



APPLICATION REPORT Food & Beverage

Measuring quantity of heat produced in the heating system in the “Weisses Bräuhaus, G. Schneider & Sohn”

- Heat flow volume output for custody transfer measurement
- Invoicing of combustible used according to energy output
- Complete measurement solution: Flow measurement with two temperature sensors



1. Background

In 1607, Duke Maximilian I of Bavaria founded the Weisses Bräuhaus in Kelheim. Since 16 April 1608, Weissbier has been brewed here. The Schneider family has owned the brewery since 1927.

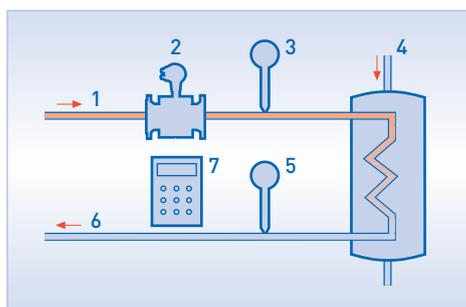
The “Weisse Bräuhaus” constructed a new heating station to supply the brewery and the administration building with high temperature water (165 °C / 329 °F) and hot water (90 °C / 194 °F). The boiler generates a total of approx. 5400 kilowatts of heat output. At the core of the system is a wood chip furnace with a high temperature boiler. In addition to the basic load, a 4000 kilowatt peak load boiler running on heating oil was installed to handle energy peaks.

For increased efficiency, a waste-gas heat exchanger was installed to generate the low temperature hot water (90 °C / 194 °F).

2. Measurement requirements

It is not the quantity of wood chips but rather the quantity of heat produced that is used when invoicing the wood chips used in firing the boiler. The basis for calculation is the heat energy generated at the boiler outlet. Since it is a custody transfer measurement, it was necessary to use an approved heat volume system.

In addition to the flow rate of the water, the temperature in the supply line and the return must be measured in both heating circuits to determine the heat energy.



Measuring the produced heat quantity in a heating circuit

- 1 Supply line
- 2 Flowmeter
- 3 Supply line temperature sensor
- 4 Heat consuming unit
- 5 Return temperature sensor
- 6 Return
- 7 Separate heat quantity calculator

3. KROHNE solution

To measure the quantity of heat produced, a UFM 3030 ultrasonic flowmeter and two paired and calibrated temperature sensors were used in each circuit. For better instrument read-out, the UFM 3030 devices were supplied with separate signal converters. Along with the temperature sensors, the flowmeters are connected to separate "CALEC" energy calculators featuring the required approval as per EN 1434. These calculators display the current heat quantity gained for each heating circuit as well as the cumulative kilojoule value, which is then transferred to the overriding control system.



4. Customer benefits

The Schneider brewery can determine and invoice the wood chips necessary for firing based on the quantity of heat produced. The following factors were crucial in the process:

- Complete custody transfer hot water energy balancing was achieved for both circuits with minimal effort
- The available heat quantity in the circuits can be determined at any time
- The technology installed is practically maintenance-free
- The system complies with EN 1434

5. Products used

UFM 3030

- Universal 3-beam in-line ultrasonic flowmeter for liquids
- Independent of conductivity, viscosity, temperature, density and pressure
- No moving or intruding parts, no pressure loss

OPTITEMP TRA-S12

- Temperature assembly with extension tube for screw-in
- High measuring accuracy
- Paired design



Contact

Would you like further information about these or other applications?
Do you require technical advice for your application?
application@krohne.com

Please visit our website for a current list of all KROHNE contacts and addresses.



www.krohne.com