



APPLICATION REPORT Food & Beverage

Equipping a PVPP beer stabilizing system with flow measurement technology



- Fully automated beer stabilization through the removal of polyphenols
- Electromagnetic flow measurement for the dosing of polyvinylpolypyrrolidone (PVPP)
- Profibus communication for process control and system visualisation via a PLC

1. Background

KHS GmbH is one of the world's leading suppliers of filling and packaging systems as well as technical systems for the beverage industry. In addition to components for filling, cleaning and packaging liquids, KHS also supplies industry-specific process technology. This includes fully-automated systems to stabilize beer in container format.

2. Measurement requirements

For small and medium-sized breweries KHS manufactures the Innopro ECOSTAB B, a beer stabilization system for batch processing. The system removes the phenols that cause turbidity from the beer by way of renewable PVPP (polyvinylpolypyrrolidone). This allows the beer to be stabilized accordingly and prevents turbidity during transport or long periods of storage. The PVPP suspension is provided in a stackable container. Since this system stabilizes the beer in small process modules, the mixing phases and product consumption are accordingly low.

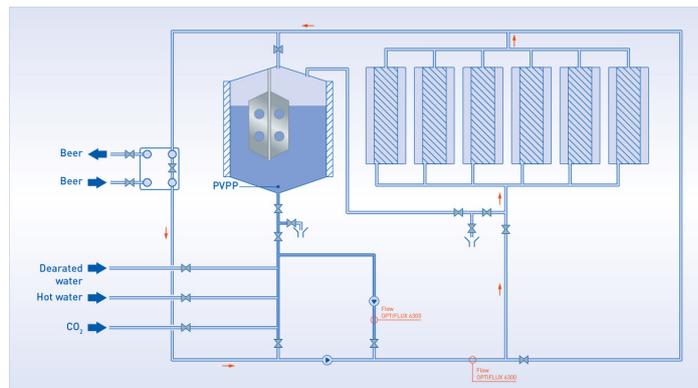
Following successful stabilization the PVPP is regenerated in the modules and fed back to the dosage tank so that it may be reused for the next stabilization cycle. In order to dose the PVPP properly in relation to the overall volume flow of 50...240 hl/h (ca. 42.6...204.5 US beer bbl) and to enable automated operation, the system must be equipped with flowmeters.

3. KROHNE solution

KHS chose KROHNE's OPTIFLUX 6300 as its flowmeter. For this plant manufacturer, KROHNE is the standard supplier of flow instrumentation. The two companies have enjoyed a long partnership. The electromagnetic flowmeters have been in use for a long time for other KHS products such as filling systems.

A total of two devices were used in the system. One compact version (C) and one version with a remote converter and wall housing (W). The PVPP is then either dosed in proportion to quantity using an OPTIFLUX 6300 W in a small size (DN 10) or the exact amount is added to the flow of beer on top while regulating the turbidity. An OPTIFLUX 6300 C (DN 40) also measures the overall volume flow of the beer to be stabilised.

Both device versions feature a state-of-the-art Profibus DP interface and use it to digitally transmit all of the measured parameters to the higher-ranking PLC.



Beer stabilization with the OPTIFLUX 6300

4. Customer benefits

Dosing the PVPP is accurate and fully-automated when using the OPTIFLUX 6300.

The higher-ranking PLC makes it possible for the plant operator to quickly measure and further process all parameters and operating states of the OPTIFLUX 6300 via the Profibus DP. The entire dosing process can be centrally adjusted and visualised along with the entire system.

The high accuracy of the measuring device with a deviation of <0.2% from the measured value ensures high plant safety and cost-saving operation. The PVPP is carefully dosed into the beer flow according to the dosing quantity in the formula.

5. Product used

OPTIFLUX 6300 C and W

- Electromagnetic flowmeter for the food and beverage industry
- For demanding mixing, dosing and filling applications with liquids
- Robust stainless steel housing and PFA liner
- DN 2.5...150 / 1/10...6"; process temperature up to 140 °C / 284 °F
- All industry-specific process connections
- On-site verification of flowmeter with OPTICHECK
- FDA, EC 1935/2004; 3A; EHEDG
- HART®, FOUNDATION™ fieldbus, PROFIBUS® PA and DP, Modbus etc.



Contact

Would you like further information about these or other applications?

Do you require technical advice for your application?

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