Application Notes: Beer Production

Rugged and portable density monitoring for quality beer production

Mobile Density Meter: Advancing Liquid Density Measurement

Industry: Beer

Challenge

Measuring wort sugar concentration throughout the beer production process.

Solution

Mobile Density Meter (MDM100)

Dissolved solids Plato (P°) in wort is measured using accurate density and temperature measurements

Quick, accurate, repeatable density measurement; in the brewhouse or in the lab

Challenge

Extract Concentration in Wort – The key indicator in beer production

Density can be used to measure the dissolved solids Plato (P°) in the wort extract at the wort kettle. Traditionally this measurement was made using a glass hydrometer. The extract content in the wort at the start of the fermentation process is an indication of the potential final alcohol content in fermented beer. This measurement in some countries has a financial implication. The taxes paid on the beer produced are based on the wort extract and not the final alcohol content of the beer.

The extract, which is the result of sparging water through the grain bed in the Lautering process, contains the dissolved solids (sugars and higher molecular weight soluble fractions) from the grain that eventually through fermentation becomes the beer. Dividing the original extract by 3 is an indication of the final potential alcohol content of the finished beer. During the fermentation step the wort sugars are converted into carbon dioxide and alcohol. Periodic monitoring of the density in the wort during the fermentation process helps the brewer check on the health of the yeast and the extent of fermentation. Fermentation is stopped when the gravity reaches a certain point.

Viscosity Measurements in a Brewery

In a brewery, viscosity measurement plays an important role in the controlling the quality of the beer. It indicates the quality of the malt, predicts filtering times and is an indicator of the foam behavior of the finished beer.

Digital display on a Windows device for instant reading and record samples for further analysis.

Solution

The MDM100, the mobile density meter from Integrated Sensing Systems provides beer makers with the option of performing accurate density measurements in the brewhouse or in the lab. Only a few milliliters of wort or beer are required for making the measurement. There is no need for rinsing the density meter when measuring multiple beer samples. Yeast and dissolved CO2 in the beer will not affect the performance of sensor measurement. At the heart of the MDM100 is a patented, innovative, MEMS vibrating density sensor that is immune to the effect of gas bubbles in the beer. This assures accurate and consistent measurements that are available in seconds.

The MDM100 calculates sugar concentration based on measured density and temperature. Results can be displayed in the preferred units such as °Plato. Results are stored in a standard file format that can be exported into applications such as Excel for further analysis.

MDM100 is a multifunction instrument that,

- measures specific gravity or Plato of the wort
- provides an accurate density measurement for determining the alcohol concentration in beer using traditional glass distillation
- determines residual sugar concentration in beer using the residue from traditional glass distillation
- measures finished beer density for accurate weight based bottling
- can measure viscosity for additional insight into beer characteristics

Features

- Mobile density measurement in the brewhouse or lab
- Measures liquid density and temperature to calculate sugar content
- Measures alcohol concentration in distilled spirit production
- Uses gas bubble resistant MEMS vibrating sensor
- Calibration checked using pure water
- Sample injected using inexpensive plastic syringe
- Tough construction can handle rough handling
- Economical for beer producers of all sizes

More Information

To find out more about the MDM100 visit www.metersolution.com/analytical

To find out more information about the complete product family of Fluidic Products, please visit: www.metersolution.com

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