

Embra CarboCheck System 2000

Non-sampling, integrated CO₂ measurement and control for carbonated beverages

Originally launched in 1982 and with over two thousand sensors installed round the world.

General Description

As the world's leading CO₂ monitor and control system, Embra CarboCheck uses the well-known saturation pressure / temperature tech-nique for accurate, non-sampling measurement. Embra CarboCheck can be used for measurement alone or configured as a control system.

Principle of Operation

The CarboCheck sensor features a silicone rubber membrane, through which the dissolved CO₂ permeates into a sealed, evacuated chamber. The partial pressure of the gas is then measured and displayed by the analyser / control unit as a CO₂ content. The system incorporates a vacuum exhaustor to regularly evacuate the sensor, providing continual, accurate measurement of dissolved CO₂.

The analyser / control unit can be linked to a carbonation system to enable fully integrated CO₂ measurement, injection and control. Enhancements

CarboCheck System 2000 incorporates:

- Measurement and compensation for the effect of O₂ and N₂
- Discrete calibrations for different products
- Start / stop and product set-point remote change facility
- Faster performance on filling lines

Typical Applications

- Beer carbonation ex-filter
- Mineral waters carbonation
- Sparkling wines carbonation
- In-line CO₂ monitoring on brewery and soft drinks packaging lines
- Carbonation of pre-mixed drinks

Benefits

- Accurate monitoring and control of dissolved CO₂ levels in carbonated beverages
- Improved "right first time" carbonation figures in-line or in tank
- More efficient process control
- Reduction in re-work

Features

- Accurate to +/-0.02 vol/vol (+/-0.04 g/l)
- No sampling or product by-pass lines
- Hygienic fitting, can be cleaned-in place
- No moving parts
- Low maintenance requirement
- Available as single / dual channel controller or up to 4 channel monitor



Description of Equipment

The measuring system comprises the analyser / control unit, CO₂ sensor assembly, resistance thermometer and vacuum exhaustor.

Analyser / Control Unit

Supplied in an IP65 (NEMA 4) enclosure for panel or wall mounting, the control unit can monitor up to four process streams. High and low alarms are available for each channel, as are outputs for recorders, PLCs or supervisory systems.

The analyser / control unit also provides:

- Analogue outputs of CO₂ temperature and pressure
- Analogue input for remote set-point
- Digital outputs for high and low level alarms
- Digital inputs for remote start, no flow
- RS422 serial communications link

The CO₂ Sensor

This is designed to fit in the shortened leg of a standard 3" ISS T-piece or Varivent type body. The materials in contact with the liquid are food quality 316 stainless steel and silicone rubber cured to 250°C, impervious to all known CIP solutions.

The Vacuum Exhaustor

This is housed in a separate IP65 (NEMA 4) poly-carbonate (or optional stainless steel) enclosure. The function of the unit is to evacuate the sealed chamber of the CO₂ sensor at start-up to remove all gases. The cell is 'refreshed' regularly (at a user defined interval) to maintain the accuracy of the reading.