zenon heats the spa town of Karlovy Vary

Karlovy Vary in the Czech Republic – also known as Karlsbad in German-speaking countries – has an excellent reputation worldwide as a thermal spa town. One of the town's main suppliers of teleheating is Karlovarská teplárenská, a.s. The company's main activity is the production and distribution of heat energy. Karlovarská teplárenská, a.s. employed the experienced System Integrators Prozesstechnik Kropf s.r.o. to deploy zenon in order to modernize their SCADA system.

HEATING THE TOURIST HOT-SPOT OF KARLOVY VARY

The popular historic spa facilities with thermal springs and baths made Karlovy Vary a popular destination for spa guests and tourists. The town also boasts the second oldest golf course in Europe and many architectural sights worth seeing.

To ensure that guests and residents are supplied with heat and electricity, the 79 employees of Karlovarská teplárenská a.s., have laid out 63 km of hot water pipes, 17 km of warm water pipes and 1 km of steam pipes across Karlovy Vary. The company produces, distributes and trades in thermal energy. In 2007, over 1.4 million gigajoules (GJ) of energy was put into circulation; 765,000 GJ of this was produced by the company itself. In addition, Karlovarská teplárenská is active in the production and trading of electrical energy. In this capacity, approximately 1,300 MWh of energy was fed into the electricity grid in Karlovy Vary in 2007. Karlovarská teplárenská operates the Bohatice combined heat and power (CHP) plant and the hot water boilers

in the Doubí and Tašovice boilerhouses. In addition, heat is purchased from Sokolovská uhelná, a.s. This heat is generated from the fuel supplies of the municipality of Vresová and directed to Karlovy Vary by means of a teleheating pipeline.

Two hot water boilers from LOOS International are used in the Bohatice CHP plant. One produces 18 tonnes per hour (t/h) of superheated steam and the other produces 30 t/h. This takes place at a temperature of 230°C and a pressure of 13 bar. In addition, a 1 MW gas turbine, which is also equipped with a waste heat boiler, runs with an output of 4 t/h of superheated steam, also at a temperature of 230°C and a pressure of 13 Bar. The waste heat boiler uses the heat from the exhaust gases of the gas turbine. The heat gained from the superheated steam supplies a steam pipe for two industrial laundries and three independent steam-water transformer stations with 34.0 MW, 7.2 MW und 4.0 MW respectively.

QUICKER, SIMPLER, SAFER

Obsolete technology – the FactoryLink IV system running under Windows 95 - had been in use, unchanged, for twelve years. This, combined with the large distances from the control center to the turbines, as well as communication that used several convertors, caused an increasing amount of problems. As a result, Karlovarská teplárenská a.s. decided to use a modern SCADA system to manage the supply of heat and energy to Karlovy Vary. To implement this, a company experienced in SCADA integration was chosen - Prozesstechnik Kropf.

Petr Mandák, Process Control and Monitoring System Manager at Karlovarská teplárenská a.s., says: "We wanted the new SCADA system to provide us with the latest technology, including the possibility of being able to change projects independently." Given these requirements, the engineers at Prozesstechnik Kropf decided to use zenon from the European automation experts, COPA-DATA.

Tomáš Lípa from Prozesstechnik Kropf explains, "With zenon we have a reliable and easy-to-use tool for monitoring and controlling our teleheating production. zenon has enabled us to integrate different stations with different communication protocols into a common network without problems". In addition zenon makes it very easy to set parameters, and the employees at Karlovarská teplárenská quickly learned how to adjust settings for their projects for themselves.

