

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

Gasmet Continuous Mercury Monitoring System (CMM)

Manufactured by:

Gasmet Technologies Oy

Mestarintie 6
01730 Vantaa,
Finland

has been assessed by Sira Certification Service
And for the conditions stated on this certificate complies with:

**MCERTS Performance Standards for Continuous Emission
Monitoring Systems (CEMS), Version 4 dated July 2018
EN15267-1:2009, EN15267-2:2009 & EN15267-3:2007,
& QAL 1 as defined in EN 14181: 2014**

Certification Ranges :

Hg 0 to 5 $\mu\text{g}/\text{m}^3$
0 to 10 $\mu\text{g}/\text{m}^3$
0 to 45 $\mu\text{g}/\text{m}^3$
0 to 100 $\mu\text{g}/\text{m}^3$
0 to 1000 $\mu\text{g}/\text{m}^3$

Project No.: 70176571
Certificate No: Sira MC170332/04
Initial Certification: 04 January 2018
This Certificate issued: 07 September 2020
Renewal Date: 03 January 2023



Emily Alexander
Environmental Project Engineer

MCERTS is operated on behalf of the Environment Agency by

Sira Certification Service

Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
Tel: +44 (0)1244 670 900



*The MCERTS certificate consists of this document in its entirety.
For conditions of use, please consider all the information within.
This certificate may only be reproduced in its entirety and without change
To authenticate the validity of this certificate please visit www.csagroupuk.org/mcerts*

Certificate Contents

| | |
|--------------------------------|---|
| Approved Site Application..... | 2 |
| Basis of Certification | 2 |
| Product Certified..... | 3 |
| Certified Performance | 4 |
| Description..... | 7 |
| General Notes | 7 |

Approved Site Application

Any potential user should ensure, in consultation with the manufacturer, that the monitoring system is suitable for the intended application. For general guidance on monitoring techniques refer to the Environment Agency Monitoring Technical Guidance Notes available at www.mcerts.net

On the basis of the assessment and the ranges required for compliance with EU Directives this instrument is considered suitable for use on waste incineration and large coal-fired combustion plant applications. This CEM has been proven suitable for its measuring task (parameter and composition of the flue gas) by use of the QAL 1 procedure specified in EN14181, for IED Chapter III and IED Chapter IV applications for the ranges specified. The lowest certified range for each determinand shall not be more than 1.5X the daily average emission limit value (ELV) for IED Chapter IV applications, and not more than 2.5X the ELV for IED Chapter III and other types of application.

The field test took place over a period of six months in the exhaust gas of a coal-fired power plant.

Basis of Certification

This certification is based on the following Test Report(s) and on Sira's assessment and ongoing surveillance of the product and the manufacturing process:

TÜV Rheinland Energy GmbH Report no. 936/21238865/AE dated October 2017

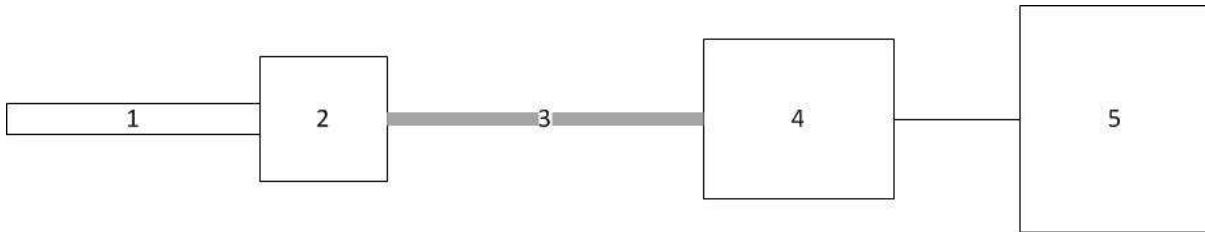
TÜV Rheinland Energy Supplementary Report no. 936/21238865/BE dated February 2018

