

CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000089095_00

Certified AMS: OPM250 for PM_{2,5} and PM₁₀

Manufacturer: ENVEA
111, Boulevard Robespierre
78304 Poissy Cedex
France

Test Institute: TÜV Rheinland Energy & Environment GmbH

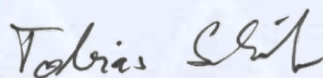
**This is to certify that the AMS has been tested
and found to comply with the standards
VDI 4202-3 (2019), EN 12341 (2014), EN 16450 (2017),
Guide for Demonstration of Equivalence of Ambient Air Monitoring Methods (2010),
EN 15267-1 (2023) and EN 15267-2 (2023).**

Certification is awarded in respect of the conditions stated in this certificate
(this certificate contains 9 pages).



This certificate will expire on:
23rd October 2030

TÜV Rheinland Energy & Environment GmbH
Cologne, 24th October 2025



Dr. Tobias Schäfer
Local Field Manager



M. Sc. Sebastian Decker
deputy Head of QAL1 Certification Body

QAL1-Certification Body
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Am Grauen Stein
51105 Cologne

Test institute accredited to EN ISO/IEC 17065 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.

Certificate:
0000089095_00 / 24.10.2025

Test report: EuL/21269536/A dated 29 January 2025
Initial certification: 24th October 2025
Expiry date: 23rd October 2030
Publication: 28th October 2025, official database www.qal1.de

Approved application:

The tested AMS is suitable for continuous ambient air monitoring of PM₁₀ and PM_{2,5} for stationary operation.

The suitability of the AMS for these applications was assessed based on a laboratory test and a field test at four different locations and over different seasons.

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 measured values relevant to the application.

Any potential user should ensure, in consultation with the manufacturer, that this AMS is suitable for the intended use.

Basis of the certification

This certification is based on:

- Test report EuL/21269536/A dated 29th January 2025 of TÜV Rheinland Energy & Environment GmbH
- Audit report EuL/21271282/A dated 21st March 2025 of TÜV Rheinland Energy & Environment GmbH
- Certification decision by the DIN EN ISO/IEC 17065 accredited QAL1-Certification body TÜV Rheinland Energy & Environment GmbH
- Surveillance of the product and the manufacturing process

AMS designation:

OPM250 for suspended particulate matter PM_{2,5} and PM₁₀

Manufacturer:

ENVEA
111 Boulevard Robespierre, 78304 Poissy Cedex
France

Field of application:

For continuous parallel ambient air quality measurement of the PM_{2,5} and PM₁₀ fractions in suspended particulate matter in stationary use.

Measuring ranges during the performance test:

Component	Certification range	Unit
PM _{2,5}	0 - 5,100	µg/m ³
PM ₁₀	0 - 12,000	µg/m ³

Software versions:

1.04 (Firmware)
0.08 (FPGA)
1.02 (GUI)

Restrictions:

None

Notes:

1. The measuring insert of the measuring system must be sent to ENVEA Service or an authorised ENVEA service partner at least every 12 months (or when the "Calibration" wear indicator is completely red) for maintenance, including a calibration check.
2. The Field Test Kit (FTK) can optionally be used for the measuring device to check the calibration on-site / in the field. The Field Test Kit (FTK) can be applied to the entire system (incl. sampling tube) or directly to the measuring insert. If the result of the calibration check using the Field Test Kit (FTK) is positive, it is not necessary to send the measuring insert to ENVEA Service or an authorised ENVEA service partner every 12 months.
3. The measuring system can be operated with either the WS300, WS500 or WS600 weather stations.
4. The measuring system can also be used in the fully air-conditioned, weatherproof housing model 199 from ENVEA.
5. The performance test report can be found online at www.qal1.de.

Test institute:

TÜV Rheinland Energy & Environment GmbH, Cologne
Report No.: EuL/21269536/A dated 29th January 2025

Certified product

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

The OPM250 measuring system is a measuring device for suspended particulate matter in ambient air. The suspended particulate matter concentration is determined using an optical aerosol spectrometer, which determines the particle number size distribution by analysing the scattered light on the individual particles and calculates the corresponding mass concentrations using an algorithm.

