

Inspection & quality control

Ensuring the safety and quality of any product underpins the activities of all beverage manufacturers. To support this critical function, industry suppliers are constantly researching and updating the technology available to improve the solutions for inspection and testing throughout the production process.

Oxygen testing

Claire Rowan interviewed Doug Lindemann, vice president, **Mocon**, about the importance of oxygen testing in the beverage industry.

In the field of oxygen testing in beverage containers, what are the main trends?

Oxygen testing in beverage containers has become the trend. Traditionally, carbon dioxide and water were the main compounds tested in the beverage industry. However, with the addition of flavours, vitamins and nutraceutical compounds combined with processing methods such as aseptic, hot fill and retort, the need for fast, reliable oxygen (permeation) testing has become vital.

Traditional methods for testing water vapour and CO₂ egress,

such as weight loss or pressure decay, cannot determine oxygen permeation. The best methods allow for real time tests, which take into account product interaction and total package oxygen, including headspace and dissolved O₂. These measurements demand an instrument with flexibility both in the lab and in the field.

Desire for faster results, smaller sample lot size, and confidence in the results are important factors in the new testing requirements.

What is driving this trend/these trends?

Introduction of products geared towards healthier lifestyles, new processing methods, and sustainability (including lightweighting) are all driving the trend of increased oxygen testing in beverages. There is a need for non-destructive, real-time measurements as well as accelerated shelf life studies and quality assurance / quality control methods. Accuracy, portability and flexibility with different package configurations are required.

What new solutions are available to help beverage manufacturers with these needs for information?

Optical fluorescence technology with platinum chemistry such as MOCON's OpTech offers headspace analysis, dissolved O₂, permeation studies and non-destructive shelf life determination in various package configurations.

How does the technology work?

A platinum sensor is attached to the inside surface of the package. The OpTech shines an LED light toward the sensor and then measures the fluorescent response. As the level of oxygen inside the package increases,



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the fluorescent response of the platinum is quenched. Oxygen in both the headspace and dissolved in the product can be measured, depending upon where the sensor is placed inside the package. For opaque packages or those filled without the addition of a sensor, the ImPULSE sensor can be inserted through the package wall to yield the same results.

What does it offer that other available solutions currently do not?

Platinum chemistry, unique to the OpTech, offers both an increased range and increased sensitivity. Typically one is sacrificed for the other. Platinum chemistry is also more stable in ambient light and is less affected by temperature changes resulting in more accurate real time study of oxygen levels in a package. ■



Sensotech

Using **Sensotech's** inline analyser, LiquiSonic, product quality can be monitored continuously during the various phases of the beverage manufacturing process.



In juice and soft drink manufacturing, the LiquiSonic can give precise measurement of the extract or sugar concentration, independent of the Brix content. It is integrated

directly into the pipeline and uses sonic velocity to measure the concentration of the liquid. It provides stable, reproducible data, which is updated every second. ■