Application Report
Phase Separation Beer / Water

SIGRIST PROCESS-PHOTOMETER

The PhaseGuard In-line interface monitor consists of 3 models for various applications. One of the most important is the beer/water separation in which the model PhaseGuard C is used.
Technically, this is a simple measurement, where the application within the filling station can easily be identified.

Benefit
The variety of beer products and/or bottle types has increased in many breweries in the past years. This can result in frequent changes at the bottling station. Such changes are time consuming, increase beer loss and can reduce the productivity of the filling station. By installing a PhaseGuard C, losses can be minimized and profitability can be increased.

Typical Application
At the filling station of a brewery, the ultimate goal of an efficient product switch is to do this job swiftly. At the same time, the amount of pre-running and post-running beer (this is the term used for the beer/water mixture, which is collected in corresponding tanks and later will be re-worked again in an upstream production step. Critical point for the pre-running beer is also the content of oxygen) should be reduced to an absolute minimum.

This goal will be achieved by the implementation of an interface monitor PhaseGuard C. The working principle of the PhaseGuard C is based on light absorbance, whereby light from a LED light source with a wavelength of 430nm (according to the recommendation of the MEBAK/EBC standard) is transmitted through the medium to be measured. The instrument response quicker than conductivity measurement and has a more dynamic measuring characteristic. This means, even smallest amounts of water or cleaning detergents can be detected. So, besides the optimization of the product change, the PhaseGuard C will also act as a QA-tool, since any turbidity present will have an impact on the signal, resulting that the product-specific switching point will be shifted.
The installation is easy and can be done prior to the bottling or keg filling station. The installation is done using a Varivent® or compatible inline housing. The design complies with the CIP and SIP requirements.
For simple applications and system integration the instrument configuration and communication can be done easily using the integrated USB interface with a parameter file in combination with the existing outputs. Optionally available is a version with integrated bus connection.
For more comfortable installations the optional control unit SICON can be used, allowing connection of several sensors on one control unit.

```
PhaseGuard Configuration
----------
Language 0:Deutsch, 1:English
=1
----------
Limits Mode 0:Off, 1:Exceeded,
2:Undershot
=0
----------
Limits Upper limit
=1.000
----------
Limits Lower limit
=0.900
----------
Integration
=1 s
----------
Output 1 Invert 0:No, 1:Yes
=0
----------
Output 2 Invert 0:No, 1:Yes
=0
----------
```

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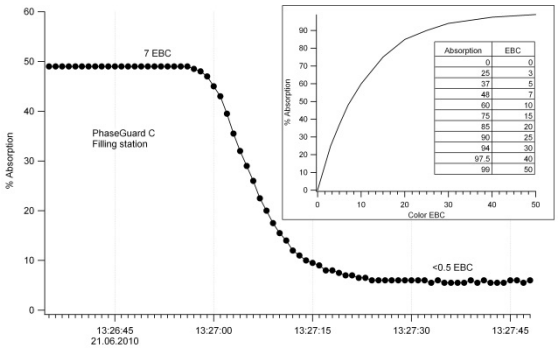
Practical Measurement (Example):



This diagram shows a typical pattern of a phase change from beer to water, which takes place within about 20 seconds. The PhaseGuard C picks up this interface change quickly and with high precision. It allows the user to select the switching point which he believes is the optimum (compromise between beer loss or amount of water in the storage tank).

Typical example to calculate the savings

To calculate possible savings, some information is necessary which are relevant at the measuring point (some typical values are inserted in brackets as an example):

- Pipe diameter (DN100)
- Flow rate in m/sec (2.0)
- Number of switching cycles per day (4)
- Time saving compared to the current method in seconds (typical 2.5)
- Number of production days per year (220)
- Sales revenue for 1 litre of beer (0.5 Euro)
- Current method

Savings/ROI-Calculation

Based on the figures used in this example, a yearly saving of approx. 13.000 EUR can be expected. Taking into account the cost for the instrument and the installation, the return on investment (ROI) is achieved already within less than 4 months! Sigrist can provide a program which allows you to calculate the savings and the revenue individually.

Products

SIGRIST Product und Configuration for this Application:

- PhaseGuard C
- Optional: SICON control unit
- Suitable Varivent® or compatible housing

Parameter Setting

- Selection of the desired switching point (% Absorption)
- Setting of the configuration is done using a PC via the USB connection and a parameter file, or by connecting the optional available SICON control unit

Advantage of the SIGRIST PhaseGuard C

- LED light source, only 2W power consumption
- No purge air needed
- Sealless design
- Extremely low cost for maintenance