The OPM250 measuring system is designed for installation in a measuring container with a roof duct (or alternatively in the fully air-conditioned, weatherproof Model 199 housing). It essentially consists of sampling and measuring insert. The sampling unit is designed for permanent installation in a 19" rack and consists of a sample tube with sampling head (Sigma-2), a weather sensor from Ott Hydromet / Lufft (WS300, WS500 or WS600), a roof flange with rain deflector and, inside, the water separator and sample tube holder. The measuring module is mounted in the rack under the sample tube holder and connected to the sampling unit in just a few simple steps. It contains the aerosol spectrometer and all components subject to wear and tear and can therefore be easily removed for maintenance and calibration.

A condensate trap, which is automatically emptied during the self-test, and a two-stage dust filter with a pre-filter and a residual dust filter are located next to the optical measuring cell. The sample volume flow is regulated automatically. The sample air pump also conveys the purge air, which is extracted from the pump exhaust air in the device via an ultra-fine filter and kept constant by a purge air regulator. The purge air prevents contamination of the illumination and detection optics and is used as particle-free reference air during the device self-test.

The sample air is drawn in at a constant flow rate of 1.2 litres/min (based on operating conditions at the measuring orifice) via the Sigma-2 sampling head (non-fractionating, equipped with a head heater to prevent ice formation) and fed vertically via the sample tube for sample air conditioning into the optical measuring cell in the measuring insert. The adaptive heating in the sample tube is actively controlled so that no condensation can occur on the way of the aerosol to the measuring cell and at the same time the heating of the aerosol is kept as low as possible.

The device is controlled either via the touch display on the front of the device or via one of the interfaces (RS-232, USB-B, Ethernet) and one of the data protocols (OPM protocol, Modbus TCP, GESYTEC / Bayern-Hessen protocol).

In addition to the suspended particulate matter fractions for PM₁₀ and PM_{2.5}, further extensive measurement data (suspended particulate matter fractions TSP, PM₄, PM₁ and PM_{Coarse}, total particle number concentration, particle number size distribution in 72 size channels (0.178 µm to 29.4 µm optical latex equivalent diameter) as well as data from the Ott Hydromet / Lufft WS300 weather station (ambient temperature, humidity, ambient pressure), WS500 (like WS300, additionally wind direction and wind speed) or WS600 (like WS300, additionally wind direction, wind speed and precipitation).

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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 requests of the TÜV Rheinland Energy 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 gal1.de.

History of documents

Certification of the OPM250 measuring system is based on the documents listed below and the regular ongoing surveillance of the manufacturer's quality management system:

Initial certification according to EN 15267

Certificate no.	0000089095_00
Expiry of the certificate:	23 rd October 2030
Test report:	EuL/21269536/A dated 29 th January 2025 TÜV Rheinland Energy & Environment GmbH
Issue of the certificate:	24 th October 2025
Official certificate database:	www.gal1.de

Certificate:
0000089095_00 / 24.10.2025

Expanded uncertainty PM_{2,5}

Comparison candidate with reference according to Standard EN 16450:2017				
Candidate	OPM250	SN	FE111 & FE114	
Status of measured values	Slope and offset corrected	Limit value	30	µg/m³
		Allowed uncertainty	25	%
All comparisons				
Uncertainty between Reference	0,53	µg/m³		
Uncertainty between Candidates	0,43	µg/m³		
FE111 & FE114				
Number of data pairs	308			
Slope b	1,000	not significant		
Uncertainty of b	0,012			
Ordinate intercept a	0,005	not significant		
Uncertainty of a	0,149			
Expanded meas. uncertainty W _{CM}	10,36	%		
All comparisons, ≥18 µg/m³				
Uncertainty between Reference	0,49	µg/m³		
Uncertainty between Candidates	1,02	µg/m³		
FE111 & FE114				
Number of data pairs	43			
Slope b	1,138			
Uncertainty of b	0,052			
Ordinate intercept a	-4,007			
Uncertainty of a	1,358			
Expanded meas. uncertainty W _{CM}	12,96	%		
All comparisons, <18 µg/m³				
Uncertainty between Reference	0,54	µg/m³		
Uncertainty between Candidates	0,25	µg/m³		
FE111 & FE114				
Number of data pairs	265			
Slope b	1,051			
Uncertainty of b	0,024			
Ordinate intercept a	-0,309			
Uncertainty of a	0,202			
Expanded meas. uncertainty W _{CM}	12,92	%		

