control algorithm.

The Beckhoff Bus Terminal system is used for controlling the binary and analog periphery. The system covers a wide range of binary I/Os and meets the special requirements of intelligent, analog or digital process devices. For the latter, a comprehensive range of high-resolution (16 bit) analog I/O terminals is available.

High-performance system coupling

An important prerequisite for using the CX1000 at Brück sewage works was its system integration capability. The sewage works control system has to offer scope for integration into a comprehensive telecontrol system by a variety of modems. "We use the full range of access options including dedicated lines, dial-up and GSM," Henry Sander said. "The CX1000 is ideally suited for this purpose due to its wide range of interface options."
The second integration aspect relates to visualization and interfacing of the sewage works control system with the HST Hydrodat control system. Here too, the CX1000 is ideal due to its system interfaces and its client/server functionality: The tried and tested Hydrodat concept can be combined with Beckhoff technology without problems. Henry Sander has no doubt that the CX1000-based control solution implemented at the Brück sewage works will also be used in other applications. "For medium-sized and smaller systems this is an interesting combination that also offers scope for larger systems due to its very large memory capacity and its capability of dealing with very high I/O data volumes," Henry Sander said.

→ Wates GmbH **www.hst-wates.de**