

# Keeping the turbine running

## State-of-the-art SWAS solution for Zwickau Süd power plant



Heizkraftwerk Zwickau Süd GmbH (HKWZS) has built a new biomass power plant to supply the city of Zwickau. The fully automated plant in the east of Germany is woodchip fired and produces 75,000 MWh of district heating and 36,000 MWh of electrical power yearly.

“The water/steam cycle in our combined heat and power plant is monitored by a SWAS panel from Endress+Hauser. We are amazed how reliable and low maintenance the solution is and can fully recommend it to other power plant operators.”

Lutz Loos  
Project leader  
Heizkraftwerk Zwickau Süd GmbH



Lutz Loos  
Project leader of the power plant



SWAS analytical panel for the water/steam cycle at the combined heat and power plant (CHP) Zwickau Süd

**Newly built biomass power plant monitors its steam and water quality with our Steam/Water Analysis System (SWAS). The main parameters measured are conductivity and pH.**

### The results

- Complete SWAS solution package running smoothly since day one.
- Minimum maintenance and simple operation thanks to devices with Memosens technology.
- The high reliability and availability of the solution ensures that the plant can be operated by a single employee.

**Customer challenge** To maximize the plant's lifetime HKWZS needed a reliable monitoring of the water/steam cycle to detect impurities that could otherwise damage the plant equipment. In addition, the turbine supplier specified a maximum conductivity value of 0.2µS/cm to maintain the warranty. Since the CHP

is operated 24/7 with just seven employees, the solution had to be extremely reliable, easy-to-operate and low maintenance.

**Our solution** To cope with these challenges, the plant management decided to use our turnkey SWAS monitoring solution. It was up and running within three days and consisted of several parts:

- State-of-the-art measuring devices optimized for the power industry.
- Lab equipment for commissioning and validation of the instruments.
- Several services such as consulting and training to customize the solution and to bring it into the process.
- Data logging of the water and steam quality to maintain the turbine warranty.



Endress+Hauser service employee training the customer on a Memosens sensor

**The modular SWAS analytical panel at CHP Zwickau Süd** The company wanted to analyze feed water, boiler water, condensate, saturated steam and superheated steam. Each of these measuring points was mounted on an individual panel with all necessary devices, sample preparations, valves, piping, etc. All panels were then assembled on one turnkey SWAS analytical panel allowing the monitoring of the complete water/steam cycle in one central place. HKWZS simply connected the process connections and the installation was complete.

**Greater ease of use with Memosens technology** All measuring devices of the SWAS solution at CHP Zwickau Süd are equipped with Memosens technology that transmits the sensor signal digitally and interference-free to the transmitter. It maximizes the solution's reliability through its sensor connection surveillance and allows the use of pre-calibrated sensors as well as an easy sensor exchange within seconds.

Mr. Lutz Loos: "Memosens is a sophisticated technology that offers simple handling of the measuring instruments for the user."

**The sample preparation system** HKWZS wanted to monitor the water and steam quality so that samples in the water/steam cycle could be taken and measured continuously. At the inlet to the SWAS analytical panel, samples have a temperature of 105°C to 485°C and a pressure of 10 to 63 bar – harsh conditions

#### Measurement instrumentation at CHP Zwickau Süd

- 9 x Condumax CLS15D sensors for low conductivity
- 2 x Orbisint CPS11D pH sensors with salt ring
- 2 x Liquiline CM448 multichannel transmitters with integrated data logging

for the measuring instruments. Therefore samples run first through a sample preparation system where temperature is cooled down to 25-35°C and pressure is reduced to 2-3 bar. Subsequently, samples go through the respective measuring points on the panel. Since day one, measurements at CHP Zwickau Süd have run smoothly and reliably.

**Additional services** In cooperation with our power industry experts, HKWZS specified in detail the requirements of the SWAS panel solution, which was designed and engineered accordingly. As an example, the panel needed to fit into the allocated space, be made of stainless steel and free of nonferrous metals to avoid any corrosion. In addition, our Service team supported the commissioning phase and trained the operators for example on correct sensor calibration and handling of the sample preparation systems.

#### Where does HKWZS measure and what

- Conductivity before and after the cationic exchanger: feed water, boiler water, superheated steam
- Conductivity after the cationic exchanger: saturated steam, condensate
- pH: feed water, boiler water

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