

Food transportation and storage



Facts & figures:

Food kilometres describe the distance that food is transported as it travels from producer to consumer.

In the UK, the food travel an amazing 30 billion kilometres each year.

Food transportation and storage in general

Research on gas concentration in food packaging has been going since the 1930's. It's proven that the control of surrounding gases, humidity and temperature within the food packaging can slow down

the ripening process. It is now possible to better control decomposition and help prevent pathogens.

Why the need to measure CO₂?

The food stays fresh longer and has enhanced flavour under controlled conditions. This leads to reduced losses of the food and it leads to more food for minimal amount of energy.

The food can be **transported long distances** in a controlled environment. There's a positive environmental benefit as you ship with only fresh food so no need for costly freezing and thawing processes.

When you **control the growth process** it reduces the amount of food that gets wasted in the stores. The food producers also benefit from gas concentration measurement due to reduced losses in the supply chain.

Utilising a CO₂ controlled packaging method to increase shelf life of food products will result in less discarded food due to short expiration dates of uncontrolled packaged products. Regulating the temperature and gas concentration in the air can slow down

the maturing process and without the need for using chemicals.

How does it work?

Small concentrations of the gas ethylene have an effect on plant maturation rates to differing extents. The concentration of ethylene depends on temperature - if the temperature is low then a low concentration of ethylene is required.

Sustainability of meat increases by 20%, when using CO₂ for modified atmosphere processing.

Oxygen levels of only 1% to 3% can destroy the microorganisms that cause decay.

Carbon dioxide levels of 60% combined with 1% oxygen are effective in killing insects that may be in leaves and stems of tropical fruits and vegetables, as stated in a report by Adel Kader.

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What solution can Rotronic offer?

Rotronic offers a wide range of fix-mounted CO₂ only and CO₂ 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 cur-

rent 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



CF8-W-Disp-GH transmitter

Rotronic products:

Transmitter:

- **CF3 series**
0...2000ppm or 0...5000ppm,
±30ppm, ±3% of reading
Optional display,
IP54
- **CF8 series**
0...2000ppm or 0...4000ppm,
±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.

Customer benefits:

Accuracy and long term stability

Choosing Rotronic gives you the best accuracy on the market.

The Rotronic CO₂ sensors can easily be calibrated, to guarantee highest possible precision of the measured concentration.

Calibration

The ABC function automatically 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 0ppm calibration unit is available from Rotronic.

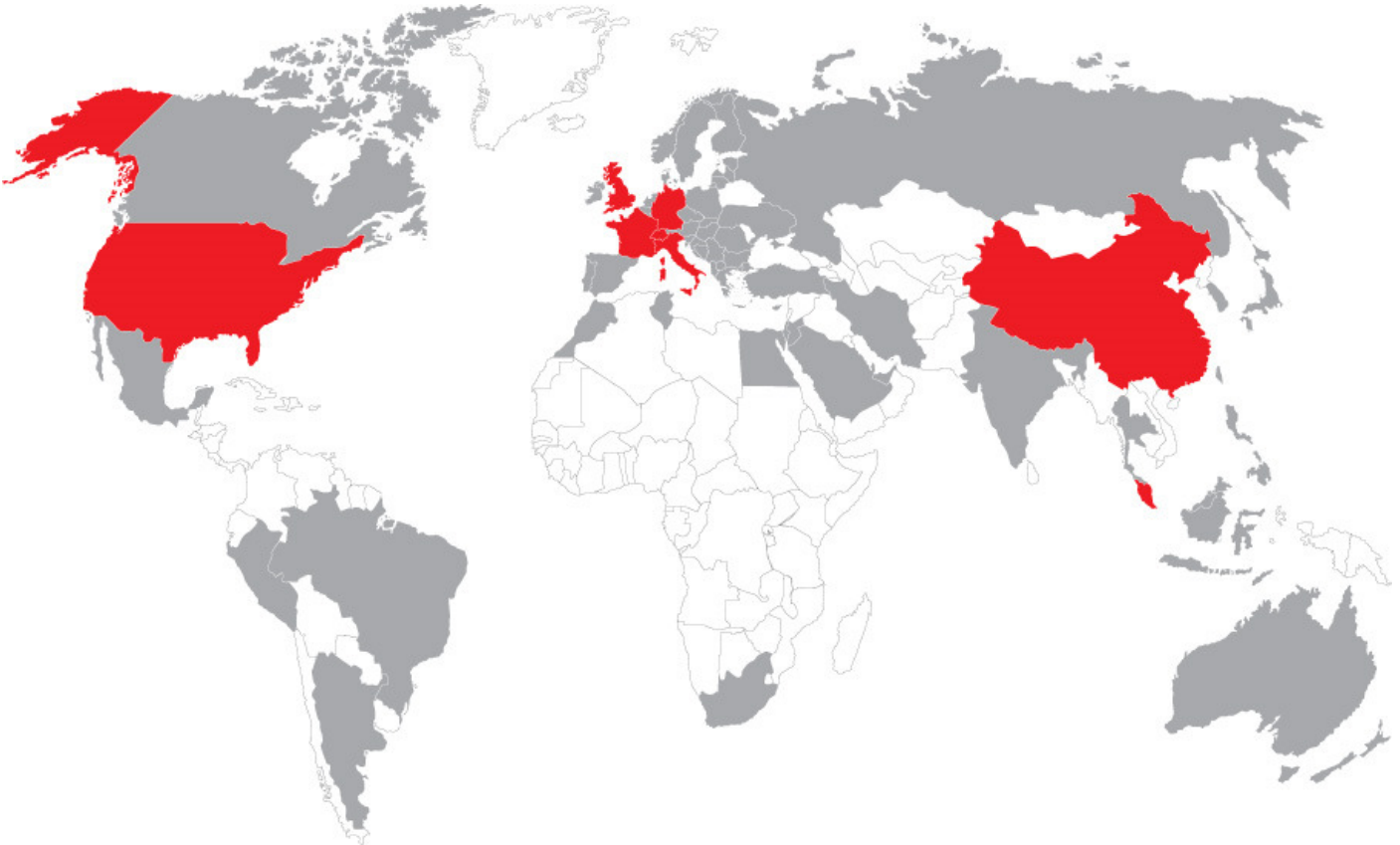


CP11 handheld device with the O-calibration unit



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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