Application note: N°F028 July 2013

Beer & Soda

Facts & figures:

Beer is the world's most widely consumed alcoholic beverage and is the third most popular drink overall after water and tea.

More than 133 billion litres of beer are sold per year

Coca Cola is sold in every country except Cuba and North Korea

Beer & Soda in general

In breweries CO_2 is added to soda and mineral water to get carbonic acid, H_2CO_3.

It is done to make the soda feel fresher when we´re drinking it. Another good effect of carbonation is that it reduces the risk of bacteria in the drink.

Carbon dioxide doesn´t affect the taste or smell of the drink and therefore CO_2 is also used as propellant gas for beer and soda at for example restaurants and bars.

Today the CO_2 that is formed in the fermentation-process in breweries is used to produce carbonated soft drinks.

Why the need to measure CO_2?

In 2011 a person died at a restaurant in the USA. Also nine people had to visit hospital after they had visited the ladies toilet at the same restaurant. All this happened due to a leakage of carbon dioxide. CO_2 is a heavy gas and the toilets were at a low point in the building, therefore these rooms were filled with gas. CO_2 is hard to detect with your senses and for that reason it´s important to always measure the gas where it´s a risk of high concentrations.

How does it work?

The recommended indoor CO_2-concentration is about 800-1000 ppm. A somewhat higher concentration can cause headache for example and when it´s in levels up to 80 000 ppm it causes convulsions, immediate paralysis and in worst case death.

By continual measurement of the air and a quick alarm at breweries, pubs and restaurants there is no big danger. It does not have to be expensive to buy an alarm like this to make the personnel feel safe and not have to worry about possible leakages.

Reduced costs

Thanks to the measuring, society gets fewer poisoned people from carbon dioxide at hospitals. This helps the government save money.

A big accident can be very costly for a company. The restaurant, in the example, had to close down whilst the police made a full investigation into the cause of the catastrophe. This is of course expensive both in time, money and reputation. The government has to pay to investigate if the accident was a crime or not. This is all very costly and totally unnecessary. Another way of saving money is taking care of the CO_2 formed by the fermentation in the breweries.

Discussed in this edition:

What solution can Rotronic offer?

Rotronic offers a wide range of fix-mounted CO_2 only and CO_2 temperature transmitters. All of them are based on the principle of NDIR technology. They are pre-calibrated and have a life-time of over 15 years under normal conditions. Multiple analogue outputs like current loop, voltage and relay contact allow for the easy adaptation to every application. A major advantage of the current sensor is the stability of the measurement over the entire temperature range, whereas some sensors are temperature dependant, Rotronic remains stable.

CF3 duct mount transmitter

Rotronic products:

Transmitter:

- ***CF3 series***
  0...2000pmm or 0...5000ppm,
  ±30ppm, ±3% of reading
  Optional display,
  IP54

- ***CF8 series***
  0...2000pmm or 0...40000ppm,
  ±30ppm, ±3% of reading or
  ±300ppm, ±3% of reading
  Optional display,
  IP54,
  Optional visual alarm,
  Optional relay,
  Optional CO measurement,
  Optional temperature measurement,

Hand held device:

- ***CP11***
  Measurement of CO2, temperature and relative humidity,
  -20...60°C,
  ±0.3K,
  0.1…99.9%rh,
  ±2.5%rh,
  0...5000ppm,
  ±30ppm, ±5% of measured value,
  Data logging function (18000 values) with time stamp.

Calibration:

- ***CO2 calibrator***
  Neutralises CO2 from the air,
  Cleanness: 20-25ppm CO2 gas flow out,
  Reaction time: 90 seconds to neutralise CO2
  Operating range: 0...45°C,
  Delivered with 10 soda lime cartridges.

CF8-W-Disp-GH transmitter

Customer benefits:

Accuracy and long term stability

Choosing Rotronic gives you the best accuracy on the market.

The Rotronic CO_2 sensors can easily be calibrated, to guarantee highest possible precision of the measured concentration.

