ULTRAMAT 23 Gas Analyzer – Unique Solution for Biogas Applications

Continuous measurements for better process control

The well-proven ULTRAMAT 23 gas analyzer extended with an hydrogen sulfide (H_2S) sensor provides the perfect, simple and complete solution for analysis in biogas plants.

It is a unique solution that combines the measurement of infrared active gases with oxygen and H_2S sensors in a single unit to determine process states in the plant by continuous analysis of the gas composition.

ULTRAMAT 23

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The ULTRAMAT 23 for biogas applications simultaneously measures 4 gas components: 2 infrared active gases, methane (CH_4) and carbon dioxide (CO_2), and oxygen (O_2) and hydrogen sulfide (H_2S) using electrochemical cells. The measurements of all components are made continuously allowing better process control which results not only in an economically optimized process but also in a better product quality.

The H_2S sensor is integrated in the 19" rack ULTRAMAT 23 analyzer, which can also be mounted in a compact enclosure including a sample conditioning system (IP54).

The autocalibration feature of the ULTRAMAT 23 and the low drift of the H_2S sensor enable maximum ease of use and minimum maintenance attention for effective, economic and reliable plant operation.

Applications

- Process control of the fermenter for biogas generation (crude side and clean side)
- Gas engine monitoring (electrical and thermal energy generation) for motor protection
- Optimization of methane yield and feed (biogas power generation)
- Quality control of biogas fed into commercial gas distribution network

Technical specifications, H_2S channel	
Smallest measuring range	0 ... 500 vpm
Largest measuring range	0 ... 5000 vpm
Drift	< 1 % per month
Repeatability	< 4 % of full scale
resolution	0.2 % of full scale
Delayed display (t90-time)	< 80 s at approximately 1 ... 1.2 l/min sample gas flow
Permissible pressure fluctuations	750 ... 1200 hPa
Permissible ambient temperature	5 ... 40 °C
Sensor life cycle	ca. 12 months

Benefits

- Better process control – continuous measurements of all four gas components including CH_4 and H_2S in one compact analyzer
- Improved durability and process control even under extreme conditions – long operating life of the H_2S sensor even at high concentrations
- Low maintenance and improved safety – no dilution of the measured gas, no purging of the H_2S sensor
- Improved safety – measurement of flammable gases, as found in biogas plants (e.g. 70 % CH_4) is allowed (TÜV certificate)
- Reduced calibration effort and costs – minimal drift of the H_2S at the endpoint (< 1 % per month), autocalibration with ambient air
- Simplified process integration, remote operation and control – open interface architecture (RS 485, RS 232; PROFIBUS PA/DP, SIPROM GA)
- Service information and logbook – preventive maintenance; help for service and maintenance personnel, cost savings

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