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Comparison candidate with reference according to Standard EN 16450:2017				
Candidate	OPM250	SN	FE111 & FE114	
Status of measured values	Slope and offset corrected	Limit value	30	µg/m³
		Allowed uncertainty	25	%
Cologne				
Uncertainty between Reference	0,37	µg/m³		
Uncertainty between Candidates	0,19	µg/m³		
	FE111		FE114	
Number of data pairs	79		73	
Slope b	1,134		1,091	
Uncertainty of b	0,037		0,039	
Ordinate intercept a	-0,542		-0,408	
Uncertainty of a	0,292		0,301	
Expanded meas. uncertainty W _{CM}	24,42	%	16,90	%
Bornheim				
Uncertainty between Reference	0,48	µg/m³		
Uncertainty between Candidates	0,42	µg/m³		
	FE111		FE114	
Number of data pairs	78		78	
Slope b	0,955		0,894	
Uncertainty of b	0,022		0,019	
Ordinate intercept a	0,785		0,895	
Uncertainty of a	0,232		0,207	
Expanded meas. uncertainty W _{CM}	8,75	%	16,89	%
Niederzier				
Uncertainty between Reference	0,72	µg/m³		
Uncertainty between Candidates	0,08	µg/m³		
	FE111		FE114	
Number of data pairs	75		75	
Slope b	1,067		1,049	
Uncertainty of b	0,087		0,084	
Ordinate intercept a	-0,820		-0,622	
Uncertainty of a	0,608		0,593	
Expanded meas. uncertainty W _{CM}	15,62	%	14,20	%
JRC Ispra				
Uncertainty between Reference	0,50	µg/m³		
Uncertainty between Candidates	0,73	µg/m³		
	FE111		FE114	
Number of data pairs	82		82	
Slope b	1,056		0,995	
Uncertainty of b	0,022		0,020	
Ordinate intercept a	-0,685		-0,496	
Uncertainty of a	0,420		0,393	
Expanded meas. uncertainty W _{CM}	13,78	%	12,05	%
All comparisons, ≥18 µg/m³				
Uncertainty between Reference	0,49	µg/m³		
Uncertainty between Candidates	1,02	µg/m³		
	FE111		FE114	
Number of data pairs	44		43	
Slope b	1,166		1,100	
Uncertainty of b	0,054		0,051	
Ordinate intercept a	-3,978		-3,718	
Uncertainty of a	1,383		1,31	
Expanded meas. uncertainty W _{CM}	15,06	%	13,36	%
All comparisons, <18 µg/m³				
Uncertainty between Reference	0,54	µg/m³		
Uncertainty between Candidates	0,25	µg/m³		
	FE111		FE114	
Number of data pairs	270		265	
Slope b	1,083		1,020	
Uncertainty of b	0,024		0,023	
Ordinate intercept a	-0,443		-0,168	
Uncertainty of a	0,206		0,194	
Expanded meas. uncertainty W _{CM}	17,11	%	9,98	%
All comparisons				
Uncertainty between Reference	0,53	µg/m³		
Uncertainty between Candidates	0,43	µg/m³		
	FE111		FE114	
Number of data pairs	314		308	
Slope b	1,033	significant	0,967	significant
Uncertainty of b	0,012		0,011	
Ordinate intercept a	-0,142	not significant	0,155	not significant
Uncertainty of a	0,152		0,143	
Expanded meas. uncertainty W _{CM}	12,11	%	11,46	%

