



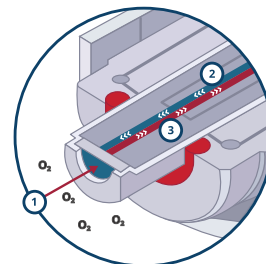
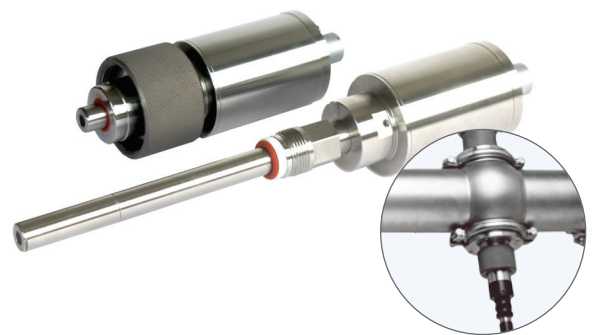
In-process Oxygen (O₂) sensor for beverage facilities of the future



Orbisphere M1100 Luminescent Dissolved Oxygen Sensor

Our improved LDO (O₂ sensor) allows our Beverage customers to put reliable, stable, and accurate in-process monitoring in place, providing them Real Time insight of product quality, as it acts as an indicator of processes disruption, through digitalization. Building this quality into the manufacturing process, allows further optimization, by taking data driven decision with confidence - as part of their goals towards "Beverage facility of the Future" - while at the same time mitigating product waste and/or product recalls that has a severe impact on productivity, or even affects final product reputational damage.

The LDO sensor provides immediate oxygen readings with a measurement frequency of two seconds. This capability is achieved from a lower detection level of 0.6 ppb to a high range of 40 ppm. This highly accurate instrument's readings are essential to control low oxygen levels in beverage production and is ideal for use in challenging applications such as the wort environment and CIP processes using harsh chemicals under high temperatures. The instrument carries consistent readings with limited to no drift for 12 months without calibration surpassing other optical sensors that display significant drift after only a few months in similar conditions. The M1100 probe has a low level of detection that withstands all process changes, temperature, pressure shocks, etc." (See more specifications in M1100 data sheet).



1. Active luminescent spot
2. Blue light (excitation)
3. Red light (detection)

An active fluorescent spot is excited with blue light and a red luminescent light is detected. The presence of oxygen changes the rate of fluorescence decay and this is directly related to the oxygen partial pressure value. LDO technology eliminates traditional membranes and electrolyte.

Certifications

EMC: EN61326-1:2006

CE: EN61010-1:2010

ETL, conforming to UL61010-1

CSA 22.2 No. 61010-1



Be Right™

Many Brewery Applications

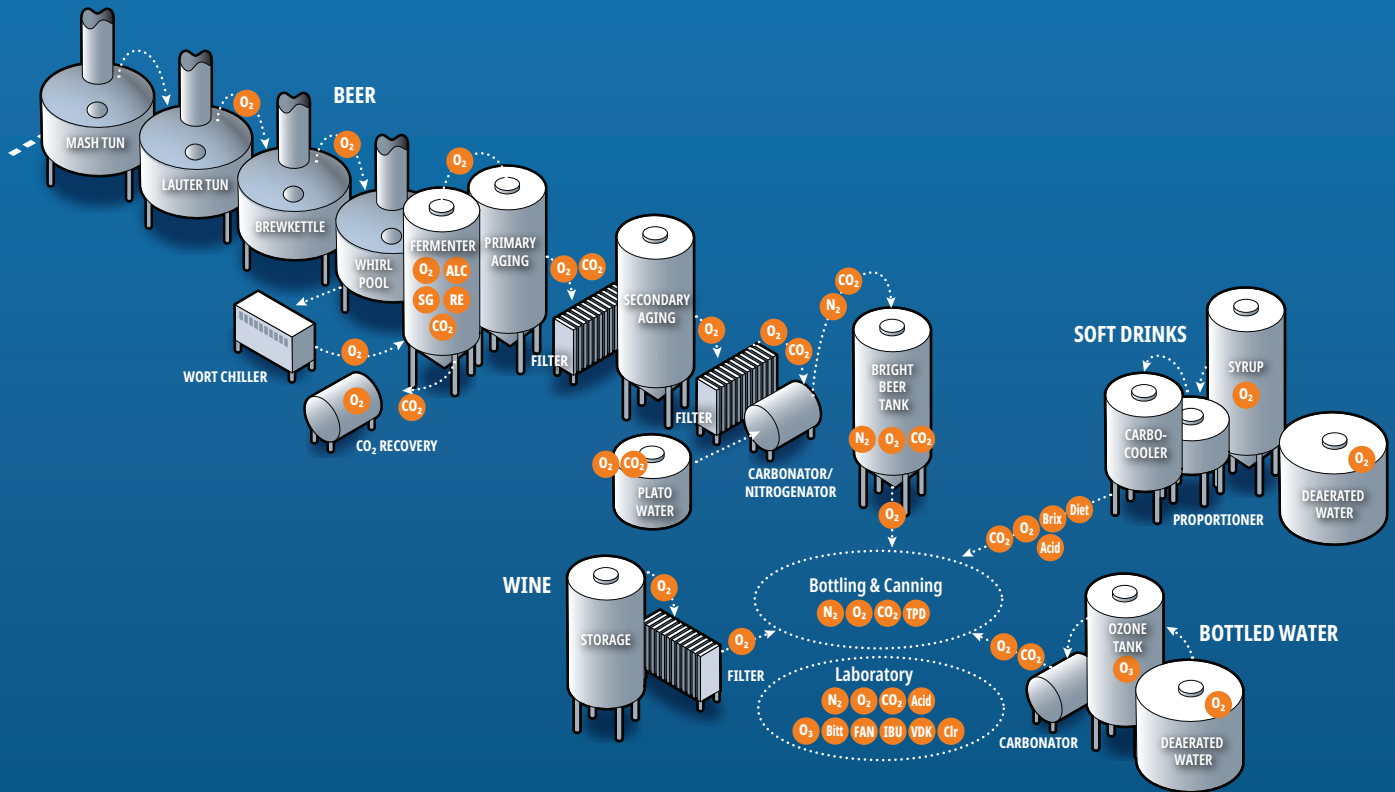
Robust design to withstand all processes

