Umwelt Bundesamt

TÜVRheinland®
Precisely Right.

CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000074628_02

Certified AMS:	SM-5 for Hg
Manufacturer:	ENVEA GmbH Liebigstr. 5 85757 Karlsfeld Germany
Test Institute:	TÜV Rheinland Energy & Environment GmbH

This is to certify that the AMS has been tested and found to comply with the standards EN 15267-1 (2009), EN 15267-2 (2023), EN 15267-3 (2007) as well as EN 14181 (2014).

Certification is awarded in respect of the conditions stated in this certificate (this certificate contains 7 pages).
The present certificate replaces certificate 0000074628_01 dated 9 August 2022.

TÜVRheinland® CERTIFIED
Suitability Tested
EN 15267
QAL1 Certified
Regular Surveillance
www.tuv.com
ID 0000074628

Publication in the German Federal Gazette (BAnz) of 31 October 2025

German Environment Agency

Dessau, 23 March 2026

This certificate will expire on:
22 March 2031

TÜV Rheinland
Energy & Environment GmbH
Cologne, 20 March 2026

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Test institute accredited to EN ISO/IEC 17025 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.

Test report:	936/21246513/B dated 18 May 2022 issued by TÜV Rheinland Energy GmbH as well as the supplementary test (Addendum) EuL/21246513/C dated 20 February 2025 issued by TÜV Rheinland Energy & Environment
Initial certification:	11 April 2022
Expiry date:	22 March 2031
Publication:	BAnz AT 31.10.2025 B5, chapter I No. 2.1

Approved application

The tested AMS is suitable for use at plants according to 13th BImSchV:2021, 17th BImSchV:2021. 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 seven-month field test at a waste incineration plant and a two-month field test at a power plant.

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 emission 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.

Note
The legal regulations mentioned correspond to the current state of legislation during certification. Each user should, if necessary, in consultation with the competent authority, ensure that this AMS meets the legal requirements for the intended use. In addition, it cannot be ruled out that legal regulations governing the use of a measuring device for emission monitoring may change during the lifetime of the certificate.

Basis of the certification
This certification is based on:

- Test report 936/21246513/A dated 15. September 2021, test report 936/21246513/B vom 18. May 2022 of TÜV Rheinland Energy GmbH as well as supplementary test EuL/21246513/C dated 20. February 2025 of TÜV Rheinland Energy & Environment
- 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 31.10.2025 B5, chapter I No. 2.1, Announcement by UBA dated 27 August 2025:

AMS designation:
SM-5 for Hg

Manufacturer:
ENVEA GmbH, Karlsfeld, Germany

Field of application:
For plants according to the 13th BImSchV and 17th BImSchV.

Measuring ranges during the performance test:

Component	Certification range	Supplementary range				Unit
Hg	0 – 5	0 – 30	0 – 45	0 – 100	0 – 1,000	µg/m³

Software versions:
Software System: 1.42
Software Display: 2
Software Probe: 2.07

Restrictions: None

Notes:
1. The maintenance interval is three months.
2. Moist test gases shall be used when testing Hg.
3. An external test gas generator shall be used for regular check of reference point in maintenance interval.
4. The length of the sample gas line was 15 m in the laboratory test and 35 m in the field test.
5. From system software version 1.22, the measuring system has digital interfaces of type Modbus TCP/IP and Modbus RTU in accordance with VDI 4201.
6. Software version 1.07 can also be used for the probe of the SM-5 measuring system in addition to the software versions already announced.
7. Supplementary test (Extension of the area of application of the measuring system, introduction of a digital interface) to the announcement of the Federal Environment Agency of 28 June 2022 (BAnz AT 28.07.2022 B4 chap. I No. 2.1 and of 2 April 2025 (BAnz AT 19.05.2025 B3, chap. IV notification 27).

Test Report:
TÜV Rheinland Energy & Environment GmbH, Cologne
Report No.: Addendum EuL/21246513/C dated 20 February 2025 to the Report No. 936/21246513/B dated 18 May 2022 of TÜV Rheinland Energy GmbH

Certified product

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

The SM-5 measuring system is a continuously operating, extractive mercury measuring device for recording the emissions of total mercury, i.e. the sum of elemental mercury, ionic mercury and mercury compounds.

The test gas is continuously conveyed to the analyser cabinet via a sampling probe heated to 200 °C with a hot filter and via a sampling line heated to 180 °C. In the analyser cabinet, the test gas first flows through a heat reactor. There, at a temperature of about 950°C, the mercury compounds are broken down and ionic mercury is converted into the elemental form. The test gas then flows through an acid absorber and is dried in a gas cooler. In turn, a partial flow is alternately sucked through the detector - directly or via an Hg absorber.

The measuring principle used to determine the mercury concentration is the resonance absorption of the Hg atoms by UV radiation of wavelength 253.7 nm (atomic absorption spectrometry, AAS). The measurement itself takes place in a cycle of 1 min.

