GasSpect CO_2

GASPOROX
LASER SENSOR PACKAGE SOLUTIONS

Application Note

Beverage measurements

Beverages can be filled into various types of containers like glass bottles, PET bottles, cans, laminated cartons, pouches and bag-in-box, depending on type of beverage.

Gasporox has worked for many years with developing the non-destructive and non-intrusive special technique called TDLAS, Tunable Diode Laser Absorption Spectroscopy. This technique allows for beverage manufacturers to have 100 % precise inline control of their beverage packages. The result is that producers can increase their production output and efficiency by not having to do destructive and time-consuming testing, but also to be able to control 100% of the packages without throwing away the inspected and cleared packages. The sensors represent a range of high-performance inspection sensors for machines such as bottling and filling machines and are capable of measuring packs of almost any shape, size, material, or application. With their easy to operate design, speed, size, and capacity, the Gasporox GasSpect and LeakSpect series offer new levels of quality inspection.

Gasporox beverage sensors

Easy to integrate beverage sensor solutions for your needs.

- O_2 concentration
- Residual Oxygen
- Low Oxygen
- High Oxygen
- Oxygen and Water Vapour
- CO_2 concentration
- CO_2 concentration and pressure

Application Example

The general measurement concept is that the transmitting laser sends the light through the headspace of the container and the signal is picked up by the detector. This can be done either in static mode when the bottle is standing still or in dynamic mode when the beverage package is moving on a conveyor belt.

Below we are providing some examples of measurements done of different bottle types with different transmission levels and these tests have been done on three different concentrations in headspace 20 %, 40 % and 100 % and measuring pressure at the same time. For specific bottle-applications measurements are optimized according to customer specifications, bottle type and machine speed.

Bottle parameters are:

Bottle material: PET, glass (transparent, blue, green, amber)
Transmission: > 1 % of the laser light

Measurements:

O2 (Oxygen) concentration 0.1 – 100 %
CO2 & Bar which can be measured with one sensor
CO2 0.1 – 100 %, pressure 0.5 – 8 bar

The table shows the same measurement on various bottles containing carbonated beverages.

Example	Size	Material	Neck Diameter	Transmission	Internal pressure	Headspace concentration	Measuring time	Accuracy
Carbonated water Ramlösa	500 ml	PET	30 mm	25 % (high)	1-2 bar	20 - 40 - 100 % CO_2	300 ms	± 100 mbar (25 mbar) ± 2 % CO_2
Beer Iron age	500 ml	Glass	25 mm	8 %	2-3.5 bar	40 - 100 % CO_2	300 ms	± 100 mbar (30 mbar) ± 1 % CO_2
Sparkling wine	750 ml	Glass (dark green)	28 mm	5 %	2- 4 bar	20 - 40 - 100 % CO_2	300 ms	± 100 mbar ± 3 % CO_2