

The GEM5000 landfill gas extraction monitor for measuring CH<sub>4</sub>, CO<sub>2</sub> and O<sub>2</sub>. It's an easy to use analyser designed to aid balancing the gas field, maximise power output and ultimately maximise revenue from CH<sub>4</sub> extraction.



## SECTOR

Landfill and Waste to Energy

## APPLICATIONS

- Landfill gas field optimisation
- Landfill gas energy calculation
- Flare / engine output estimation

## FEATURES

- Certified: ATEX, IECEx, CSA, MCERTS and UKAS calibration (ISO17025)
- Measures % CH<sub>4</sub>, CO<sub>2</sub>, O<sub>2</sub>
- Records static and differential pressure
- Choice of user settings and simple gas reading function
- Calculates gas flow (m<sup>3</sup>/h)
- Calorific value (kW or BTU) (external flow device and Gas Analyser Manager software required)
- CH<sub>4</sub> and CO<sub>2</sub> accuracy ± 0.5% after calibration
- Modular and upgradeable
- 3 year warranty
- Robust design for market leading reliability
- Datalogging and profiling function
- Up to 6 gases monitored

## BENEFITS

- Aids balancing of gas field
- Real time adjustments can be made
- Maximise power output from site
- Easy to read
- No need for self-certification of anemometer
- Maximise revenue from CH<sub>4</sub>

## OPTIONS (AVAILABLE AT PURCHASE OR LATER)

- External gas flow devices: anemometer (ATEX) / pitot tubes
- Gas Analyser Manager software for data download
- H<sub>2</sub> compensated CO
- Choice of additional gases including H<sub>2</sub>S to 10,000ppm
- GPS / field navigator

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## TECHNICAL SPECIFICATIONS

POWER SUPPLY				
Battery type	Rechargeable nickel metal hydride battery pack (not user replaceable)			
Battery life	Typical use 8 hours from fully charged			
Battery charger	Separate intelligent 3A battery charger powered from mains supply (100-240V)			
Charge time	Approximately 4 hours from complete discharge			
GAS RANGES				
Gases measured	CO <sub>2</sub> and CH <sub>4</sub>	By dual wavelength infrared sensor with reference channel		
	O <sub>2</sub>	By internal electrochemical sensor		
	CO (H <sub>2</sub> compensated), H <sub>2</sub> S, NH <sub>3</sub> and H <sub>2</sub> (optional)	By internal electrochemical sensor		
	A full range of internal gas cells can be specified at the time of manufacture			
Standard gas cells	Cell	Range	Typical accuracy (range : accuracy)	Typical accuracy (range : accuracy)
	CH <sub>4</sub>	0-100%	0-70% : ±0.5% (vol)	70-100% : ±1.5% (vol)
	CO <sub>2</sub>	0-100%	0-60% : ±0.5% (vol)	60-100% : ±1.5% (vol)
	O <sub>2</sub>	0-25%	0-25% : ±1.0% (vol)	
Optional gas cells	Cell	Range	Typical accuracy	
	CO	0-500ppm	±2.0% FS	
	CO	0-1,000ppm	±2.0% FS	
	CO	0-2,000ppm	±2.0% FS	
	CO (H <sub>2</sub> ) *	0-2,000ppm	±1.0% FS	
	H <sub>2</sub> S	0-50ppm	±1.5% FS	
	H <sub>2</sub> S	0-200ppm	±2.0% FS	
	H <sub>2</sub> S	0-500ppm	±2.0% FS	
	H <sub>2</sub> S	0-1,000ppm	±2.0% FS	
	H <sub>2</sub> S	0-5,000ppm	±2.0% FS	
	H <sub>2</sub> S	0-10,000ppm	±5.0% FS	
	NH <sub>3</sub>	0-1,000ppm	±10.0% FS	
	H <sub>2</sub>	0-1,000ppm	±2.5% FS	
Typical accuracies	All typical accuracies quoted are after calibration			
*Hydrogen compensated carbon monoxide measurement	Hydrogen cross gas effect on carbon monoxide approximately 1% Do not use where hydrogen is in excess of 10,000ppm			
Response time, T90	CH <sub>4</sub>	≤10 seconds		
	CO <sub>2</sub>	≤10 seconds		
	O <sub>2</sub>	≤20 seconds		
	CO	≤30 seconds		
	H <sub>2</sub> S	≤30 seconds		
	NH <sub>3</sub>	≤90 seconds		
	H <sub>2</sub>	<30 seconds		
PUMP				
Flow	550 ml / min typically			
Flow fail point	-200 mbar vacuum - user settable			
Maximum vacuum restart	-250 mbar approximately with flow rate of approx 250ml / min			

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## TECHNICAL SPECIFICATIONS *CONTINUED*

FACILITIES	
Temperature measurement	-10°C to +75°C with optional probe
Temperature accuracy	±0.5°C with optional probe
Flow measurement	Via pitot tube, orifice plate, or anemometer (optional)
Energy measurement	Calculated using gas concentrations, flow, and temperature readings
Alarm	User selectable alarms
Communications	Via USB lead or wireless Bluetooth**
Relative pressure measurement	±250 mbar
Relative pressure accuracy	±4 mbar typically (should be zeroed before reading) to ±15 mbar max
Barometric pressure measurement	500 to 1500 mbar, ±5 mbar accuracy
GPS sensor	Location and positioning (optional)
Available memory	2,000 IDs**, 4000 readings**
ENVIRONMENTAL CONDITIONS	
Operating temperature range	-10°C to +50°C
Atmospheric pressure range	700 to 1200 mbar
Relative humidity	0-95% non condensing
Case seal	IP65
PHYSICAL	
Weight	1.6kg
Size	L 220mm, W 155mm, D 60mm
Case material	ABS / polypropylene with rubber over-moulding
Keys	Alpha-numeric keypad with "tactile" membrane
Display	Ultra-clear high resolution 4.3" full colour TFT
Connections	Colour coded gas inlet, outlet and pressure ports. Waterproof USB port, anemometer and charger / temperature probe connections
Gas sample filters	External user changeable 2.0µm ptfe water traps
CERTIFICATION RATING	
ATEX	II 2G Ex ib IIA T1 Gb (Ta = -10°C to +50°C)
MCERTS	MC130239
ISO17025	Calibration to UKAS certificate number 4533
CSA	Ex ib IIA T1 (Ta= -10°C to +50°C) (Canada), AEx ib IIA T1 (Ta= -10°C to +50°C) (USA)
**Gas Analyser Manager software required	
Important note: The information in this document is correct at the time of generation. We do however, reserve the right to change the specification without prior notice as a result of continuing development.	



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