Do You Know Your Fermenting Wort?

How well do you know your fermenting wort? Craft brewers have a common challenge to produce a high quality beer, at a reasonable cost using available equipment and labor. Maintaining batch-to-batch consistency requires data. Frequent monitoring of the fermentation progress is difficult to achieve with available labor and equipment.

Our Solution, BeerSense AFM

Integrated Sensing Systems, Inc. introduces the revolutionary BeerSense™ Automated Fermentation Monitoring (AFM) system for brewers of all sizes. The AFM is a quality enhancing and labor-reducing alternative to the routine measurement of wort using a glass hydrometer or a hand-held density meter. The AFM provides time stamped measurements of wort density during the fermentation process. Sampling frequency is set by the user. Operating unattended 24 hours a day, it generates measurements at critical times in the process. This data is used to identify problems with a fermentation and when to stop the batch.

Bubble Resistant Beer Sampling

Automated, on-fermenter sampling of wort has been a challenge due to the entrained carbon dioxide gas and produced foam. The patent pending AFM sampling system withdraws wort from the fermenter on a timed basis. Foam is separated and the gas reduced liquid wort is pumped through an embedded micro density sensor for measurement of Plato and specific gravity.

AFM Benefits

- Reduce labor to monitor fermentation
- Improved density measurement reliability
- Accurate SG, Plato and ABV measurements
- Sensor optimized for operation with gas bubbles
- More data for early identifications of problems
- Improved fermenter utilization
- Small packaging for portable use in the cellar
- Vibration insensitive for reliable measurement

AFM Specifications

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Electrical, Digital Communication</th>
<th>Physical Specifications</th>
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</thead>
<tbody>
<tr>
<td>Density: +/- 0.0005 gr/cc</td>
<td>Power: 24vDC (2 watts, 12 watts with tablet)</td>
<td>Weight: 10.5 lbs</td>
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<tr>
<td>Plato: +/- 0.1</td>
<td>Digital: RS232</td>
<td>Size: 11” x 10” x 6”</td>
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<tr>
<td>Specific Gravity: +/- 0.0005</td>
<td>Sampling Frequency 0.5 - 24 hours, user defined</td>
<td>Mounting: Unistrut, close to sample point</td>
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<tr>
<td>Fermentation Rate</td>
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<td>IP 65</td>
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High Performance, On-Line Density Measurement
MicroCoriolis™ Digital Density Measurement Technology

The heart of the BeerSense family of products is an innovative, liquid digital density measurement technology, the ISS patented* microCoriolis sensor. The components of a vibrating tube digital density meter are miniaturized using silicon micromachining technology to fabricate this sensor. An integrated platinum RTD temperature sensor is closely coupled to the silicon micro-tube density sensor for precise fluid temperature. The combination of density and temperature measurement, sophisticated electronics and software, result in a sensor that can convert these measurements into data useful in beer production. The small size of the microCoriolis sensor results in a natural resistance to dissolved gas in the beer. Yeast easily passes through the filter and density sensor. The result, consistent measurements from start to finish.

The BeerSense AFM is a completely self contained unit that is mounted on or close to the fermentation vessel and plumbed to the existing sample port. The device is powered with 24vDC for operation in wet environments. The AFM periodically removes a sample of wort from the fermenter and measure degrees Plato and specific gravity. Waste wort is collected in a container. The complete system can be cleaned by CIP systems for sterile operation. The results are summarized on an integral LCD display. An optional Windows computer, running custom ISS software, provides a graph of fermentation progress. Digital data is available as an output to other computers. The results of the complete fermentation run are stored in the computer in a format compatible with spreadsheet programs.

*US Patents 6,477,901, 6,499,354, 6,637,257, 6,647,778, 6,923,625, 6,932,114, 6,935,010, 7,059,176, 7,228,735, 7,263,882, 7,351,603, 7,381,628, 7,437,912, 7,568,399, 7,581,429, 7,628,082, 7,789,949, 7,823,445, 7,921,73782, 8,016,798, 8,021,901, Japanese Patent 4,588,763 and more patents pending

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