

# CERTIFICATE

## of Product Conformity (QAL1)

Certificate No.: 0000056506\_01

**AMS designation:** CMM for Hg

**Manufacturer:** Gasmot Technologies Oy  
Pultitie 8 A 1  
00880 Helsinki  
Finland

**Test Laboratory:** TÜV Rheinland Energy GmbH

**This is to certify that the AMS has been tested and certified  
according to the standards**

**EN 15267-1: 2009, EN 15267-2: 2009, EN 15267-3: 2007  
and EN 14181: 2015.**

Certification is awarded in respect of the conditions stated in this certificate  
(this certificate contains 6 pages).

The present certificate replaces certificate 0000056506 of 13 April 2018.



Suitability Tested  
EN 15267  
QAL1 Certified  
Regular  
Surveillance

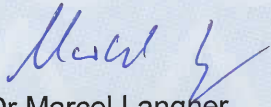
www.tuv.com  
ID 0000056506

Publication in the German Federal Gazette  
(BAnz) of 17 July 2018

This certificate will expire on:  
25 March 2023

German Federal Environment Agency  
Dessau, 4 September 2018

TÜV Rheinland Energy GmbH  
Cologne, 3 September 2018

  
Dr Marcel Langner  
Head of Section II 4.1

  
ppa. Dr Peter Wilbring

[www.umwelt-tuv.eu](http://www.umwelt-tuv.eu)  
[tre@umwelt-tuv.eu](mailto:tre@umwelt-tuv.eu)  
Phone: + 49 221 806-5200

TÜV Rheinland Energy GmbH  
Am Grauen Stein  
51105 Köln

Test institute accredited to EN ISO/IEC 17025:2005 by DAkkS (German Accreditation Body).  
This accreditation is limited to the accreditation scope defined in the enclosure to the certificate D-PL-11120-02-00.

<b>Test Report:</b>	936/21238865/C dated 8 March 2018
<b>Initial certification:</b>	26 March 2018
<b>Expiry date:</b>	25 March 2023
<b>Publication:</b>	BAnz AT 17.07.2018 B9, chapter I number 2.2

### **Approved application**

The tested AMS is suitable for use at combustion plants according to Directive 2010/75/EU, chapter III (13<sup>th</sup> BImSchV) and waste incineration plants according to Directive 2010/75/EU, chapter IV (17<sup>th</sup> BImSchV). The measured ranges have been selected so as to ensure as broad a field of application as possible.

The suitability of the AMS for this application was assessed on the basis of a laboratory test and a six-months field test at a lignite-fired plant. An additional two-months test was performed at a special-waste incinerator.

The AMS is approved for an ambient temperature range of +5 °C to +40 °C.

The notification of suitability of the AMS, performance testing and the uncertainty calculation have been effected on the basis of the regulations applicable at the time of testing. As changes in legal provisions are possible, any potential user should ensure that this AMS is suitable for monitoring the limit values relevant to the application.

Any potential user should ensure, in consultation with the manufacturer, that this AMS is suitable for the installation at which it will be installed.

### **Basis of the certification**

This certification is based on:

- Test report 936/21238865/C dated 8 March 2018 issued by TÜV Rheinland Energy GmbH
- Suitability announced by the German Federal Environment Agency (UBA) as the relevant body
- The ongoing surveillance of the product and the manufacturing process

Publication in the German Federal Gazette: BAnz AT 17.07.2018 B9, chapter I number 2.2, UBA announcement dated 3 July 2018:

**AMS designation:**

CMM for Hg

**Manufacturer:**

Gasmet Technologies Oy, Helsinki, Finland

**Field of application:**

For plants in accordance with the 13<sup>th</sup> and 17<sup>th</sup> BImSchV

**Measuring ranges during performance testing:**

Component	Certification range	Supplementary measuring ranges				Unit
Hg	0–5	0–10	0–45	0–100	0–1 000	µg/m <sup>3</sup>

**Software version:**

1.197

**Restrictions:**

none

**Notes:**

1. The maintenance interval is three months.
2. Wet test gases should be used for testing Hg.
3. An external test gas generator is needed for regular span checks during the maintenance interval.
4. The length of the sample gas line was 12 m for the laboratory and field test and 25 m (waste incinerator).
5. The measuring system needs to be aligned with the zero and span point daily using the integrated Hg(0) generator.
6. Supplementary testing (extension of the maintenance interval, software changes, reduction of the certification range and extension of the scope of certification to cover plants according to 17<sup>th</sup> BImSchV) as regards Federal Environment Agency (UBA) notice of 21 February 2018 (BAnz AT 26.03.2018 B8, chapter I number 2.1).

**Test Report:**

TÜV Rheinland Energy GmbH, Cologne  
Report no.: 936/21238865/C dated 8 March 2018

### Certified product

This certification applies to automated measurement systems conforming to the following description:

The AMS CMM is an extractive continuous mercury emission monitoring system. A sample flow is extracted from the waste gas using an electronically heated probe tube and diluted with nitrogen in the probe. The diluted sample gas is then transported to the analyser cabinet via a heated test gas line where it first passes through a thermal catalytic converter which converts chemically bound mercury present in the waste gas into atomic mercury. The mercury present in the waste gas is then measured with the help of a spectrometer using atomic fluorescence spectroscopy (CVAF; cold vapour atomic fluorescence).