- High and low temperatures
- Pressure changes
- Cleaning processes
- Product chemicals

Application from wort, to bright beer, and on to final product

Industry Standard Oxygen Levels Throughout the Brewery

In wort	8 -17+ ppm
Fermentation	< 10 ppb
Filtration	5 - 50 ppb
Beer at the filler	10 - 30 ppb
Package dissolved O ₂ (bottle)	20 - 50 ppb
Package dissolved O ₂ (can)	30 - 60 ppb
Total package dissolved O ₂	40 - 150 ppb



Tried and tested technology of more than 10 years, the LDO experience with enhanced performance to guarantee product quality and process efficiency.

Conclusion

In beer, the oxygen exchange between the sample and the luminescent spot as well as accurate temperature measurement are keys to provide a fast response time.

We have proven that the latest optical sensor for beer has a response time equivalent to that of amperometric sensors in the brewing process (see figure 1). In addition, the oxygen levels measured correspond well to values from the amperometric sensor (within less than 3 ppb).

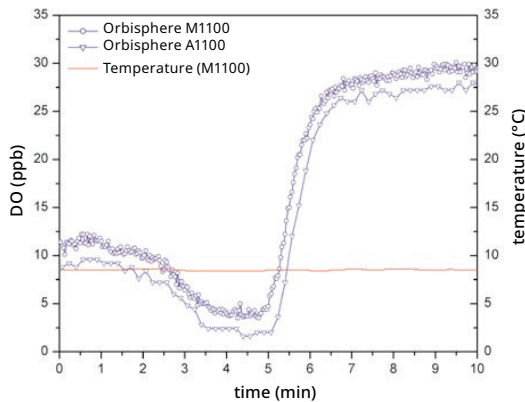
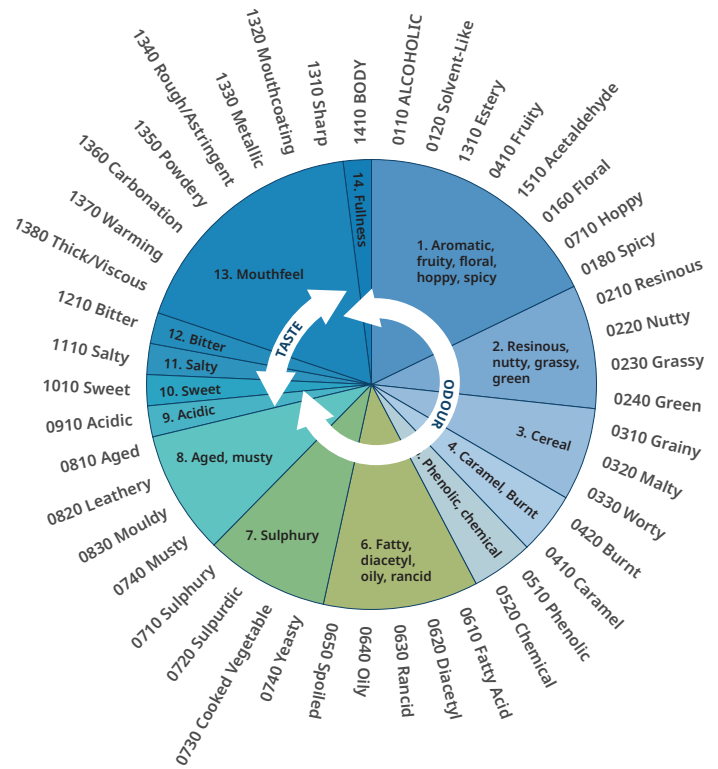


Figure 1: Sensor measurement response time

“I appreciated the M1100’s ease of handling, ease of calibration and the long interval between calibrations.”

Florian Galler, Quality and Lab Manager at Cardinal Breweries, Fribourg (Switzerland)

Brewery Flavor Wheel



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