



Biogas solutions  
for optimum  
plant efficiency

**EATON**

*Powering Business Worldwide*



### **A leader in reliability, efficiency and safety**

Eaton designs, manufactures and supplies world leading solutions for harsh, hazardous and industrial environments, as part of its Crouse-Hinds series portfolio.

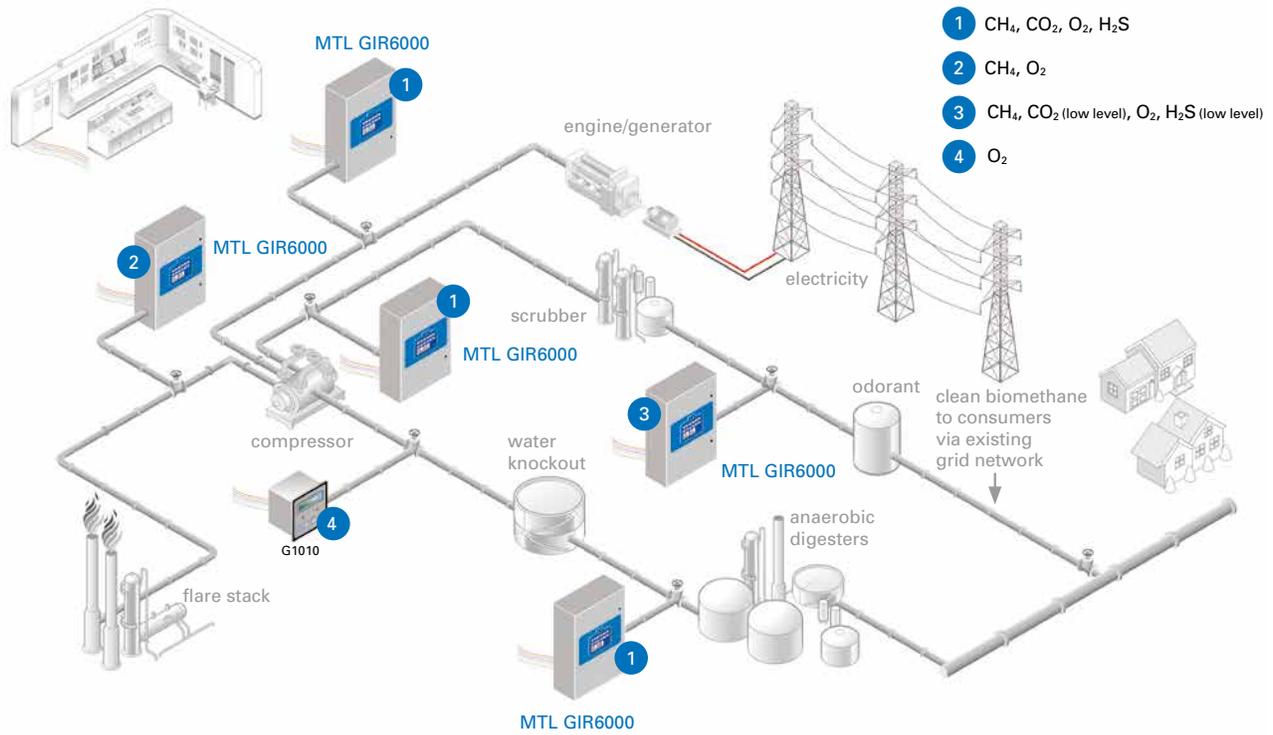
Distinguished by its global network of offices and manufacturing sites, our engineers and professionals are accessible where you are, providing experience and expertise to help solve your challenges. Eaton's MTL product range can provide a necessary solution to ensure the safety and success of your business.

### **Your plant efficiency and safety is our business**

With over 30 years of application experience, our installed base includes supplied equipment used in digester gas analysis, landfill gas monitoring, CDM verification, gas-to-grid, CHP engine protection and efficiency and flare stack monitoring.

Eaton's MTL Biogas range of application specific solutions are designed exclusively for purpose, making them quick and easy to specify, reducing installation and start-up costs, optimising plant productivity and increasing plant availability.





# Innovative product solutions for the global renewable energy market



Biogas is an extremely valuable renewable energy resource and is becoming increasingly more important in reducing our reliance on fossil fuels to produce energy. The main combustible component, like natural gas, is methane (CH<sub>4</sub>) which can power an engine generator. Monitoring of oxygen levels within the process is required to ensure anaerobic conditions are maintained in the digester and that the methane/oxygen mix does not reach explosive levels. If increasing oxygen levels are detected, then it indicates an air leak into the system with the likely risk of a potential explosive hazard. Other gases present include hydrogen sulphide (H<sub>2</sub>S), a highly toxic and corrosive gas that needs to be monitored to prevent plant damage and health risks.

By meticulously monitoring and controlling the biogas quality using the **new MTL GIR6000** analysers, the whole process can be safely optimised to produce the best return on investment from this increasingly important renewable energy commodity.

# Introducing the next generation biogas analyser, the **MTL GIR6000** - featuring innovative modular sensor design.

The new **MTL GIR6000** offers a unique modular platform concept that is quick and easy to customise with a choice of up to six gas modules. This allows the user to choose only the gas elements they wish to measure. Reducing plant start-up costs is easy with an integrated solution that optimises your productivity and increases your plant availability. Rugged, reliable and easy to maintain, the MTL GIR6000 is an IP65 weather-proof system and is ATEX certified for use in a Zone 2 area for safety confidence.

