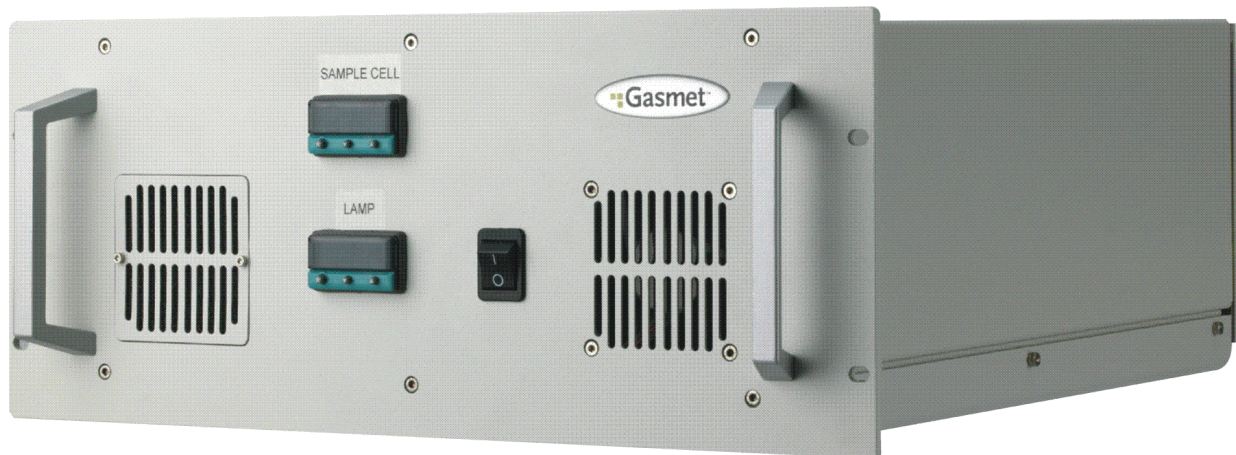


Gasetm™ CMMS



GASMET CMMS Continuous Mercury Monitoring System

GASMET CMMS is a complete emissions monitoring system designed to meet the regulations for continuous mercury measurement standards in different combustion sources, such as coal fired power plants or waste incinerators. Relying on proven technologies it is a robust, reliable, and cost-effective measurement system to meet the latest standards. The system has low need for maintenance and provides an excellent solution for demanding industrial measurement conditions like other GASMET analysers.

GASMET CMMS employs atomic fluorescence spectroscopy and thermal conversion of ionic mercury compounds to atomic mercury. No wet chemistry or gold amalgamation trap is needed. High inherent sensitivity of the atomic fluorescence spectroscopy enables extensive dilution of the sample gas. The diluted sample gas is transported to the analyser. Directly after thermal reduction of the mercury compounds the dry gas containing only atomic mercury is lead to the sample cell. Calibration of the whole system is performed with an automatic calibration unit capable in producing constant flow of both atomic and oxidised mercury.

GASMET CMMS Ambient is a modified version of GASMET CMMS for ambient applications with no ionic mercury present in sample gas. In spectrometer the conversion unit is replaced with heated dilution ejector part. In calibrator unit multipoint cold sampling system is constructed instead of equipment for oxidised mercury generation.

General parameters

Measuring principle:	Cold Vapour Atomic Fluorescence (CVAF) with extractive filtration, dilution, and thermal conversion
Performance:	minimum detection limit for elemental mercury 0.5 ng/m ³ (with N ₂ , effective before dilution)
Operating temperature:	20 - 30°C, non-condensing, dust free ambient air
Storage temperature:	-20 – 60°C, non condensing
Response time, T₉₀:	typically < 120 s, depending on the sample line length and measurement time
Power supply:	100 – 115 or 230 V / 50 – 60 Hz

Spectrometer with integrated thermal converter or dilution part

Operation principle:	direct Cold Vapour Atomic Fluorescence (CVAF) in vacuum pressure
Detection limit:	0,5 ng/m ³ with 98.5 % nitrogen
Detector:	photon detection unit with photon counting
Source:	low pressure mercury vapour lamp
Operation wavelength:	253.7 nm
Sample conversion:	integrated high temperature thermal converter
Dilution principle:	ejector with critical orifice

Calibrator for Hg⁰ and/or HgCl₂

Operation principle Hg⁰:	vapour generation from saturated source and dilution
Operation principle HgCl₂:	HgCl ₂ solution dosing and evaporation
Calibration gas:	dried, and Hg scrubbed instrument air
Dilution gas flow control:	MFC 0 – 30 l/min
Span gas flow control:	MFC 0 – 30 ml/min
Hg source temperature:	0 – 15 °C
Hg concentration:	1 – 200 µg/m ³

Measurement parameters

Zero point calibration:	24 hours
Span calibration:	24 hours
Calibration linearity test:	1 week
Zero point drift:	< 2% of measuring range per calibration interval
Sensitivity drift:	< 2% of measuring range per calibration interval
Linearity deviation:	< 2% of measuring range
Temperature drifts:	< 2% of measuring range per 10 K temperature change
Pressure influence:	ambient pressure changes measured and compensated

Instrument air preparation

Instrument air inlet:	5 – 6 bar, 60 l/min, 8mm Swagelok fittings
Instrument air filtration:	3-stage filter unit
Nitrogen generator:	capacity 98,5 % N ₂ , 8 l/min, 5-6 bar, efficiency ratio 20 %
Calibration gas drying:	absorption dryer, capacity -50 °C
Mercury scrubber:	absorption scrubber
Vacuum pump:	WOB-L Piston twin headed

Alarm Outputs

System Alarm:	CASMET CVAF Mercury Analyzer and application software
Service Request:	CASMET CVAF Mercury Analyzer and application software
Maintenance switch:	service & maintenance

Air conditioning

Cooling capacity:	A35 °C / A35 °C 1500 W A50 °C / A35 °C 1100 W
Internal Circulation:	500 m ³ /h

Dilution probe

Operating principle:	ejector with critical orifice
Material:	SS 316, glass coated sample wetted parts
Operating temperature:	max. 250 °C
Filter element:	glass coated SS 316, 5 µm
Dust loading:	< 2 g/m ³

Other filter materials and temperatures on request.

Heated probe tube

Material:	SS 316, glass coated sample wetted parts
Temperature:	max. 250 °C
Length:	1m

Other materials, lengths, and temperatures on request.

Heated line

Tube size:	2 * 4/6 mm
Core material:	PFA Teflon core
Temperature:	max. 200 °C
Fittings:	6mm Swagelok
Power supply:	230 VAC or 115 VAC
Power density:	120 Watts / meter

The maximum length for the heated line is 30m with 230 VAC and 15m with 115 VAC power supply. Analyzer and calibrator are connected to dilution probe with combined heated line which divides into two parts on both ends. Other lengths over 30m (230 V) and temperatures on request.

Electrical connections

Main supply:	3 * 16 A
Power consumption:	The full CMMS with heated lines 20m, ~ 6 kW

Measuring data outputs

GASMET Measuring System is equipped with analog or digital outputs. GASMET PC controls the measuring outputs.

Digital Output: ModBus, ASCII, COMLI, DDE link
Other protocols on request

Analog Output range: 4 – 20 mA

Analog Output channels: 8 or 16 (1 or 32 bit PCI board)

Enclosure

Material: bake painted steel

Dimensions (mm): 1600 * 600 * 600 (Cooling unit on side)
2030 * 600 * 600 (Cooling unit on top)

Weight: ~ 500 kg (Full System)

Protection: IP 54