



APPLICATION REPORT Food & Beverage

Measuring the suspended solids content in bottom-fermented brewer's yeast

- Determining the switching point for separating excess yeast and wort
- Process control between the fermentation and storage of green beer
- Use of TSS measuring system and flowmeter for minimal product loss



1. Background

German company Wellmann Engineering develops and manufactures process solutions for all areas of the food industry as well as the pharmaceutical industry. The international process specialist constructs, for example, turnkey systems for production processes in the brewing sector.

2. Measurement requirements

Wellmann has supplied a mobile measuring and control unit for a family brewery in Southern Germany. The purpose of this mobile unit is to determine the right time to separate the yeast from the green beer. Following the fermentation process, i.e. the conversion of maltose to CO₂ and alcohol, the excess yeast settles at the bottom of the fermentation tank and can be removed. The green beer separated from the yeast is then channeled into a storage tank for further maturing.

Wellmann's mobile unit is connected to the brewing tank by a flexible hose. To keep product loss to a minimum when removing the yeast, it is important to determine the correct switching point from which the flow of brewer's yeast converts to green beer. To this end, Wellmann was looking for a suitable measuring instrument that could be permanently fitted to the measuring and control unit.

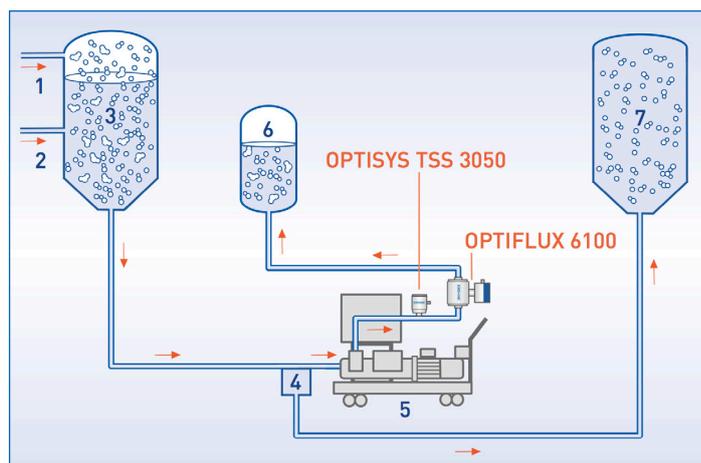
3. KROHNE solution

Wellmann equipped the mobile system with the OPTISYS TSS 3050 total suspended solids measuring system. This compact measuring device is optimally designed for separation and filtering processes in the food industry. The optical sensor of the KROHNE system detects the media change from brewer's yeast to green beer based on the turbidity level, i.e. the light absorption caused by solid contents in the beer. To this end, the measuring system was configured to a measuring range of 0...3250 EBC.



The measuring system features an elastomer-free hygienic process connection and thanks to its sturdy construction is also suitable for CIP (Cleaning in Place) and high-pressure cleaning (IP69K).

The mobile measuring and control unit was also fitted with the OPTIFLUX 6100 C so that it can measure the volume flow of the brewer's yeast too. This electromagnetic flowmeter is a standard instrument for food and beverage applications. The EHEDG-approved and 3A-certified flowmeter was fitted to the trolley with a hygienic connection in compliance with DIN 11864.



1 Yeast; 2 Wort; 3 Brewing tank; 4 Connection nozzle for pipe to storage tank; 5 Mobile measuring and control unit; 6 Yeast collecting tank; 7 Storage tank

4. Customer benefits

The interface can be effectively determined using the TSS measuring device for removing the yeast. The fast response time of the KROHNE device ensures that the pump is switched off as soon as only the green beer flows through the pipe. Product loss/waste is kept to a minimum.

Thanks to the electromagnetic flow measurement, the brewery now also knows the total volume flow of brewer's yeast that has been removed. The measuring data is displayed on the mobile measuring and control panel for monitoring purposes.



Mobile measuring and control unit with OPTISYS TSS 3050 and OPTIFLUX 6100

5. Products used

OPTISYS TSS 3050

- Total suspended solids measuring system for hygienic applications
- Process connection: G1/2 for hygienic adapters
- Hygienic stainless steel design, suitable for CIP/SIP
- Max.: 3 AU, 6 OD, 13000 FAU, 13000 FTU, 3250 EBC, 26.65 g/l
- 4-wire, 4...20 mA, with integrated transmitter



OPTIFLUX 6100 C

- Electromagnetic flowmeter for standard hygienic applications
- Reliable dosing and filling in the food sector
- Nominal size: DN2.5...150 / 1/10...6"
- Available with industry-specific installation lengths and various hygienic process connections
- Certified to 3A, EHEDG; complies with FDA and EC1935/2004 regulations



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