

Online Gas Monitor (OGEM)

Key Features

- Fast indication of genuine releases through advanced alarm algorithm
- Unique lead design facilitates shielded installation
- Many scintillation detector options allows the selection of the right detector for your application
- Versatile design for both horizontal and vertical pipe runs
- High safety integrity (optional SSM board provides high integrity redundancy circuit)

Technology overview

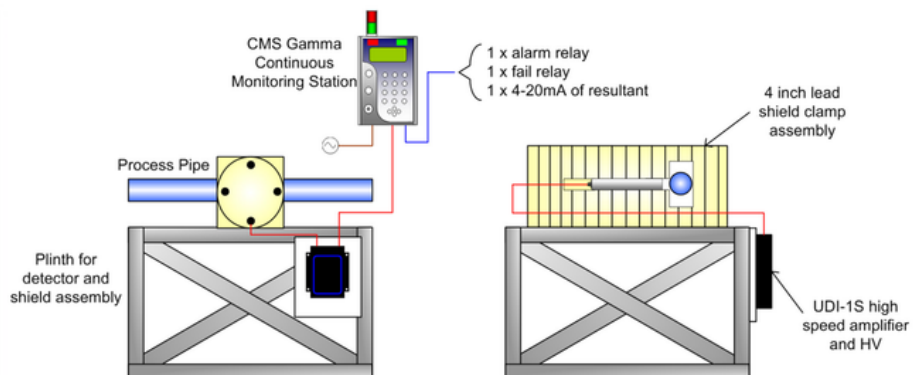
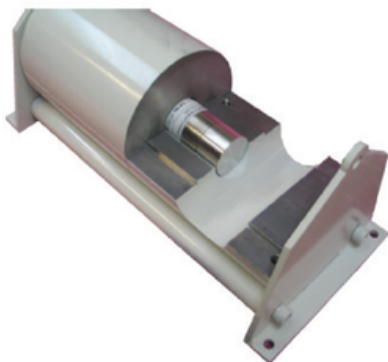
Curtiss-Wright's Online Gas Monitor (OGEM) continuously measures radioactive gamma emitting isotopes in process lines. The OGEM system includes detector, electronics and lead shielding. The detector and shield assembly is totally non-invasive to the process line and there is no need for a pumping system or tap-off points for sample removal and return.

Easy Installation

The 'clamp-on' OGEM system makes it easy to install. It can be mounted horizontally or vertically to accommodate process pipe runs. A mounting plinth may be supplied to raise the OGEM above the floor line if necessary.

High efficiency

OGEM can be configured to measure gross gamma radiation or isotopic specific radiation in the process line. A high efficiency scintillation detector (sized depending on the diameter of the process line), is used to take the measurement. The detector is optionally temperature stabilized. It can possess an in-built radioactive pulser to allow the user to perform routine performance checks on the system.



Technical Specifications

CMS digital ratemeter

The standard OGEM shielding solution uses 2-6 inches of lead around the detector and pipe to minimize interference from background. Alternative shielding assemblies are available and if required, the system may be furnished with an optional cooling jacket for high temperature process applications.

After amplification and pulse shaping, the detector signal is transmitted to a Continuous Monitoring Station (CMS). The CMS is an advanced digital ratemeter providing a continuously updating display of result values and generating audible-visual alarm indications in the event of an activity event or system fail.

Low detectable limit

The CMS can be configured to report in raw count-rate (cps or cpm) or engineered units (i.e. $\mu\text{Ci}/\text{ml}$). Under typical conditions and using a 60 second count time the OGEM offers an minimal detectable activity (MDA) of well below $1 \times 10^{-6} \mu\text{Ci}/\text{ml}$

High safety integrity

As an added benefit, the CMS can be provided with additional hardware for high safety integrity.

This hardware, called the SIL Safety Module (SSM*) conforms to Safety Integrity Level 2 (SIL2) in accordance with the IEC 61508 standard.

The SSM independently monitors the detector output with a simple and separate scaler circuit. Detector counts are evaluated in this way, and the SSM will activate alarms in the event of a high detector count. No software is used with the SSM and each component in the circuit has been evaluated using a detailed failure mode and effects

analysis. Although the SSM is resident within the CMS, the board is fully isolated and possesses its own power supply, power backup and output relays for driving audible and visual alarms and interlocks.

By offering users SIL2, the OGEM gives added protection over conventional systems.

The SSM provides a safeguard in the event the main CMS processor fails and reduces the overall risk of 'fail to alarm' scenarios. This is especially important when a failure of the system could indirectly expose people, the process or equipment to radiological or other hazardous conditions.

More information on the SSM module is available on request.



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Technical Specifications

OGEM detector assembly	
Detector type	<ul style="list-style-type: none"> • NaI(Tl), CsI(Tl), LaBr₃ depending on application. Crystal size selected to suit
Shielding	<ul style="list-style-type: none"> • 2" to 6" (50.8mm to 152.4 mm) as standard
Pipe size	<ul style="list-style-type: none"> • Accommodates 1" to 12" (25.4mm to 203.8mm) diameter pipework
Calibration check source	<ul style="list-style-type: none"> • Stick mounted for manual check. Optional solenoid operated automatic source
Measuring range	<ul style="list-style-type: none"> • $<1 \times 10^{-6}$ $\mu\text{Ci/ml}$ - 1×10^{-1} $\mu\text{Ci/ml}$
Operating environment	<ul style="list-style-type: none"> • 0°C to 50°C (32°F - 122°F) ramp rate (Max) - 2°C / hr • Maximum relative humidity 95% (up to 30°C)
CMS Gamma	
Dimensions	<ul style="list-style-type: none"> • 18" x 8" x 5½" (457.2mm x 203.2mm x 139.7mm)
Enclosure	<ul style="list-style-type: none"> • 304 stainless steel
Display	<ul style="list-style-type: none"> • Large LCD graphic display 4.5" x 2.5" (114mm x 64mm) with backlight
Parameters	<ul style="list-style-type: none"> • Fail-safe relay contacts for faults and alarms • Alarm levels - ATTN, ALERT, ALARM • Displayed Units i.e. $\mu\text{Ci/ml}$, Bq/m³ etc. • Calibration factor, Detector Dead Time, overrange Threshold • Detector Count averaging time (Time Constant Low/Time Constant High)
Alarm indications	<ul style="list-style-type: none"> • Two layer status light column (totem pole with red and green LED) and audible alarm sounder (two tones alternating at 1.2hz > 100db)
Outputs	<ul style="list-style-type: none"> • Fail-safe relay contacts for faults and alarms, up to three relay outputs (alarm 1, alarm 2 and fault) • RS-232/RS-485 • Up to 2 x analogue outputs configurable 0-5V, 4-20ma, 0-20ma • Ethernet 10baseT

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