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Expanded uncertainty PM₁₀

Comparison candidate with reference according to Standard EN 16450:2017				
Candidate	OPM250	SN	FE111 & FE114	
Status of measured values	Slope and offset corrected	Limit value	50	µg/m³
		Allowed uncertainty	25	%
All comparisons				
Uncertainty between Reference	0,72	µg/m³		
Uncertainty between Candidates	0,62	µg/m³		
FE111 & FE114				
Number of data pairs	304			
Slope b	1,000	not significant		
Uncertainty of b	0,011			
Ordinate intercept a	-0,006	not significant		
Uncertainty of a	0,219			
Expanded measured uncertainty WCM	7,04	%		
All comparisons, ≥30 µg/m³				
Uncertainty between Reference	1,06	µg/m³		
Uncertainty between Candidates	1,21	µg/m³		
FE111 & FE114				
Number of data pairs	39			
Slope b	0,955			
Uncertainty of b	0,062			
Ordinate intercept a	1,366			
Uncertainty of a	2,233			
Expanded measured uncertainty WCM	8,12	%		
All comparisons, <30 µg/m³				
Uncertainty between Reference	0,65	µg/m³		
Uncertainty between Candidates	0,50	µg/m³		
FE111 & FE114				
Number of data pairs	265			
Slope b	1,022			
Uncertainty of b	0,016			
Ordinate intercept a	-0,303			
Uncertainty of a	0,275			
Expanded measured uncertainty WCM	7,70	%		

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Comparison candidate with reference according to Standard EN 16450:2017				
Candidate	OPM250	SN	FE111 & FE114	
Status of measured values	Slope and offset corrected	Limit value	50	µg/m³
		Allowed uncertainty	25	%
Cologne				
Uncertainty between Reference	0,52	µg/m³		
Uncertainty between Candidates	0,39	µg/m³		
	FE111		FE114	
Number of data pairs	79		73	
Slope b	1,066		1,018	
Uncertainty of b	0,031		0,032	
Ordinate intercept a	-0,445		-0,292	
Uncertainty of a	0,407		0,414	
Expanded measured uncertainty W _{CM}	12,56	%	5,42	%
Bornheim				
Uncertainty between Reference	0,71	µg/m³		
Uncertainty between Candidates	0,61	µg/m³		
	FE111		FE114	
Number of data pairs	68		68	
Slope b	1,009		0,958	
Uncertainty of b	0,024		0,024	
Ordinate intercept a	-0,985		-0,874	
Uncertainty of a	0,445		0,444	
Expanded measured uncertainty W _{CM}	6,14	%	13,22	%
Niederzier				
Uncertainty between Reference	0,89	µg/m³		
Uncertainty between Candidates	0,50	µg/m³		
	FE111		FE114	
Number of data pairs	81		81	
Slope b	0,974		1,010	
Uncertainty of b	0,022		0,022	
Ordinate intercept a	1,312		1,229	
Uncertainty of a	0,466		0,453	
Expanded measured uncertainty W _{CM}	7,47	%	10,01	%
JRC Ispra				
Uncertainty between Reference	0,69	µg/m³		
Uncertainty between Candidates	0,88	µg/m³		
	FE111		FE114	
Number of data pairs	82		82	
Slope b	1,027		0,973	
Uncertainty of b	0,017		0,017	
Ordinate intercept a	-0,343		-0,147	
Uncertainty of a	0,446		0,453	
Expanded measured uncertainty W _{CM}	7,64	%	8,88	%
All comparisons, ≥30 µg/m³				
Uncertainty between Reference	1,06	µg/m³		
Uncertainty between Candidates	1,21	µg/m³		
	FE111		FE114	
Number of data pairs	39		39	
Slope b	0,969		0,968	
Uncertainty of b	0,057		0,075	
Ordinate intercept a	1,289		0,491	
Uncertainty of a	2,058		2,72	
Expanded measured uncertainty W _{CM}	6,79	%	10,13	%
All comparisons, <30 µg/m³				
Uncertainty between Reference	0,65	µg/m³		
Uncertainty between Candidates	0,50	µg/m³		
	FE111		FE114	
Number of data pairs	271		265	
Slope b	1,035		1,011	
Uncertainty of b	0,016		0,017	
Ordinate intercept a	-0,331		-0,316	
Uncertainty of a	0,262		0,291	
Expanded measured uncertainty W _{CM}	8,85	%	7,49	%
All comparisons				
Uncertainty between Reference	0,72	µg/m³		
Uncertainty between Candidates	0,62	µg/m³		
	FE111		FE114	
Number of data pairs	310		304	
Slope b	1,013	not significant	0,990	not significant
Uncertainty of b	0,010		0,012	
Ordinate intercept a	-0,019	not significant	-0,029	not significant
Uncertainty of a	0,207		0,237	
Expanded measured uncertainty W _{CM}	7,16	%	7,89	%