



FTIR Gas Analysis

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AIRGARD® Biogas Siloxane Monitor

CONTINUOUS REAL-TIME MONITOR FOR SILOXANE DETECTION IN BIOGAS STREAMS FROM LANDFILLS AND DIGESTERS

RAPID RESPONSE • VERY LOW DETECTION LIMITS • MULTIPLE GASES SIMULTANEOUSLY

The MKS AIRGARD® Biogas Siloxane Monitor is an ultra-sensitive gas analyzer capable of measuring parts per billion (ppb) levels of siloxanes in percent levels of methane, carbon dioxide, and moisture. The analyzer is designed to measure a wide variety of gases with a high level of accuracy and repeatability using Fourier Transform Infrared (FTIR) spectroscopy technology.

The monitoring of siloxanes becomes increasingly important as the use of biogas is more prevalent as a local renewable energy source. The combustion of biogas containing siloxanes can create SiO₂ particulates (sand) which can damage downstream engines or turbines and plug SCR NO_x emissions catalysts if not removed from the gas stream prior to combustion. The AIRGARD is designed for continuous, in-line monitoring of siloxanes levels prior to and after the biogas conditioning equipment and provides early warning as the levels begin to rise. The AIRGARD Biogas analyzer also monitors other constituents in the biogas stream, including CH₄, CO₂, CO and NH₃ for process gas control.

Features & Benefits

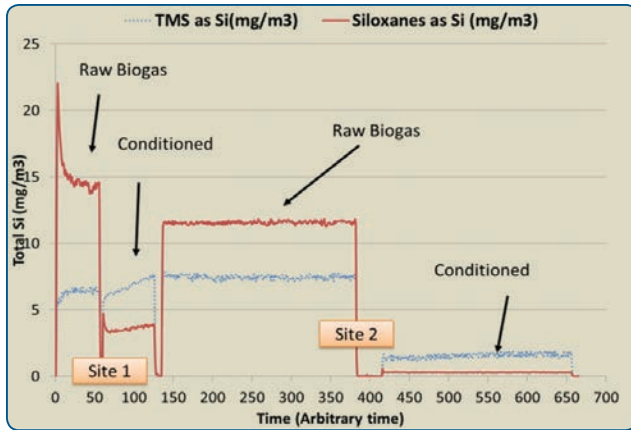
- Low total siloxane detection limits
- Rapid response – typical time to identify siloxanes 30-300 second sample time
- Simultaneously monitor other gaseous components for process control
- Automated, stand-alone operation – self-contained analyzer with embedded computer

Applications

- Monitor siloxane content in biogas or biomethane
- Quantify CH₄ and CO₂
- Monitor conditioning systems for siloxane breakthrough to increase time between media changes
- Monitoring siloxane in biogas prior to and after conditioning media
- Total Silicon value representing the Linear and Cyclic siloxane compounds



Specifications and Ordering Information



AIRGARD® Biogas —

Siloxane concentration reported as Total Silicon in mg/m³ in raw and conditioned biogas, measured at two landfill sites. TMS (trimethylsilanol) is also reported for additional information.

Landfill	Lowest Detectable Limit 1 min. measurement*
Total Siloxanes	0.2 mg/m ³
Total Siloxanes as Si	100 ppb
Total Silicon	0.1 mgSi/m ³
Digester	Lowest Detectable Limit 1 min. measurement*
Total Siloxanes	0.2 mg/m ³
Total Siloxanes as Si	100 ppb
Total Silicon	0.1 mgSi/m ³
Other Constituents	Analytical Range
CH ₄	0 - 100%
CO ₂	0 - 100%
H ₂ O	0 - 20%

Detection Limits Table —

Table of detection limits for Total Siloxanes in the presence of Landfill or Waste Water Digester Gases. Other gas constituents that can be monitored at the same time are also shown.

* Detection limits will vary based on application specific anomalies in the biogas.

Specifications

Measurement Technique	FTIR Spectrometry
Measurable Gases	Total Siloxanes, CH ₄ , CO ₂ , CO, H ₂ O, NH ₃ , Ethylene, and Propylene
Analytical Ranges	Concentration range between ppb and 100% Full Scale depending upon analyte
Communication Protocols	Modbus TCP/IP, OPC, Ethernet, XML
Sample Temperature	40°C
Sample Flow	1 to 10 liters per minute
Sample Pressure	1 atmosphere (not to exceed 20 psig / 1.38 bar)
Fittings/Connections	3/8" Swagelok®
Installation	19" wall mount chassis
Operating Dimensions	18.4"(W) x 25.4" (H) x 7.5" (D) [46.7 x 64.5 x 19.1 (cm)]
Operating Weight	75 lbs. [34.1kg]
Operating Temperature/Humidity	10-40°C / up to 65% RH
Power	120 or 240 VAC, 50/60Hz, 3 amps

Ordering Information

Please contact your MKS Sales office for price and availability information.



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