AEMS
Continuous Gas Analysis





Landfill

Biogas

Pre-engine/flare monitoring

Automated Extraction Monitoring System

The AEMS is designed to offer continuous analysis of biogas on landfill gas extraction systems and anaerobic digestion plants. Operates remotely with secure data reporting.

Benefits

- Remote monitoring
- Field-proven technology
- Easy to service
- Secure interface with remote data acquisition software
- Remote system diagnostics and maintenance
- Provide signals for engine/flare control
- Onsite installation and training
- Collect data from other onsite devices e.g. flow meter
- Helps maximise site efficiency and revenue
- Onsite installation and training

Features

- CH_4, CO_2, O_2 measurement
- H_2S and CO measurement options
- 4-20mA output
- Auto-calibration and manual calibration check options
- Wireless communication
- Fully auditable data trail
- Analysis & reporting of all data collected on site
- Profibus and modbus comms options
- Up to 5 gas sample lines per system
- Clean air purge and zero
- Gas conditioning
- Connect to other onsite devices



Applications

- Landfill gas analysis
- Engine control
- Anaerobic digestion plant monitoring

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The Automated Extraction Monitoring System (AEMS) comprises two enclosures referred to as the Field Analytical Unit (FAU) and the Field Server Unit (FSU).
The **FAU** contains the gas analyser instrument together with gas path components.
The **FSU** contains the electrical components that control the gathering, storing and transmission of data to the internet, together with the associate power supplies and interfaces for auxiliary channels such as 4-20mA outputs.

AEMS

GENERAL SPECIFICATION	
Number of gas monitoring points	Up to 5
Gases to be monitored	CH_4, CO_2, O_2, H_2S (optional), CO (optional)
Optional input and output channels	Temperature probe 4-20mA inputs 4-20mA outputs Thermocouple inputs RTD inputs
Reading intervals	From every 2 minutes for storing From every 10 seconds for monitoring - this allows 4-20mA outputs to be updated frequently
Automatic downloading of readings to Internet	Via GPRS modem, landline modem or Ethernet
Power supply	110 or 230 VAC 50/60Hz
Operating temperature range	-10 to +40°C (FSU chamber has heater and optional air conditioning)
FAU SPECIFICATION	
Analyser instrument	Can be easily detached to be sent for routine service and calibration, and replaced temporarily by another instrument
Air purge and zero	Allows purging of electrochemical cells, span calibration of O_2, and zero calibration of CH_4, H_2S and CO.
Optional auto calibration	Calibrated gas cylinder, typically mix of 60% CH_4, 40% CO_2 attached to system. Programmable calibration frequency. Allows span calibration of CH_4 and CO_2, and zero calibration of O_2. Pressure switch monitors calibration gas cylinder to warn if a replacement is needed
Temperature probe	-10 to +75°C
Sample line length	Up to 30m
Sample flow	350ml/min typical in free air
Humidity of gas sample	Up to 100% RH
Input pressure range	+250mbar to -250mbar
Sample conditioning	Water trap comprising a coalescing and particulate filter, followed by a PTFE membrane. A manual drain is fitted to the water trap.
Enclosure	Painted steel 760 x 600 x 210 mm rated IP54 (or optional Stainless Steel 760 x 600 x 210 mm IP54
Weight	40 kg
Accuracy of optional gas cells	
H_2S 5000ppm	±100ppm or ±5% of reading (if greater)
CO 500ppm	10% of FS

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Product designs and specifications are subject to change without notice. User is responsible for determining suitability of product.

FAU SPECIFICATION continued

Accuracy of main gas channels

	Range	Accuracy without autocal (with autocal) (% gas)		
		0 - 5%	5 - 15%	15% - FS
CH_4	0 - 100%	0.5% (0.2%)	1% (0.2%)	2.0% (0.2%)**
CO_2	0 - 100%	0.5% (0.2%)	1% (0.2%)	2.0% (0.2%)
O_2	0 - 25%	1% (0.5%)	1% (0.5%)	1% (0.5%)

**when above 70% of concentration between temperatures of 41°C and 50°C the accuracy is up to +3.8%

FSU SPECIFICATION

Power supply	230VAC 50/60Hz 3A or 110VAC 50/60Hz 7A. Poor mains supplies are tolerated as backup batteries support the system
Power consumption	Maximum 140W (plus 500W with heater on) Typical 50W (with heater off)
Backup batteries	Two lead acid 12v 7AHr. In the event of mains failure, system will continue to run for approximately 8 hours.
Main processor board	Embedded processor board running Microsoft Windows CE 5 Operating System.
PLC	PLC to support solenoid switching, and optional I/O.
Communication options	Quad Band GPRS modem, landline modem, Ethernet.
Enclosure	Painted steel 1000 x 600 x 250 mm IP54 (or optional stainless steel 1000 x 800 x 300 mm IP54)
Weight	53 kg including 5 kg for batteries (Stainless steel option 65 kg including 5 kg for batteries)
Air conditioning	Optional, 400W, 230VAC or 110VAC. The power is in addition to the standard power requirement above

COMMUNICATIONS

Readings	Stored locally on flash memory. Automatically transferred to online database at configurable scheduled intervals. Capacity - typically 10,000 readings (depends on system configuration). Local storage is cleared only after successful transmission has been verified.
Log files	For diagnostic purposes, log files record a log of the actions carried out by the system. The amount of detail to be stored is pre-selected. The files are uploaded at programmable intervals.
Alarm notifications	Channels can trigger immediate email and/ or SMS notifications when values fall below, or rise above, specified values.
Application software updates	Application software can be updated remotely. The system will automatically restart and run the new application.
Programming updates	Reading interval, calibration interval, and many other parameters can be updated remotely.
Web based analysis software	Access can be gained via the web to the uploaded readings. The sophisticated analysis software provides graphing and reporting functions.

Due to Geotech's continuous programme of improvement, this specification is subject to change without prior notice.

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