APPLICATION REPORT

Food & Beverage

Measuring alternating media in the mash filter of a brewery

- Separating wort from mash slurry in the lautering process
- Monitoring media change from sugary wort to spent grain (malt)
- Detecting spent grain passing through the filtration system to trigger process shutdown

1. Background

The Brasserie St-Feuillien is a Belgian brewery famous for their internationally acclaimed ales. Their various types of beer are brewed at a production site located in Le Roeulx, in the French speaking part of Belgium.

The facility uses the traditional way of brewing which basically consists of malting, worting and fermentation: In a first step barley is malted, i.e. it gets steeped in water, germinated and then dryed (kilned). The malt is then converted into fermentable sugars by mixing it with water. The mashing process results in a sugar rich liquid called wort, which is then separated from the spent grains in the lautering process. Only after the liquid is extracted from the malt can it be boiled with hops in the worting kettle, fermented and further processed to produce beer.

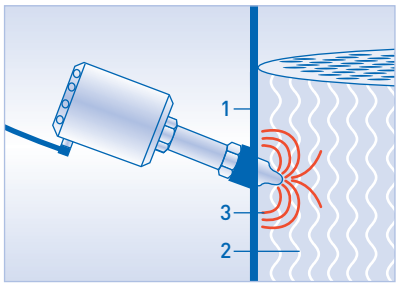
2. Measurement requirements

For the separation of the wort from the malt the Brasserie St-Feuillien uses a membrane free mash filter. In order to find out when it is no longer efficient to extract more wort from the mash, the filtering process needs continuous monitoring. Once the sugary liquid is drained and the insoluable grains start passing through the filter, the mash filter has to be put on hold to secure product quality. Therefore, the customer was looking for a technical solution to detect a change of medium from the sweet wort to the clogging malt.

3. KROHNE solution

KROHNE recommended using the OPTISWITCH 6500. The device was delivered as a long version (250 mm/ 9.8") with G½ process connection. It was welded in the mash filter using a welded sleeve (HWN 200).

The switch uses a high frequency signal sweep that is radiated from the sensor tip into the mash filter. The medium acts as a virtual capacitor, which together with a coil in the sensor head, forms a circuit creating the switching point signal. This virtual capacity will depend of the dielectric value of the medium. With the help of a configuration tool the switching point of the OPTISWITCH 6500 was quickly fine-tuned. The switching point is accurately defined and when the switch comes into contact with the grain, its switching point is triggered. This information is indicated by an LED which shines through the housing cover.



1 Wall of mash filter, **2** Medium, **3** Line of electric flux

4. Customer benefits

The OPTISWITCH 6500 ensures that the wort extraction is as free from malt bits as possible, thus helping the Brasserie St-Feuillien run the lautering process efficiently and maintain the highest product quality. Both types of medium are always well detected so that immediate steps can be taken, if the malt starts passing through the filter press.

Given the sticky spent grain, it is an additional advantage to the customer that the device is easy to clean and the risk of clogging products is minimised. The OPTISWITCH 6500 doesn't need any maintenance. Its measuring performance is not affected by its mounting position and it is resistant against CIP and SIP agents which have to be applied by the brewery on a regular basis.

The customer is very satisfied with the OPTISWITCH 6500. The switch is part of a whole instrumentation package of KROHNE products for various brewing processes at ST-Feuillien.

5. Product used

OPTISWITCH 6500

- Hygienic switch for level detection and dry-run protection
- Measures alternating media
- Excellent for media separation
- Insensitive to build up or foam
- Hygienic switch completely in Stainless Steel
- Process temperature -40 ...+200°C / -40...+392°F

Contact
Would you like further information about these or other applications?
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