



# Newsline

## FOOD & BEVERAGE

September 2009 edition



Dear Readers,

these days, industry outsiders often tell me that our industry is protected from the current crisis because there is always a need for beverages.

That is not exactly true: in many cases, breweries struggle against stagnating or sinking sales. Costs for providing water continue to rise, which means that efficient operation and the optimum use of resources are an absolute must for every producer. This is also evident in the number of forums and conferences dealing exclusively with this topic.

Internal energy balancing is an important instrument used by many breweries to determine the leading consumers throughout the entire brewing process. In the plants, necessary components such as hot water, steam and air are typically provided without exact knowledge of where and in what quantity they will be required. For example, nearly every production operation has a compressed air network but only rarely those networks are monitored and adapted to reflect actual consumption rates.

In this case, costs could easily be reduced if the compressors were controlled to provide compressed air according to consumption. Even with energy prices under 10 cents

per kilowatt hour, it pays to monitor the compressed air system using measurement equipment. Costs generated by leaks or unused capacity can quickly run up into the five figure range over the course of a year.

The same is true for steam: in addition to hot water, hot steam is one of the most important energy carriers in beverage manufacturing plants. Every major production process, including pasteurisation, brewing, sterilisation, washing and cleaning require steam or hot water. However, the supply of hot steam is extremely energy intensive as the boiler is usually fired using fossil fuels or natural gas. Accordingly, it is essential to accurately measure the quantity produced to ensure optimised control of the burner and, ultimately, efficient and environmentally friendly operation of the plant.

In this issue of Newsline and at our stand at Drinktec we will show you how to measure the consumption rates in auxiliary and supply processes reliably and accurately. Our goal is to offer you solutions that allow you to optimise your processes and thus reduce costs.

Sincerely

Bernd Schumacher  
Industry Manager Food & Beverage

KROHNE presents  
at the **drinktec**



Once again this year KROHNE presents its entire product portfolio for the beverage industry at Drinktec.

In addition to new products for filling equipment, measuring solutions for auxiliary and supply processes will also be presented.

Visit our stand 312  
in Hall A4. We look forward to seeing you!



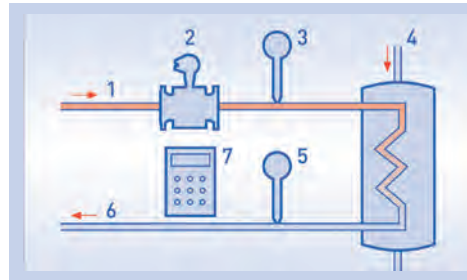
## Schneider Weisse heats with KROHNE



The "Weisse Bräuhaus" in Kelheim

The "Weisse Bräuhaus" constructed a new heating station to supply the brewery and the administration building with high temperature water (165°C) and hot water (90°C). 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).



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

### 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



### TRA-TF 30 temperature sensor

- High measuring accuracy
- paired design

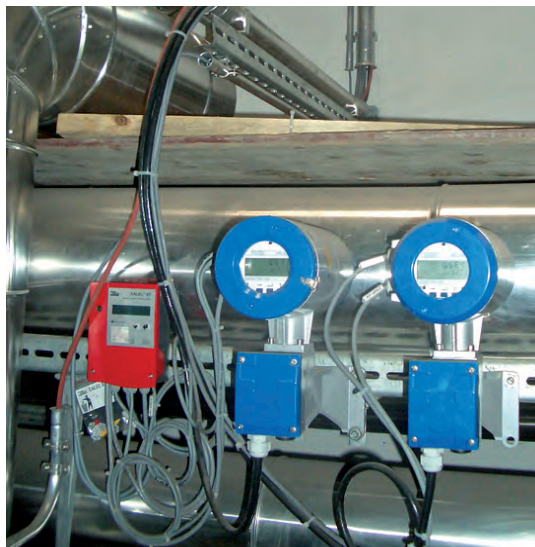


It is not the quantity of wood chips but rather the quantity of heat produced that is used when it comes to invoicing. The basis for the calculation is the heat energy generated at the boiler outlet. Since it is a custody transfer measurement, it was necessary to use an approved heat volume system. In addition to the flow rate of the water, the temperature in the feed line and the return line must be measured in both heating circuits to determine the heat energy.

To measure the heat volume, a UFM 3030 ultrasonic flowmeter and two paired, calibrated temperature sensors were used in each circuit. For improved readability, the UFM 3030 was supplied with a separate signal converter. Along with the temperature sensors, the flowmeters were connected to separate "CALEC" energy calculators, which also have the required EN 1434 approval. They measure the momentarily gained heat quantity per heating circuit as well as the cumulative kilojoule value, which are then transferred to the overarching control system.

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 when selecting the solution:

- Complete custody transfer hot water energy balancing was achieved for both heating 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
- The complete measuring solution comes from the one source



UFM 3030 in operation

## Increased long-term stability and accuracy for process and filling

Electromagnetic flowmeters with ceramic measuring tubes like the OPTIFLUX 5300 have been used for some years in various processes of the food industry including filling machines for PET bottles or in processes with conductive liquids. The devices boast outstanding long-term stability in spite of regular cleaning with hot media. That is the result of cooperative research between KROHNE and the PTB (German National Metrology Institute).