The AMS under test comprises the following main components:

- Sampling probe (stainless steel, glass coated) heated to 180 °C with diluter and back purging unit.
- Cable bundle between probe and analyser cabinet containing 4 separate gas lines (diluted sample gas from the probe to the analyser cabinet (heated), adjustment gas (heated), compressed air for back purging and nitrogen for diluting from analyser cabinet to probe), max. 12 m in length
- Air-conditioned analyser cabinet (dimensions 2.03/0.6/0.6 m c/w air conditioning) comprising the following components:
  - Mercury analyser with integrated high temperature converter
  - Adjustment gas generator for Hg(0) and HgCl<sub>2</sub> adjustment gas (not part of the performance test)
  - Nitrogen generator for the purpose of dilution
  - Windows PC running Gasmert MAUI (Mercury Analyzer User Interface) Software for control and evaluation
  - Sample gas pump
  - Compressed air preparation
  - Interface card for analogue and digital inputs and outputs

The adjustment generator is able to generate Hg(0) and HgCl<sub>2</sub> separately. A heated line transports the adjustment gas generated to the probe. During the performance test period, the AMS zero and span points were automatically compared with Hg(0) daily.

The HgCl<sub>2</sub> function of the adjustment gas generator was deactivated during the performance test, therefore it is not performance tested.

The current software version is: 1.197.

### General remarks

This certificate is based upon the equipment tested. The manufacturer is responsible for ensuring that on-going production complies with the requirements of the EN 15267. The manufacturer is required to maintain an approved quality management system controlling the manufacturing process for the certified product. Both the product and the quality management systems shall be subject to regular surveillance.

If a product of the current production does not conform to the certified product, TÜV Rheinland Energy GmbH must be notified at the address given on page 1.

A certification mark with an ID-Number that is specific to the certified product is presented on page 1 of this certificate.

This document as well as the certification mark remains property of TÜV Rheinland Energy GmbH. Upon revocation of the publication the certificate loses its validity. After the expiration of the certificate and on request of TÜV Rheinland Energy GmbH this document shall be returned and the certificate mark must no longer be used.

The relevant version of this certificate and its expiration date are also accessible on the internet at [qal1.de](http://qal1.de).

Certification of the CMM measuring system is based on the documents listed below and the regular, continuous surveillance of the manufacturer's quality management system:

### Initial certification according to EN 15267

Certificate no. 0000056506: 13 April 2018  
Expiry date of the certificate: 25 March 2023  
Test report: 936/21238865/A dated 2 October 2017  
TÜV Rheinland Energy GmbH, Cologne  
Publication: BAnz AT 26.03.2018 B8, chapter I number 2.1  
UBA announcement dated 21 February 2018

### Supplementary testing according to EN 15267

Certificate no. 0000056506\_01: 4 September 2018  
Expiry date of the certificate: 25 March 2023  
Test report: 936/21238865/C dated 8 March 2018  
TÜV Rheinland Energy GmbH, Cologne  
Publication: BAnz AT 17.07.2018 B9, chapter I number 2.2  
UBA announcement dated 3 July 2018:

**Calculation of overall uncertainty according to EN 14181 and EN 15267-3**

**Measuring system**

Manufacturer	Gasmet Technologies Oy
AMS designation	CMM
Serial number of units under test	17010 / 17011
Measuring principle	Atomic fluorescence

**Test report**

Test laboratory	936/21238865/C
Date of report	TÜV Rheinland 2018-03-08

**Measured component**

Certification range	Hg 0 - 5 µg/m³
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**Evaluation of the cross-sensitivity (CS)**

(system with largest CS)

Sum of positive CS at zero point	0.00 µg/m³
Sum of negative CS at zero point	0.01 µg/m³
Sum of positive CS at span point	0.16 µg/m³
Sum of negative CS at span point	0.00 µg/m³
Maximum sum of cross-sensitivities	0.16 µg/m³
Uncertainty of cross-sensitivity	$u_i$ 0.091 µg/m³

**Calculation of the combined standard uncertainty**

**Tested parameter**

			$u^2$
Standard deviation from paired measurements under field conditions *	$u_D$ 0.057 µg/m³		0.003 (µg/m³)²
Lack of fit	$u_{lof}$ -0.030 µg/m³		0.001 (µg/m³)²
Zero drift from field test	$u_{d,z}$ 0.049 µg/m³		0.002 (µg/m³)²
Span drift from field test	$u_{d,s}$ -0.081 µg/m³		0.007 (µg/m³)²
Influence of ambient temperature at span	$u_t$ 0.038 µg/m³		0.001 (µg/m³)²
Influence of supply voltage	$u_v$ 0.023 µg/m³		0.001 (µg/m³)²
Cross-sensitivity (interference)	$u_i$ 0.091 µg/m³		0.008 (µg/m³)²
Influence of sample gas flow	$u_p$ -0.020 µg/m³		0.000 (µg/m³)²
Uncertainty of reference material at 70% of certification range	$u_{rm}$ 0.040 µg/m³		0.002 (µg/m³)²

\* The larger value is used :

"Repeatability standard deviation at set point" or

"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty ( $u_c$ )

$$u_c = \sqrt{\sum (u_{max, i})^2} \quad 0.16 \text{ µg/m}^3$$

Total expanded uncertainty

$$U = u_c * k = u_c * 1.96 \quad 0.31 \text{ µg/m}^3$$

**Relative total expanded uncertainty**

**U in % of the ELV 2 µg/m³** **15.6**

**Requirement of 2010/75/EU**

**U in % of the ELV 2 µg/m³** **40.0**

**Requirement of EN 15267-3**

**U in % of the ELV 2 µg/m³** **30.0**