- **Innovative intelligent modular sensor concept**
- **Measurement of up to 6 gas components (incl. CH<sub>4</sub>, CO<sub>2</sub>, H<sub>2</sub>S & O<sub>2</sub>)**
- **Modules allow easy customisation to the measurement task**
- **Intelligent sensors provide predictive diagnostic data**
- **Modules are supplied pre-configured and easily field replaceable**
- **Robust, weatherproof design to IP65**
- **Suitable for ATEX Zone 2 mounting**
- **Digital Communications options**
- **Future upgrade potential by adding/changing sensors**

## The next generation in biogas measurement



New

MTL GIR6000  
Biogas Analyser



EATON

CROUSE-HINDS  
SERIES

**Typical Applications:**

- Digester gas analysis
- Landfill gas monitoring
- CDM verification
- Gas-to-grid
- CHP engine protection and efficiency
- Flare stack monitoring



Helps achieve optimum plant efficiency  
Low cost of ownership  
Easy installation and commissioning

The new **MTL GIR6000 Biogas Analyser** is the ideal instrument for biogas applications. Where the measurement of methane (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>), oxygen (O<sub>2</sub>) and hydrogen sulphide (H<sub>2</sub>S) have implications on both the efficiency and safe working of biogas processes. Dedicated modules for up to 6 gases are available for use in Zone 2 hazardous area applications. Other trace elements are often also present and may need measurement.

Methane is the desired component in fuel gas for CHP engines or burners by using the measurements from the MTL GIR6000. NDIR sensors are used to measure methane and carbon dioxide. These are sensors specially designed to withstand the damp, corrosive atmosphere often found in these applications.

Oxygen is an important process indicator in digester gas where a high reading may indicate a decrease in microbial activity due to poisoning or overloading. For this application, special long-life electrochemical cell designed for use in the presence of acidic gases, e.g. carbon dioxide are used.

Hydrogen sulphide is present in digester gas in varying amounts depending on the waste composition. Hydrogen sulphide is highly toxic and can be extremely corrosive to engine generator sets. Accurate monitoring can prevent costly damage. Eaton have developed a system which allows for continuous measurement of H<sub>2</sub>S. Even at 2000ppm H<sub>2</sub>S, good sensor lifetime can still be achieved.

Modular sensor design is an innovative feature of the MTL GIR6000. Self-diagnostics on each sensor inform the user if a sensor needs attention, minimising regular service and maintenance requirements. Replacement is quick and done on-site, without special tools or training and the modules are pre-configured to allow "plug-and-play" installation. All modules are replaceable in the field minimising downtime.

These are hazardous area applications by their very nature. All MTL GIR6000 versions are designed for use in Zone 2 hazardous areas according to the Industry Code of Practice ESA ICoP Edition 2, a decision endorsed by the Health & Safety Executive in the UK.

# Your plant performance Our measurement solution

## G1010

### Oxygen Analyser

- Long life oxygen sensor
- Hazardous area versions
- Remote sensor option
- Proven sensing technology

The **G1010 oxygen analyser** has numerous applications in safe or hazardous area biogas processes requiring the precise measurement of oxygen down to 0.01% v/v.

Oxygen is measured to detect potential explosive gas conditions and anaerobic activity in biogas processes. This proven long life 'E' type oxygen cell has a working life of up to 5 years and is used in all biogas applications. The unique design of this sensor means it is compatible with many of the mildly acidic gases found in biogas without any detriment to its accuracy or working life.

A remote sensor option is available which is supplied in an IP65 enclosure, complete with flowmeter and flow control valve. Where sensor cable lengths are an issue, a loop powered IS transmitter can also be included in the remote enclosure.

For hazardous area applications, the sensor may be mounted remotely in the hazardous area, safely interfaced via an MTL zener barrier or galvanic isolator to the electronics unit in the safe area. Alternatively, the G1010 electronics can be mounted in the hazardous area by supplying the unit in an optional Ex d enclosure.



#### Typical Applications:

- Anaerobic digester plants
- Biogas purification
- Gas-to-grid
- Engine generators
- Gasification
- Flare stack monitoring

## Accessories



### Surge protection

Surges and spikes from nearby lightning strikes and high voltage cables can destroy or disrupt unprotected electronic equipment. Induced surges and transient voltages can destroy or, perhaps more worryingly, render inaccurate sensitive control and measurement instruments. Advanced MTL surge protection devices safeguard all types of electric and electronic equipment from destructive high voltage transients and feature rapid operation, accurate voltage control and automatic resetting once the over-voltage has ceased.



### Intrinsically safe interfaces

With over forty years experience in the development of world leading intrinsic safety (IS) interfaces for hazardous areas, our zener barriers, galvanic isolators and integrated IS help prevent explosions in hazardous environments. With DIN-rail mounting or backplane integration, Eaton have an interface solution for safeguarding hazardous area signals without compromising modern design practices.



# A partner poised to meet your biogas monitoring needs



EATON Crouse-Hinds series

# The safety you rely on.

See the complete MTL analysers for gas applications product portfolio at [www.mtl-inst.com](http://www.mtl-inst.com)

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