Benefits

Process analytical systems from METTLER TOLEDO support breweries in their endeavors to achieve these goals. Optical product monitors help to minimize beer losses and to optimize yeast recovery processes. The real-time identification of the current product in the filling line and an early alarm in the event of an unwanted product change, increases process safety and avoids unscheduled downtimes.

Process

Detection of phase transition yeast – beer

Typically, turbidity monitors are installed in the outlet of cylindroconical fermentation and storage tanks. Compared to a visual phase separation, the detection of the phase transition yeast to beer can be fully automated and optimized with an optical product monitor. In the outlet of fermentation tanks this leads to a higher yield of yeast for the yeast recovery process. Furthermore, a low yeast concentration in green beer results in a controlled and reproducible maturation process in the
storage tanks. Also, in the outlet of storage tanks the product monitor optimizes the phase separation of yeast to beer, and consequently the lower yeast concentration in the matured beer increases the operational availability of the downstream beer filter.

Another application is the installation of a turbidity monitor in the outlet of a separator. In this case, the turbidity signal is used to trigger the self-cleaning mechanism of the separator. Compared to an inflexible time controlled triggering the loss of beer is significantly lower.

**Product identification in filling lines**

Reliable and reproducible product identification in filling lines helps to increase process safety and can be implemented in the charge traceability documentation for quality assurance purposes. Also here, an in-line monitor based on the interaction of different light sources with differently colored products, is a cost-efficient solution. In addition, the monitor will also detect the phase transition between rinse water and colored product for an optimized phase separation control of water to beer.

**METTLER TOLEDO Solution**

**InPro 8300 RAMS Product Monitor Series**

In the phase separation yeast to beer application the standard version of the InPro 8300 RAMS monitor family is used (Fig. 1). The transition from turbid to clear is based on an absorption measurement of near infrared (NIR) light. By applying an alternative system configuration the same unit can also be used for phase separation processes for differently colored liquids, e.g. wort and water or beer and water. In this set-up absorption of blue light is measured instead of NIR light. In both cases the measurement signal is also available on a standard 4 … 20 mA output for control purposes.

For product identification in filling lines an InPro 8300 RAMS model with four light sources is used. The simultaneous measurement of reflection and absorption of NIR, red, green and blue LEDs leads to eight different parameters for one liquid medium (Fig. 2). In order to identify more liquids, representative “fingerprints” of the different products must be taken first and stored in the instrument. This is possible for up to eight differently colored liquids, plus colorless water. After this “product learning” procedure the different media will be accurately identified during the filling process. Digital signals are used to transmit the information to a DCS or PLC.

All members of the InPro 8300 RAMS product family are easily installed on Tuchenhagen VARINLINE® housings. They are further characterized by a reduced maintenance requirement thanks to the use of long life LEDs and CIP resistant materials. A PC software package is available for the above mentioned product parameterization via the integrated RS232 interface. The only calibration procedure necessary for all InPro 8300 RAMS versions after a certain period of use – typically after one year – is an in-line zero point correction. In this case, the InPro 8300 RAMS unit stays in the pipe, which is filled with clear water, and the offset is corrected by a simple push on the corresponding button.

![Fig. 1: InPro 8300 RAMS with communication interfaces in a VARINLINE® housing](image1)

![Fig. 2: Simultaneous absorption/reflection measurement at four wavelengths](image2)
At a glance

Advantages of the METTLER TOLEDO InPro 8300 RAMS

- Fast and easy installation on Tuchenhagen VARINLINE housings
- Use of silica gel in optical housings eliminates error-prone usage of air purge installation
- Easy configuration via PC
- Self-diagnoses regarding humidity and temperature ensures highest operational availability
- Simple in-line calibration correction with clear water
- Low maintenance thanks to the use of long life LEDs
- Minimized spare part costs, as regular exchange of lamps becomes unnecessary
- Extremely attractive price/performance ratio
- The InPro 8300 RAMS series is identical in construction with the “RAMS” (Innotech) instruments

www.mt.com/turbidity

www.mt.com/beer