

## How reliable CO<sub>2</sub> monitoring improves animal welfare and the sustainability of meat production



Reliable, accurate CO<sub>2</sub> monitoring has a critical role to play in safeguarding animal welfare and improving the sustainability of agricultural activities.

With its temperate climate, residual flows from the food industry, and connection to the affluent markets of northwest Europe, the Netherlands is an ideal base for livestock farming. It comes as no surprise, then, that the country's highly developed livestock husbandry sector is recognized globally as a leader in terms of efficiency, productivity, and sustainability.

The ever stricter demands on food safety, animal welfare, and

emissions control are driving the increasing adoption of new digital tools and measurement technologies to help farmers manage their daily work more efficiently, secure the welfare of their livestock, and improve the sustainability of their operations.

A prime example of this is the use of CO<sub>2</sub> measurement sensors based on Vaisala's CARBOCAP® technology in automated systems for pig and poultry farming.

The reliable and stable Vaisala CARBOCAP® sensor has been delivering accurate measurements since the late 1990s across a wide range of industries and applications.

### Smart, sustainable operations in animal shelters

The Dutch company that is the market leader in complete automated systems for agriculture uses Vaisala's CARBOCAP® technology to control CO<sub>2</sub> levels in animal shelters such as pig and poultry houses.

The company's systems combine an energy-efficient climate system, a smart feeding system, and a biometrics system into a single entity that optimizes the conditions for animal growth.

As well as providing valuable information that helps farmers to optimize the efficiency of their operations, these systems are a

way for farmers to demonstrate how their animals are housed and raised. One of the most important aspects in this regard is air quality.

## Air quality and animal welfare

Adequate air exchange in shelters is crucially important for the well-being of animals. The parameters typically controlled to ensure good air quality are temperature, relative humidity, and carbon dioxide.

The Dutch company uses Vaisala's CARBOCAP® technology to control CO<sub>2</sub> levels in animal shelters such as pig houses, which are especially

demanding environments because of the combination of dirty surroundings, high relative humidity, and the presence of corrosive ammonia in the air.

The Vaisala CARBOCAP® Carbon Dioxide Probes GMP251 and GMP252 are intelligent, stand-alone probes especially designed for harsh and humid environments like animal shelters. They have an operating temperature range of -40 ... +60 °C. The [GMP251](#) has a measurement range of 0 ... 20 % CO<sub>2</sub> while the [GMP252](#) is intended for ppm ranges and has a measurement range of 0 ... 10 000 ppm CO<sub>2</sub>.

To enable farmers to monitor and manage air quality data from their shelters remotely, Vaisala offers the Vaisala Jade Smart Cloud system. It provides real-time data logging and long-term data storage and easy access to the data using any portable device with a web browser.

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