Certificate No: Sira MC170332/04
This Certificate issued: 07 September 2020

*This certificate may only be reproduced in its entirety and without change
To authenticate the validity of this certificate please visit www.csagroupuk.org/mcerts*

Product Certified

The CMM measuring system consists of the following parts:



| 1. Sample Probe | 2. Heated Filter | 3. Heated Sample Line | 4. Gas Conditioning | 5. Analyser |
|--------------------------------------|---|--------------------------------------|---|--|
| Model: Quarz, beheizt to 180°C | Model: Quaezwatte im Filtergehäuse aus Quarz | Model: Gasmert CMM heated line | Model: Compressed air- conditioning | Model: Mercury analyser with integrated high temperature converter |

Allowable variations could include:

- A different brand or model of sampling system of the same type, provided that there is evidence the alternative system works with similar types of CEM.

This certificate applies to all instruments fitted with software version 1.189 (serial number 17010) onwards.

Certificate No: Sira MC170332/04
This Certificate issued: 07 September 2020

*This certificate may only be reproduced in its entirety and without change
To authenticate the validity of this certificate please visit www.csagroupuk.org/mcerts*

Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: +5°C to +40°C
Instrument IP rating: IP56

Note: For outdoor installations the analyser needs to be mounted into an IP65 environment. If the instrument is supplied with an enclosure, then the ambient temperature shall be monitored inside the enclosure to ensure that it stays within the above ambient temperature range.

Results are expressed as error % of certification range, unless otherwise stated.

| Test | Results expressed as % of the certification range | | | | Other results | MCERTS specification |
|---|---|------|-------|----|---------------|----------------------|
| | <0.5 | <1 | <2 | <5 | | |
| Response time | | | | | Note 1 | |
| Hg 0 to 5 µg/m ³ | | | | | 114s | <200s |
| Hg 0 to 10 µg/m ³ | | | | | 107s | <200s |
| Hg 0 to 45 µg/m ³ | | | | | 89s | <200s |
| Hg 0 to 100 µg/m ³ | | | | | 109s | <400s |
| Hg 0 to 1000 µg/m ³ | | | | | 97s | <400s |
| Repeatability standard deviation at zero point | | | | | | |
| Hg | 0.2 | | | | | <2.0% |
| Repeatability standard deviation at reference point | | | | | | |
| Hg | | 0.5 | | | | <2.0% |
| Lack-of-fit | | | | | | |
| Hg 0 to 5 µg/m ³ | | | -1.04 | | | <2.0% |
| Hg 0 to 10 µg/m ³ | | | -1.01 | | | <2.0% |
| Hg 0 to 45 µg/m ³ | | | -1.29 | | | <2.0% |
| Hg 0 to 100 µg/m ³ | | 0.85 | | | | <2.0% |
| Hg 0 to 1000 µg/m ³ | | 0.92 | | | | <2.0% |

Certificate No: Sira MC170332/04
This Certificate issued: 07 September 2020

*This certificate may only be reproduced in its entirety and without change
To authenticate the validity of this certificate please visit www.csagroupuk.org/mcerts*

| Test | Results expressed as % of the certification range | | | | Other results | MCERTS specification |
|---|---|------|-----|------|---------------|----------------------|
| | <0.5 | <1 | <2 | <5 | | |
| Influence of ambient temperature zero point (+5°C to +40°C) Hg | | 0.6 | | | | <5.0% |
| Influence of ambient temperature reference point (+5°C to +40°C) Hg | | | 1.4 | | | <5.0% |
| Influence of sample gas flow for extractive CEMS Hg | | -0.7 | | | | <2.0% |
| Influence of voltage variations (196V to 253V) All gases | 0.9 | | | | | <2.0% |
| Influence of vibration (10 to 60Hz (±0.3mm), 60 to 150Hz at 19.6m/s ²) | | -0.8 | | | | To be reported |
| Cross-sensitivity at zero with interferents: O ₂ , H ₂ O, CO, CO ₂ , CH ₄ , N ₂ O, NO, NO ₂ , NH ₃ , SO ₂ , HCl, Hg | 0.46 | | | | | <4.0% |
| Cross-sensitivity at reference with interferents: O ₂ , H ₂ O, CO, CO ₂ , CH ₄ , N ₂ O, NO, NO ₂ , NH ₃ , SO ₂ , HCl, Hg | | | | 3.14 | | <4.0% |