The measuring system comprises the following components:

- Sampling system (manufacturer: M&C; type: SP2200), consisting of heated sampling tube and external heated dust filter with backflush valve unit and connection for the external test gas feed
- Heated sample gas pipe (15 m in the laboratory, 35 m in the field), including: heated sample gas line (180 °C), line for back-purging air and the communication line
- Lockable analyser cabinet with thermal reactor, acid absorber, gas cooler, switchover unit with Hg absorber and the detector with microprocessor. Furthermore, the analyser cabinet contains a bypass pump and a compressed air preparation unit.

General notes

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 manufacture of 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 & Environment 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 certification mark may be applied to the product or used in advertising materials for the certified product.

This document as well as the certification mark remains property of TÜV Rheinland Energy & Environment GmbH. With revocation of the publication the certificate loses its validity. After the expiration of the certificate and on request of TÜV Rheinland Energy & Environment GmbH this document shall be returned and the certificate mark must not be employed anymore.

The relevant version of this certificate and its expiration is also accessible on the internet: **qal1.de**.

History of documents
Certification of SM-5 is based on the documents listed below and the regular, continuous monitoring of the Quality Management System of the manufacturer:

Initial certification according to EN 15267
Certificate No. 0000074628_00: 31 May 2022
Expiry date of the certificate: 11 April 2027
Test report: 936/21246513/A dated 15 September 2021
TÜV Rheinland Energy GmbH
Publication: BAnz AT 11.04.2022 B10, chapter I number 3.1
UBA announcement dated 9 March 2022

Supplementary testing according to EN 15267
Certificate No. 0000074628_01: 9 August 2022
Expiry date of the certificate: 27 July 2027
Test report: EuL/21246513/B dated 18 May 2022
TÜV Rheinland Energy GmbH
Publication: BAnz AT 28.07.2022 B4, chapter I number 2.1
UBA announcement dated 28 June 2022

Notifications
Statement issued by TÜV Rheinland Energy GmbH dated 16 September 2022
Publication: BAnz AT 20.03.2023 B6, chapter IV notification 16
UBA announcement dated 21 February 2023
(Software and hardware changes)

Statement issued by TÜV Rheinland Energy GmbH dated 31 March 2023
Publication: BAnz AT 02.08.2023 B7, chapter III notification 6
UBA announcement dated 5 July 2023
(Software changes and extension for digital data communication Modbus TCP/IP)

Statement issued by TÜV Rheinland Energy GmbH dated 27 September 2023
Publication: BAnz AT 10.05.2024 B7, chapter V notification 12
UBA announcement dated 19 March 2024
(Software changes)

Statement issued by TÜV Rheinland Energy & Environment GmbH dated 20 December 2024
Publication: BAnz AT 19.05.2025 B3, chapter IV notification 27
UBA announcement dated 2 April 2025
(Software changes)

Supplementary testing according to EN 15267
Certificate No. 0000074628_02: 23 March 2026
Expiry date of the certificate: 22 March 2031
Test report: 936/21246513/B dated 18 May 2022 issued by TÜV Rheinland Energy GmbH as well as the supplementary test (Addendum) EuL/21246513/C dated 20 February 2025 issued by TÜV Rheinland Energy & Environment
Publication: BAnz AT 31.10.2025 B5, chapter I number 2.1
UBA announcement dated 27 August 2025

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

Measuring system			
Manufacturer		ENVEA GmbH	
AMS designation		SM-5	
Serial number of units under test		#2437 / #2438	
Measuring principle		Atomic absorption spectrometry	
Test report		936/21246513/B	
Test laboratory		TÜV Rheinland	
Date of report		2022-05-18	
Measured component		Hg	
Certification range		0 - 5	µg/m³
Evaluation of the cross-sensitivity (CS)			
(system with largest CS)			
Sum of positive CS at zero point		0.07	µg/m³
Sum of negative CS at zero point		0.00	µg/m³
Sum of postive CS at span point		0.07	µg/m³
Sum of negative CS at span point		-0.19	µg/m³
Maximum sum of cross-sensitivities		-0.19	µg/m³
Uncertainty of cross-sensitivity	u_i	-0.110	µg/m³

Calculation of the combined standard uncertainty

Tested parameter				u^2	
Standard deviation from paired measurements under field conditions *	u_D	0.043	µg/m³	0.002	(µg/m³)²
Lack of fit	u_{lof}	-0.035	µg/m³	0.001	(µg/m³)²
Zero drift from field test	$u_{d,z}$	-0.035	µg/m³	0.001	(µg/m³)²
Span drift from field test	$u_{d,s}$	0.075	µg/m³	0.006	(µg/m³)²
Influence of ambient temperature at span	u_t	0.064	µg/m³	0.004	(µg/m³)²
Influence of supply voltage	u_v	0.035	µg/m³	0.001	(µg/m³)²
Cross-sensitivity (interference)	u_i	-0.110	µg/m³	0.012	(µg/m³)²
Influence of sample gas flow	u_p	-0.012	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)	$u_c = \sqrt{\sum (u_{max,j})^2}$	0.17	µg/m³
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.33	µg/m³

Relative total expanded uncertainty	**U in % of the ELV 3.3 µg/m³**	**10.1**
Requirement of 2010/75/EU	**U in % of the ELV 3.3 µg/m³**	**40.0**
Requirement of EN 15267-3	U in % of the ELV 3.3 µg/m³	30.0