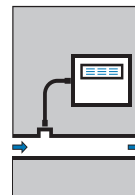




# GEM™ 500

PORTABLE GAS ANALYZER  
Instrumentation



## The GEM™500 Integrates Nine Landfill Gas Field Instruments with On-Board Computer

The GEM™500 was specifically designed by CES-LANDTEC for use on landfills to monitor landfill gas (LFG) migration control systems, gas extraction systems, flares, migration probes, LEL levels, subsurface fires, and more.

The lightweight, portable unit integrates nine field instruments with an on-board computer. The versatile monitor provides landfill technicians with an array of analysis and computation functions. The results can be stored, printed and later downloaded to a personal computer to provide error-free data management.

### Multi-Function Tools

The GEM™500 automatically samples and analyzes the methane, carbon dioxide and oxygen content of landfill gas. The easy to read LCD screen shows the results as percentages of CH<sub>4</sub>, CO<sub>2</sub>, O<sub>2</sub> and "balance" gas (typically nitrogen). The GEM™500 also calculates and displays gas flow rate. Btu content, temperature, pressures and LEL (Lower Explosive Limit).

In addition, the user can recall prior data stored at up to 500 monitoring points for contrast with current data. Alarms can easily be set for methane and oxygen.

The GEM™500 can automatically calculate gas flow rates, adjusted to standard temperature and pressure (STP). The results can be displayed in either Imperial (USA) or SI (metric) units.



CES-LANDTEC's versatile GEM™500 can be used with Orifice plates and Pitot tubes, but most effectively on CES-LANDTEC's Accu-Flo wellheads, which incorporates a built-in gas conditioning device and quick-connect sample ports.

The Accu-Flo wellhead and GEM™500 were designed to work together to expedite the time required to accurately sample and adjust LFG wellheads.

**GEM™ 500**  
*"The Standard of  
Landfill Gas Monitoring"*

### Rugged, User-Friendly Design

The GEM™500 is an all-weather, self-contained portable monitor which uses a self-compensating infrared gas analyzer, recharge-able power supply for all day use, an internal sample pump capable of drawing a gas sample at up to 80" vacuum WC. An easy to follow, on-screen menu guides the operator through the sampling process which can be completed, in less than a minute. I.D. codes allow the user to store and recall prior measurements for each monitoring point. Preset maintenance codes can be used to note field work required. The stored data can be later retrieved for viewing or downloaded to a personal computer for use in a database.

### Time Saving Conveniences

Users will readily appreciate the built-in, time-saving conveniences provided by the GEM™500 instead of fumbling with data sheets, temperature gauges, flow meters, methane/oxygen/ carbon dioxide analyzers, pressure gauges, calculators and other field equipment, the GEM™500 provides it all, and more, in an easy to carry light-weight case.

### CES-Landtec's Family of Landfill Products

The GEM™500 is part of a family of products developed by CES-LANDTEC for the solid waste industry. These products are based on over a decade of operating and regulatory experience at multiple client sites along with years of field proven reliability.



# CES-LANDTEC's GEM™500 Analyzer Provides a Convenient Link Between Your Landfill Data and Office Computer

**Key GEM™500 Features Multi-Functional Analyzer...** provides automatic sampling and analysis of gas composition (% by volume) CH<sub>4</sub> (100% & LEL), CO<sub>2</sub>, O<sub>2</sub>, balance gas, temperature and pressures. Also calculates gas flow rates as well as Btu content.

**Diverse Field Applications...** monitors migration control systems, gas extraction systems, flares, migration probes, temperatures, and more.

**Light-Weight Compact Size...** is easy to carry. Weighs less than five pounds.

**Quick Analysis...** completes sampling and displays gas analysis and flow results in usually less than one minute.

**Infrared Gas Analyzer...** provides high-tech accurate measurements of Methane (CH<sub>4</sub>), and Carbon Dioxide (CO<sub>2</sub>).

**Reference Beam...** provided by infrared analyzer for self-compensation.

**Durable Oxygen Sensor...** provided by the galvanic cell principle, unaffected by other gases such as CH<sub>4</sub>, CO<sub>2</sub> or H<sub>2</sub>S.

