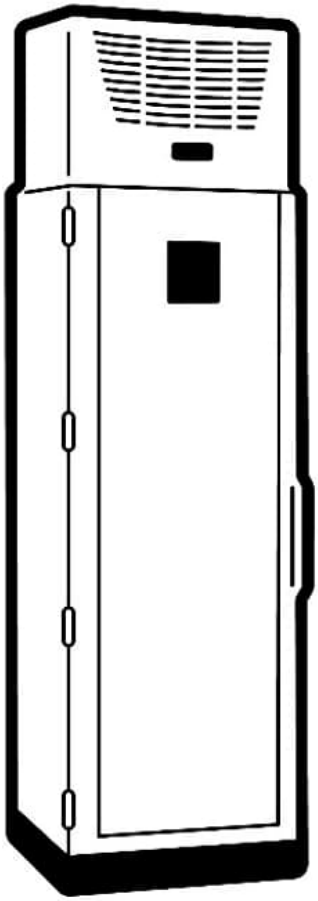
v.E.3.6



Continuous Mercury Monitoring System (CMM)

Gasmet CMM is an extractive emission monitoring system designed to meet the regulations for continuous total mercury measurement standards in different industrial applications. Its integrated test gas generator module enables automatic QAL3 validation by performing Hg^0 span checks in accordance to EN14181.

Gasmet Technologies Oy
STREET ADDRESS:
Mestarintie 6
01730 Vantaa, Finland
TEL: +358 9 7590 0400
EMAIL: contact@gasmet.fi
WEB: www.gasmet.com
VAT NO: FI26818038

System specifications

Measuring principle	Cold vapor atomic fluorescence (CVAF) with extractive filtration, dilution and thermal conversion	
Measuring range	Minimum certified range 0 - 5 µg/m³ Maximum certified range 0 - 1000 µg/m³	
Sample conversion	Integrated high temperature thermal converter	
Source	Low pressure mercury vapor lamp	
Minimum detection limit for total mercury	0.02 µg/m³, total Hg (complete system, with dilution)	
Operation wavelength	253.7 nm	
Power supply	Standard version:	400 VAC, 3 x L+N+PE
	Power consumption ~ 6,6kW (the full CMM with heated lines, 25 m)	
	US version:	200 VAC, 3 x L+N+PE
Response time	Typically < 120 s, depending on the sample line length and measurement time	
Dilution probe	Operating principle: Material:	Ejector with critical orifice SS 316, glass coated sample wetted parts
	Operating temperature:	Maximum setting 250 °C (filter housing temperature)
	Filter element: Dust load: Flow alarm:	Glass coated SS 316, 2 µm < 2 g/m3 Yes
	Heated probe tube: Material:	SS 316, glass coated sample wetted parts
	Temperature: Length: Mounting flange:	Maximum setting 250 °C 122 cm 60cm (optional) DP100PN16
Air conditioning	Cooling capacity: Internal circulation:	A35 °C / A35 °C 1500 W 500 m3/h
Test Gas Generator for Hg^0	Vapor generation from saturated source and dilution Approved for regulatory zero and Hg^0 span checks	
	Span gas flow control: Hg source temperature:	MFC 0 – 20 ml/min 1 – 10 °C
	Calibration concentration ranges converted to Hg^0	
	Saturated Hg source:	5 µg/m3
Detector	Photon detection unit with photon counting	
Heated sample line	Standard 230 V version: US 115 V version:	2 - 47 m (according to site) 2 – 23.5 m (according to site)

	Tube size:	2 * 6/8 mm
	Core material:	PFA Teflon core
	Temperature:	Maximum 200 °C
	Fittings:	8 mm Swagelok
	Power consumption:	145 watts/meter
	Dilution and blowback air:	Unheated 2 * 4/6 mm Teflon core, 6 mm Swagelok
	Analyzer and test gas generator are connected to dilution probe with combined heated line which divides into two parts on both ends.	
Instrument air preparation	Instrument air inlet:	6 – 10 bars, 60 l/min, oil free, dew point -40°C, 8 mm Swagelok fittings
	Instrument air filtration:	3-stage filter unit
	Nitrogen generator:	Capacity 99 % N2, 8 l/min, 5-6 bars, efficiency ratio 20 %
	Calibration gas drying:	Absorption dryer, capacity -30 °C
	Mercury scrubber:	Absorption scrubber
	Vacuum pump:	WOB-L piston twin headed
Input signals	External standby control	
Output signals	**5 device status contacts:** System alarm, service request, maintenance status, result valid and concentration alarm 4 analog signals (4 - 20 mA) for measurement data	
	Concentration alarm: Concentration alarm is a user defined concentration alarm signal. It can be defined from MAUI Program settings menu (Concentration alarm limits, Low and High). The alarm is only connected to a digital output signal in the CMM cabinet, and is not visible in MAUI display or measurement data.	
	Bus Output: Output format: Modbus TCP/IP With optional converter the Modbus TCP/IP can be converted to Profinet. Other fieldbus formats available on request.	
Measuring data outputs	The CMM system is equipped with 4 Analog Outputs. AO1 and AO2 represent the total Hg concentration result with different ranges, AO3 is reserved for the zero-check result and AO4 for the mercury chloride ($HgCl_2$) span check result.	
	Analog output range:	4 – 20 mA. Active, load 350 Ω max.
Enclosure	Dimensions without the door handles (H x W x D):	
	Control unit	2120 x 600 x 600 mm (cooling unit on top)
	Material:	Bake painted steel
	IP class:	IP54
Weight	Sampling probe:	approximately 27 kg (dilution probe + probe tube)
	Cabinet:	approximately 230 kg (the full CMM cabinet)
Product compliance	CE, UKCA	

Sample gas conditions

Sample gas temperature	Up to 400 °C (max in stack)
Sample gas pressure	0.9 – 1.2 bars (in stack)
Sample gas dust content	0 – 2g/m³

Operating and storage conditions

Control unit ambient temperature	5 – 40 °C
Sampling probe ambient temperature	-20 – 50 °C
Storage temperature	-20 – 60 °C, non-condensing
Operating system	Microsoft Windows CE
Application software	MAUI

Performance specifications

Zero-point calibration	24 hours
Span calibration	24 hours
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