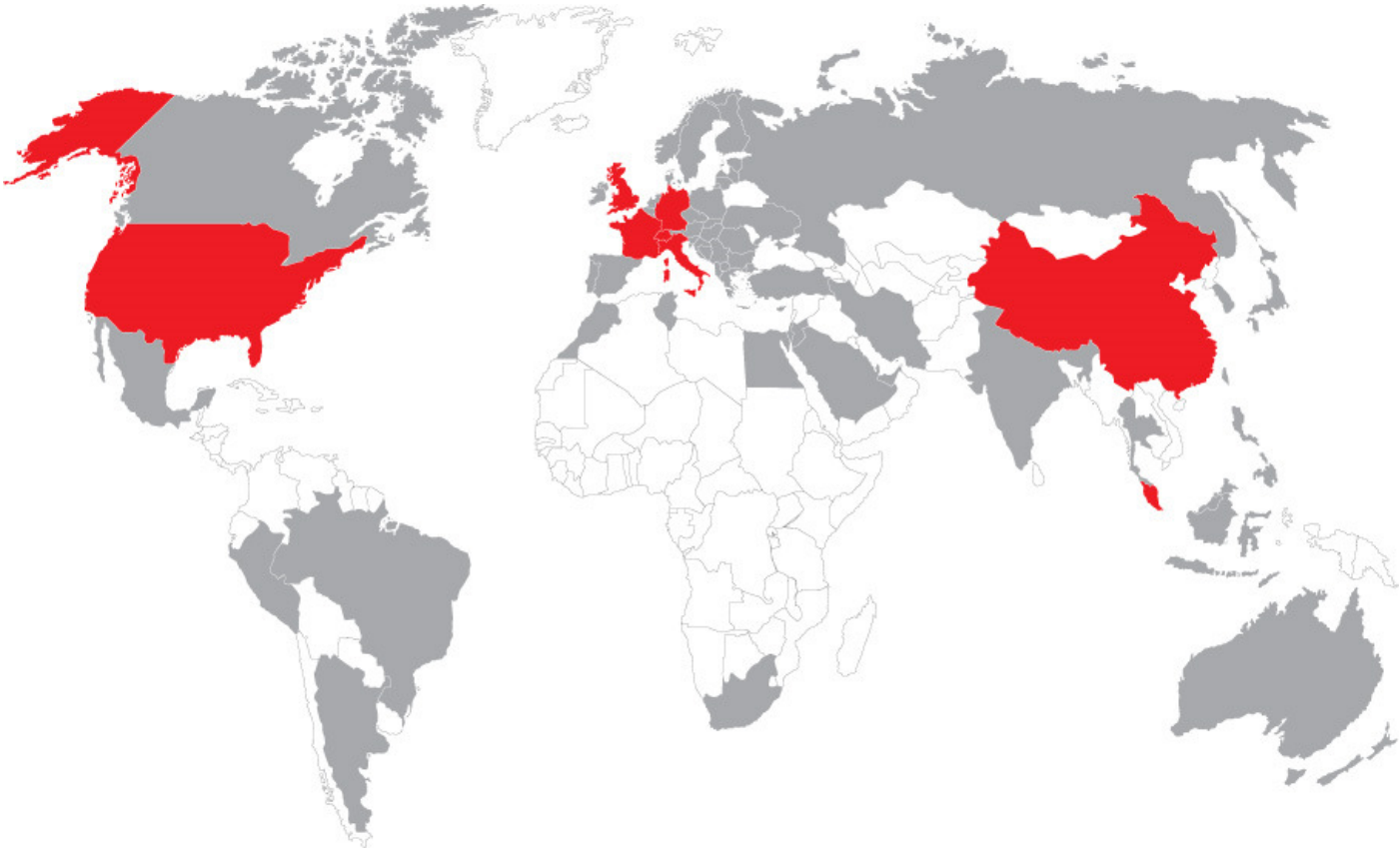
Calibration

The ABC function autonomously avoids baseline drift. A calibration and adjustment is carried within a user defined time where the lowest value is automatically calibrated at 400ppm. Optionally a 0pmm calibration unit is available from Rotronic.

CP11 handheld device with the 0-calibration unit

Contact us:

Rotronic is represented in more than 40 countries around the world. An up to date list of all our partners is available at www.rotronic.com



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