**User Friendly On-Screen Menu...** guides the user step-by-step through all functions and options available.

**PC Data Downloading...** using RS232 interface and **DataField CS** software (release 3.0 or later).

**Data Storage/Retrieval...** stores prior measurements taken for each monitoring point, over 500 monitoring points total.

**Prior Data Recall...** allows user to recall prior data for each monitoring point.

**Methane Analysis...** displayed as either %CH<sub>4</sub> by volume or LEL (Lower Explosive Limit).

**Durable Construction...** built of strong, durable plastic material suitable for harsh landfill environments. Sealed tactile keyboard.

**All Weather Use...** designed to operate in hot/wet weather extremes from 32°F to 104°F. Weather tight case.

**Built-in Adjustable Alarms...** allows user to set alarm limits for CH<sub>4</sub> and O<sub>2</sub>.

**Rechargeable Batteries...** provides all day field use

**Battery Check...** monitors battery life remaining.

**Monitoring Point I.D. Codes...** provides alphanumeric identification of monitoring points for data storage and recall.

**Maintenance Codes...** allows user to note typical maintenance needs using eight preset or eight user defined maintenance codes.

**Date/Time Stamp...** recorded for all stored data.

**Imperial vs. SI Units...** displays measurements in Imperial (USA) or SI (metric) units.

**Interfaces to DataField 3.0 Management Software...** which provides statistical analysis and reporting of LFG data.

**Multiple Flow Meter Analysis...** supported to calculate gas flow rates from Accu-Flo Wellheads, orifice plates and pitot tubes.

## GEM™500 Packs Nine LFG Instruments and Computer into Five Pound Case

The highly accurate and reliable **GEM™500** provides field technicians with the most commonly used LFG instrumentation, linked to an on-board computer for quick data calculations, storage and retrieval – all within a compact, all weather case the size of a dictionary. The **GEM™500** was designed by **CES-LANDTEC** to support the ever increasing instrumentation requirements of LFG monitoring. The multi-functional unit expedites the analysis and storage of field data. Software allows easy downloading of stored data to a personal computer for further analysis and reporting.

Couple the **GEM™500** with a **CES-LANDTEC Accu-Flo** landfill gas wellhead, and field monitoring becomes more accurate and more efficient. With the **GEM™500** and **Accu-Flo** combination, you can forget about carrying analyzers for Methane, Carbon Dioxide and Oxygen. You can also eliminate handling high and low pressure and temperature sensors, Pitot tube, Orifice plate or other cumbersome flow meters, vacuum pump, flow calculator and data sheets.

## Additional Information

Detailed product specifications and installation drawings are available for all **CES-LANDTEC**'s product including **Accu-Flo** Wellheads, **LAPSTM** Automated Pumping Station, the **KO** line of Condensate Knockouts, and Wellbore Seals. **CES-LANDTEC** also has standard designs available for electrically driven **LAPSTM** and **KO's**, as well as centrifugal or submersible pumps. Brochures are available for our full line of landfill gas instrumentation including the **GEM™2000** and **GEM™500** as well as **DataField**, the ultimate landfill gas data management software, available on the web.

### GEM™500 Typical Accuracy

CONCENTRATION	% CH <sub>4</sub> by VOLUME	% CO <sub>2</sub> by VOLUME	% O <sub>2</sub> by VOLUME
5% (LEL CH <sub>4</sub> )	±0.3%	±0.3%	±1.0%
Full Scale	±3.0%(70%)	±3.0%(40%)	±1.0%(25%)

### GEM™500 Specifications

	SENSOR RANGE	RESOLUTION
Methane- CH <sub>4</sub>	0-70%	0.1%
Carbon Dioxide - CO <sub>2</sub>	0-40%	0.1%
Oxygen - O <sub>2</sub>	0-25%	0.1%
Pressures (diff)	0-10" W.C.	0.01" W.C.
(static)	0-100" W.C.	0.1" W.C.

Pump Flow Rate – 500 cc/min at nominal flow, 250 cc/min at 80" W.C.  
Vacuum – Up to 80" W.C.



An involved and contributing member of the Solid Waste Association of North America.



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