



# Zantingh CO<sub>2</sub> dosing systems

Optimizes growth, maximizes crop

## Zantingh CO<sub>2</sub> Dosing System features

- Stainless steel fan with a three-phase motor and a directly connected stainless steel impeller.
- Specially constructed, built-in stainless steel inlet combination valve with an open/closed servomotor.
- Complete switch panel that meets the applicable regulations.
- Pressure switch for flow monitoring.
- Maximum safety thermostat for protection against high temperatures.
- Flexible sleeve for the connection of the inlet and outlet sides of the fan.

- Options:**  
Zantingh CO<sub>2</sub> dosing systems can be expanded with the following options:
- **Frequency control** for the fan motor: when specific areas are temporarily excluded from dosing.
  - **Modulating temperature control:** when flue gases are too hot and need to be mixed with ambient air before entering the greenhouse area.
  - **CO detector** with or without a sampling pump for the protection of your crops and staff.
  - **Collector** for dosing CO<sub>2</sub> from several sources.



Zantingh  
reliability

You can count on our expertise

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## Customised design

The CO<sub>2</sub> level in greenhouses must be kept at the correct level because the insulation of greenhouses has improved through time and new ones are often partly or completely closed. Plants need CO<sub>2</sub> for the photosynthesis process and the quality of the crop suffers when the CO<sub>2</sub> level in the greenhouse is too low. This influences the growth and yield. CO<sub>2</sub> can be supplemented in various ways, for example, by installing a tank with liquid CO<sub>2</sub> that is distributed over the greenhouse area as a gas. The most common way to supplement CO<sub>2</sub>, however, is distributing the CO<sub>2</sub> in the flue gases of gas-fired boilers or cogeneration systems.

### CO<sub>2</sub> piping layout diagrams

Zantingh uses its own software for calculations required to design a CO<sub>2</sub> distribution system based on the greenhouse design and the crop that will be grown in it. Vegetables require a different CO<sub>2</sub> level than, for example, cut flowers. We calculate the CO<sub>2</sub> volume to be supplied to the greenhouse as well as the required CO<sub>2</sub> fan capacity and distribution system. The distribution system consists of a network of PVC pipes in different diameters with branches among the crop: what is commonly referred to as CO<sub>2</sub> hoses. We ensure a balanced distribution of the pressure throughout the system by carefully determining the diameters of the piping and installing restriction plates on the branches. This ensures that the CO<sub>2</sub> is distributed uniformly over the entire greenhouse area. The Zantingh CO<sub>2</sub> piping calculation guarantees an optimum distribution and the best possible dosage result.

### Collectors

Especially at the larger horticulture companies more and more often the distributed CO<sub>2</sub> originates from several sources (multiple boilers with or without cogeneration). In this case, the CO<sub>2</sub> from all sources is first collected in a CO<sub>2</sub> collector and distributed further from the collector. Zantingh can also design and supply customized CO<sub>2</sub> dosing systems with a collector.

### Stainless steel CO<sub>2</sub> fan

The Zantingh CO<sub>2</sub> fan transports the flue gases to the greenhouse area. The system consists of a stainless steel fan with a directly linked stainless steel impeller, a three-phase motor and a stainless steel inlet combination valve. This valve has two openings for flue gas supply and air and is driven by a servomotor. The servomotor can also be provided with an optional **temperature controller**. The fan and the inlet combination valve are installed on a robust support frame that has all required temperature and pressure safeties. The piping can be easily connected to the fan by using a flexible connection sleeve on the inlet and outlet sides. The outlet side of the fan can be supplied in various positions. This means that it can be used in nearly all circumstances. The Zantingh CO<sub>2</sub> fan can be easily adjusted with regard to height or it can be connected directly on to a Zantingh flue gas condenser by using the **mounting frame** and the supplied adjustable supporting legs.



### Switch panel

A switch panel is supplied for the operation of the CO<sub>2</sub> system. The switches for multiple fans can be combined into a single switch panel. The switch panel also has all control and safety equipment and is supplied based on applicable regulations.

The panel is equipped, as standard, with star/delta control. The CO<sub>2</sub> fan can optional be equipped with **frequency control**. It can be used to control the speed of the fan based on the backpressure in the piping. All our switch panels are set up for dosing **liquid CO<sub>2</sub>** as well.

### CO detector

Zantingh supplies Sercom CO detectors that are suitable for the measurement of CO on the outlet side of the CO<sub>2</sub> fan or in the pipes (overpressure system). The detector is supplied with a semiconductor type sensor. This sensor is used for the selective measurement of CO levels. This safety device is essential to prevent

harmful carbon monoxide from reaching the greenhouse area. The display of the CO detector is mounted on the front (the door) when the system is delivered together with a switch panel.

Zantingh has developed a different type of CO detector for systems used to distribute CO<sub>2</sub> from several sources (for example, using a collector). After all, it is essential that you can determine the source of the carbon monoxide. A small flue gas sample is suctioned from the chimney using an integrated maintenance-free sampling pump immediately after the condenser. An electrochemical CO sensor has been integrated in the system and is, therefore, no longer installed on the outlet side of the fan. The CO detector is equipped with an integrated flue gas cooler for condensate removal. The stainless steel housing is heated and has a digital display.

