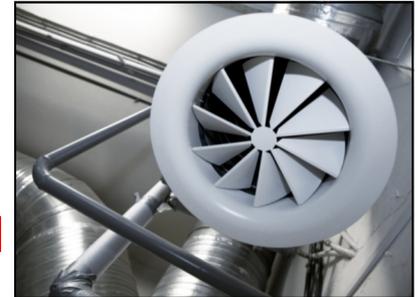


Minor Ventilation Control



Facts & figures:

IAQ, indoor air quality is a term which refers to the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants.

Carbon dioxide is a relatively easy to measure surrogate for indoor pollutants emitted by humans and correlates with human metabolic activity.

CO₂ at levels that are unusually high indoors may cause occupants to grow drowsy, to get headaches, or to function at lower activity levels.

Ventilation control in general

Either too little or too much fresh air in a building can be a problem. Over-ventilation results in higher energy usage and costs than are necessary with appropriate ventilation, while potentially increasing IAQ

(Indoor Air Quality) problems in warm, humid climates. Inadequate ventilation leads to poor air quality that can cause occupant discomfort and health problems.

Why the need to measure CO₂?

The value of carbon dioxide in the air can affect us a lot. The recommended indoor concentration of CO₂ is about 800 ppm. If it is lower, like 600 ppm, the room is over-ventilated, which is unnecessary and potentially costly.

The hygienic limit is around 5 000 ppm. At higher CO₂-concentration, about 15 000 ppm, it causes shortness of breath and raised heart rate. Concentrations of 20 000 to 80 000 ppm may cause convulsions, immediate paralysis and in worst case death.

How does it work?

The CO₂-concentration in a room varies depending of the number of people in it. An empty room generally has a concentration of about 400 ppm (normal outdoor concentration). Then the CO₂-concentration in the room increases for each added person.

Therefore using a small system of Demand Controlled Ventilation is good. This means that a sensor is measuring the CO₂-value, and it sends a signal to a ventilator or a

VAV- device (Variable Air Volume) that changes the level of the ventilation to the room.

The system has variable dampers that are usually used to regulate the air flow through the sensor. For clarity we can say that a minor ventilation system is an intelligent sensor or analyser which is adjusting one fan in the same room. This fan is regulating the air flow.

This application saves a lot of money thanks to the energy savings, when a room is empty or just a few people in it, compared to ventilation with a constant air volume. This reduced use of energy is also very good for our environment on earth and is an obvious way to conserve the earth's resources. The indoor air gets healthier because many viruses and bacteria are disappearing. Also the number of particles that occurs indoors are reduced by ventilating a room.

Tests of buildings that are using demand controlled ventilation show that the energy costs are reduced by about 30 %. This can lead to a return on investment in about 1 year.

Discussed in this edition:

Ventilation control in general	1
Why the need to measure CO ₂ ?	1
What solution can Rotronic offer?	2
Rotronic products	2
Customer benefits	2
Contact us	3

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-W-EU-Disp 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,

Data logger device:

- **CL11**
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 CO₂ 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 0ppm calibration unit is available from Rotronic.

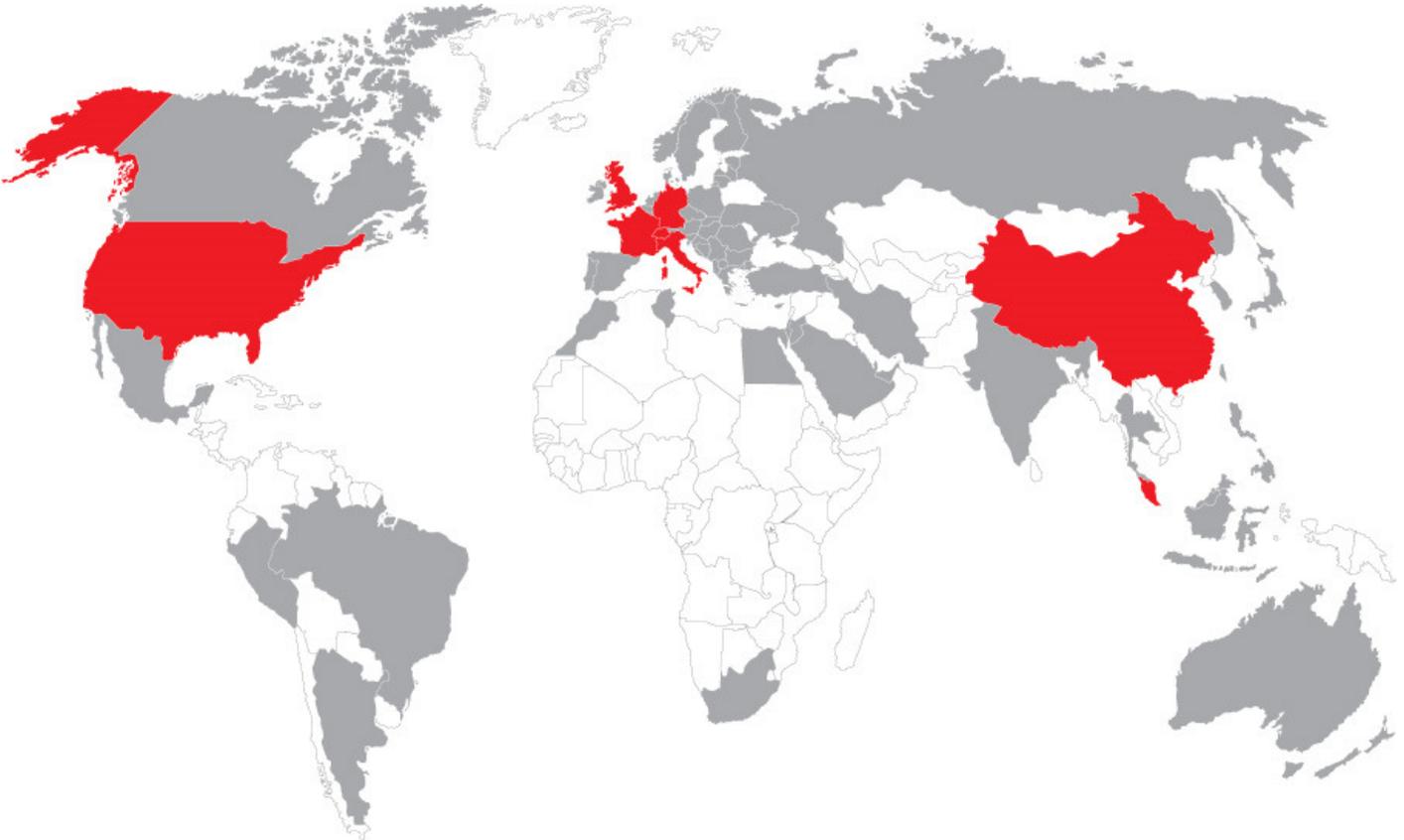


CL11 data logger with the 0-calibration unit



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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