Certificate No: Sira MC170332/04
 This Certificate issued: 07 September 2020

*This certificate may only be reproduced in its entirety and without change
 To authenticate the validity of this certificate please visit www.csagroupuk.org/mcerts*

| Test | Results expressed as % of the certification range | | | | Other results | MCERTS specification |
|---|--|----|--------------|------|---|---|
| | <0.5 | <1 | <2 | <5 | | |
| Measurement uncertainty Hg (For an ELV of 2 µg/m ³) | | | | | Guidance - at least 25% below max permissible uncertainty 15.6 | <30% (40%) |
| Calibration function (field) Hg | | | | | 0.9093 | >0.90 |
| Response time (field) Hg | | | | | 114s | <200s |
| Lack of fit (field) Hg 0 to 5 µg/m ³ 0 to 10 µg/m ³ | | | 1.52 1.85 | | | <2.0% <2.0% |
| Maintenance interval | | | | | Note 2 3 months | >8 days |
| Zero and Span drift requirement | It is possible to record zero and span drift. This complies with the requirement for QAL3 according to EN 14181. It is possible to check zero and span point using a test gas generator. | | | | | Clause 6.13 & 10.13 Manufacturer shall provide a description of the technique to determine and compensate for zero and span drift. |
| Change in zero point over maintenance interval Hg | | | 1.7 | | | <3.0% |
| Change in reference point over maintenance interval Hg 0 to 10 µg/m ³ | | | | -2.8 | | <3.0% |
| Availability | | | | | 99.0 | >95% |
| Reproducibility Hg | | | | 2.2 | | <3.3% |

Note 1: Wet test gases must be used for measuring Hg when performing the functional tests.

Note 2: The CMM has a maintenance interval of 3 months. Maintenance work to be carried out includes regular visual inspections of the compressed air, temperature of cell and sample gas line. Checks of the test gas filter, gas conditioning system, sample gas lines and gas inlets must be checked regularly. A span check must be conducted every three months by applying wet test gas. Please consider the manufacturer's instructions for further guidance.

Certificate No: Sira MC170332/04
This Certificate issued: 07 September 2020

*This certificate may only be reproduced in its entirety and without change
To authenticate the validity of this certificate please visit www.csagroupuk.org/mcerts*

Description

Gasmet CMM is an automatic emission monitoring system designed to meet the regulations for continuous mercury measurement standards in different kind of flue gas emitting plants.

Gasmet CMM employs atomic fluorescence spectroscopy and thermal conversion of ionic mercury compounds to atomic mercury. It measures hot, wet and corrosive gas streams. 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 led to low pressure sample cell for cross sensitivity free measurement. Automatic calibration and adjustment of the whole system as well as span checks are performed with an internal automatic test gas generator, capable of producing constant flow of atomic and (as an option) oxidized mercury.

General Notes

1. This certificate is based upon the equipment tested. The Manufacturer is responsible for ensuring that on-going production complies with the standard(s) and performance criteria defined in this Certificate. The Manufacturer is required to maintain an approved quality management system controlling the manufacture of the certified product. Both the product and the quality management system shall be subject to regular surveillance according to 'Regulations Applicable to the Holders of Sira Certificates'.
2. The design of the product certified is defined in the Sira Design Schedule V00 for certificate No. Sira MC170332/00
3. If certified product is found not to comply, Sira Certification Service should be notified immediately at the address shown on this certificate.
3. The Certification Marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of Sira Certificates'.
4. This document remains the property of Sira and shall be returned when requested by the company.

Certificate No: Sira MC170332/04
This Certificate issued: 07 September 2020

*This certificate may only be reproduced in its entirety and without change
To authenticate the validity of this certificate please visit www.csagroupuk.org/mcerts*