

Exhaust Gas Analysing System (EGAS-L)

Analysing the exhaust gas composition from a fermentor provides continuous observation of the metabolism of microorganisms or cells. The data generated can be used for simple batch history or enhanced process control and optimisation. The EGAS-L (Exhaust Gas Analysing System) is a fully integrated system for measurement of carbon dioxide (CO₂) and oxygen (O₂) evolved during fermentation processes.

Analyser

The combined O₂/CO₂ analyser allows the continuous online measurement of O₂ (electrochemical) and CO₂ (infrared) in the measurement ranges for

- oxygen 0 - 10 vol% and 0 - 25 vol%
- carbon dioxide 0 - 5 vol% and 0 - 10 vol%

Other measurement ranges and measurement gas components can be supplied on request.

A gas flow unit maintains a constant gas flow rate and monitors the gas with respect to adequate volume flow. A minimum of 30l/h is required from the exhaust gas flow, for example 0,25 vvm for a 2l fermenter.

All functions necessary for calibration and operation are performed by integrated control unit of the analyser. Automatic calibration is possible using environmental air. Thus additional calibration gases are not necessary. An integrated sodium hydroxide absorption cartridge is used to calibrate the zero point for CO₂ measurement. Zero adjustment for O₂ is performed electrically. End point calibration is performed with an integrated cuvette for CO₂ and with environmental air for O₂.

Analog measurement signals (4 - 20 mA) for O₂ and CO₂ are available for further data processing.

Gas conditioning

Fermenter exhaust gasses are usually warm and damp. Dehumidifying using the exhaust cooler of the fermenter is the standard procedure. As a further safeguard to prevent moisture and dust from reaching the analyser, the gas is passed through a fine filter in the gas inlet of the analyser. A gas cooler is drying the exhaust gas by cooling it down to a temperature of 3-4 °C. Thus, the gas does not reach the dew point during the entire flow through the analysing system. Any condensate remaining will be pumped out of the cooler.

Connection to MFCS/win SCADA system

When used with MFCS/win SCADA system, exhaust gas values can be stored or used to generate on-line calculations e. g. CER, OUR and RQ as a basis for enhanced control strategies.

Features & Benefits of EGAS-L

- O₂ and CO₂ Analyser
- Gas conditioning
- Calibration without additional calibration gasses
- Connection to MFCS/win SCADA system
- Display of current process values