The PTB has been using measuring devices with ceramic measuring tubes as reference devices in their test stations for over 20 years and for that reason was interested in investigating the long-term behaviour of these devices under harsh conditions.

The ceramic measuring tubes are made of an extremely durable high-tech ceramic which features high pressure stability as well as high temperature shock resistance which remains constant during common hot water or steam cleanings.

During the tests, the devices were subjected to a total of 600 simulated CIP cleaning cycles, one after the other, followed by another 60 sterilisations with hot steam. That corresponds to a device life of approximately 4-5 years in average operation. The tests showed that the ceramic devices had an average deviation of only 0.05% compared to the tests in new condition, as well as stable reproducibility at various flow rates.



OPTIFLUX 5300

## New products at the drinktec

KROHNE presents two new products especially designed for the filling processes at beverage manufacturers: OPTIBATCH 4011 and BATCHFLUX 5500.

OPTIBATCH 4011 is a Coriolis mass flowmeter with two measuring tubes which can dose conducting and non-conducting liquids or pastes by mass. BATCHFLUX 5500 is an electromagnetic flowmeter featuring a measuring tube made of highly resistant ceramic.

Both devices feature extremely high reproducibility, low weight as well as a small and compact design.



OPTIBATCH 4011



BATCHFLUX 5500

## Clean dosing



OPTIMASS 1300

The beverage bottler ARCA is a company created in 2001 as a result of the merger of the oldest bottlers in Mexico.

ARCA produces drinks for Coca-Cola and the group brands Fanta, Joya, Sprite as well as other products such as natural spring water, Powerade, Minute Maid and Nestea. The company is the second largest bottler in Latin America and distributes its products in the northern region of Mexico.

ARCA uses the OPTIMASS 1300 Coriolis mass flowmeter with two parallel straight measuring tubes when measuring the CO<sub>2</sub> to carbonise beverages. The device measures the mass flow of the gas which is between 0 and 300 kg/h. The pressure in the line is 150 psig or 10 bar.

The OPTIMASS was selected because the customer was looking for a cost-effective solution with high accuracy. With the Coriolis mass flowmeter, the customer is able to easily monitor consumption of the product.



OPTIMASS 1300

## **Krombacher** Energy balancing in the supply processes: steam and compressed air

For energy balancing in steam and compressed air networks, KROHNE offers the OPTISWIRL 4070 C. The device is calibrated to standard conditions and monitors the quantities produced or consumed in the networks. As a vortex flowmeter, it measures primarily the volume flow rate and requires a specified density in order to display the mass flow of a product. With both compressed air and steam, pressure and temperature changes can occur, changing the density of the medium accordingly. These changes must be accounted for or compensated for during measurement. That is why the OPTISWIRL 4070 C features integrated pressure and temperature measurement as well as a computer that directly outputs the corrected volume flow.



The Krombacher Brewery Group from Kreuztal-Krombach uses the OPTISWIRL 4070 C to monitor its compressed air and steam networks. With this newly installed measuring equipment, the brewery can optimally monitor and control its auxiliary and supply processes.

### Advantages of energy balancing with OPTISWIRL:

- By positioning the measuring points, usage and thus costs can be allocated to individual processes or segments
- The measurement data enables the detection of flow rate losses in the circuits
- Usage profiles can be created for the individual components, enabling the quantity provided to be controlled according to the need
- Reduced installation work and low measuring inaccuracy even with compressed air and steam measurements thanks to the pressure and temperature compensation integrated into the device



## Level under control

Knowing the exact inventory of stored products is also crucial when it comes to competitiveness in the food and beverage industry. Radar level measuring devices provide accurate information about existing quantities of liquid and solid materials, allowing you to sustainably reduce costs through optimised storage.

For continuous level measurement, KROHNE offers a range of radar measuring devices. The OPTIFLEX 1300 measures according to the TDR principle (guided radar) and is suitable for solids and liquids alike. It is also able to detect and measure interfaces in liquids. Even

disturbances such as foam formation on the surface, moving surfaces and deposits on the sensor do not affect measurement.

If the user chooses non-contact level measurement, he can still choose between two specialists: the OPTIWAVE 7300 measures without contact according to the FMCW principle and was designed for liquid products. Its equivalent for solids is the OPTIWAVE 6300. With its non-stick drop antenna it offers continuous measurement of level and volume in dusty surroundings such as hops or malt silos. There are various antenna types available for the OPTIWAVE 7300,

the hygienic antenna is one of them. All of the parts in contact with the product are made of FDA-conforming plastic.

The base version of the OPTIWAVE 6300 with a DN 80 drop antenna already measures up to 30m in distance; depending on the version, the device can reliably measure up to a height of 80 metres.



OPTIFLEX 1300 C



OPTIWAVE 6300 C



OPTIWAVE 7300 C

### For more information please contact:

KROHNE Messtechnik GmbH & Co. KG  
Ludwig-Krohne-Str. 5  
47058 Duisburg, Germany

Tel.: +49-(0)203 301-0  
Fax: +49-(0)203 301-10 389

info@krohne.de

[www.krohne.com](http://www.krohne.com)

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