

# A breath of fresh air

## New CO<sub>2</sub> transmitter for demand controlled ventilation

The Vaisala CARBOCAP® CO<sub>2</sub> sensors have proven their accuracy and durability during their ten-year presence on the market. They have an excellent long-term stability, which decreases maintenance costs over the years.

The superior performance of the CARBOCAP® sensors largely results from the stable reference provided by the electrically tunable Fabry-Perot Interferometer (FPI). With the tunable FPI filter not only the CO<sub>2</sub> absorption is measured, but also a reference wavelength. This internal reference measurement compensates effectively for any changes in the optical path, like light source intensity changes and contamination. This type of reference is a unique feature in the CO<sub>2</sub> transmitters on the HVAC market, separating CARBOCAP® products from competitors that have either no reference measurement at all or indirect reference measurement based on assumed background CO<sub>2</sub> level.

Especially in applications with a round-the-clock occupancy (e.g. hospitals, workplaces, residential buildings, homes for the elderly), the background CO<sub>2</sub> level reference just doesn't work. The true internal reference measurement of Vaisala CARBOCAP® CO<sub>2</sub>

transmitters provides years of stable CO<sub>2</sub> measurements.

### New and improved tools from Vaisala

The new GMW115 Transmitter and GMM112 Module are both designed especially for DCV (Demand Controlled Ventilation) applications with the CO<sub>2</sub> measurement range of 0...2000 ppm. The GMW115 Transmitter replaces the GMW25/45 Transmitters, offering reliable and stable CO<sub>2</sub> measurements for standard DVC needs (see long-term stability data in Figure 1).

The GMM112 is a compact diffusion aspirated module especially designed for OEM applications. The GMD/W20 series transmitters are still available for applications where wider measurement range or optional outputs are required.

### Good indoor air quality is important

Most of us spend 90 % of our time indoors. Consequently, good indoor air quality is important to our wellbeing. Every human being is a source of carbon dioxide, increasing the CO<sub>2</sub> level in human occupied spaces. Thus the introduction of fresh air by a ventilation system is needed

for a pleasant environment. Problems arise when, in order to save energy, the ventilation system is not used to bring in sufficient amounts of fresh air.

### Guidelines for indoor CO<sub>2</sub> concentrations

The CO<sub>2</sub> level can be used as an indicator for indoor human presence. A high CO<sub>2</sub> level is a sign of poor ventilation and often an indication of other unpleasant odors in the air. Since in many buildings the ventilation need varies during the day, DCV is an economical way to ensure good air quality. By controlling the ventilation system using CO<sub>2</sub> measurement, good indoor air quality can be provided energy-efficiently.

The limits for indoor CO<sub>2</sub> levels differ slightly in different countries, but for example ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers) recommends the CO<sub>2</sub> levels not to exceed 700 ppm above outdoor ambient levels. OSHA (U.S. Occupational Safety and Health Administration) has set a limit for the CO<sub>2</sub> concentration in the workplace to 5000 ppm for prolonged periods. ■

Figure 1: Long-term stability of GMW115 transmitters.