Harmonizing the communication throughout the plant appeared to be a major challenge within the project to modernize the equipment. Six Schneider PLCs were connected using Modbus Plus. A Siemens S5 also ran via Modbus RTU. With the old system, each computer had to be equipped with the appropriate communication card in order to be able to visualize and thus be able to read required data – an expensive, inflexible and, thus, unsatisfactory solution for the long term. Tomáš Lípa continues: "We used zenon's ability to communicate with various control systems and to integrate easily into a network. Using a Schneider converter and the W&T ComServer, we harmonized Modbus Plus to Ethernet TCP/IP Ethernet." As a result, all data is available on all computers at any time via the intranet. It is primarily the client/server architecture that reduces load placed on the network and, therefore, reduces costs. Even the subsequent expansion to a fully redundant system has been prepared for: with zenon,
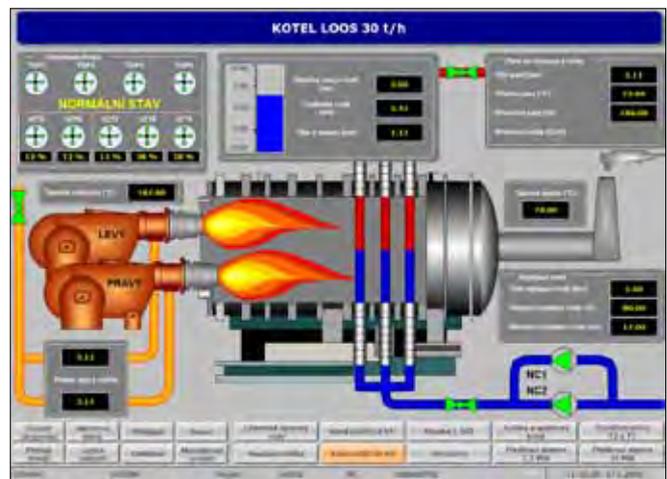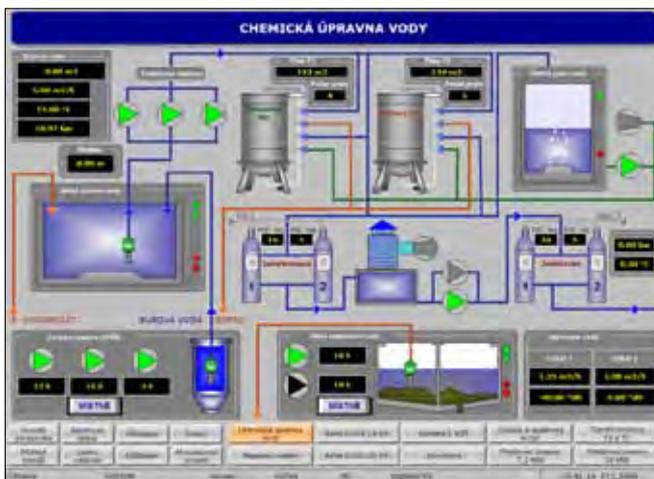
all that is required is two standard PCs and a few mouse clicks to configure them.

AN OVERVIEW PROVIDES SECURITY

In order for the engineers at Karlovarská teplárenská a.s. to have an insight into all events at all times, Tomáš Lípa and his team rely on a zenon web server with three clients. zenon can get such projects onto the web, with no additional work required. With no extra programming, the equipment can be monitored using the web browser, even by computers that are not directly connected to the system. Thanks to zenon's implemented security standards, access is only possible for authorized users.

In the CHP plant itself, the users now enjoy long-sought-after reliability. Visualization runs as a dual monitor system, which ensures a good overview and, thus, improves safety. Every alarm and even every system event is recorded and can be evaluated in detail. zenon's Extended Trend displays historical values and online data as graphic curves. It allows for an unlimited number of curves, which can be displayed at the same time and scaled as desired. COPA-DATA Product Manager Reinhard Mayr says, "In Extended Trend, each curve has its own independent y-axis, for which parameters can be set, the curves can be scanned with a cursor and all desired variable values can be shown."

Because two time axes can be displayed in a diagram at the same time, two different time periods can be easily compared with each other. The trend can also be stopped, freely scrolled or zoomed, to analyze or measure particular sections precisely.

Tomáš Lípa: "An overview in the control room and precise analyses give our customer, Karlovarská teplárenská a.s.

precisely the tools they need for efficient and secure production. Because zenon is also compatible between different versions, control and visualization can be subsequently expanded as and when required. It's also no problem to integrate applications such as SAP ERP."

Petr Mandák: "The new system with zenon has made our production and distribution more secure. We now work without disruptive interruptions. I especially like the fact that our engineers had already mastered the system within a few days. With zenon, we have increased our productivity considerably and achieved a noticeable reduction in costs."

TELEHEATING FOR KARLSBAD:

▷ Visualization for CHP plant's multi-monitor systems
▷ zenon Editor 6.22 with 1024 Tags
▷ zenon Runtime 6.22 with 1024 Tags
▷ Ability to track alarms and events
▷ zenon Extended Trend provides historical values and displays online data as graphics
▷ All data is available throughout the intranet
▷ zenon web server with 3 clients for monitoring by means of the web browser
▷ Simple maintenance and further development of projects
▷ Reduced maintenance and development costs
▷ Simple communication via TCP/IP
▷ Ready to be expanded to incorporate redundancy