CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000087855_00

Certified AMS:	OPM250 for suspended particulate matter $PM_{2.5}$ and PM_{10}
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 (2023), EN 16450 (2017), Guide for Demonstration of Equivalence of Ambient Air Monitoring Methods (2010) as well as EN 15267-1 (2009) and EN 15267-2 (2023).

Certification is awarded in respect of the conditions stated in this certificate (this certificate contains 10 pages).

TÜVRheinland® CERTIFIED

Suitability Tested
Complying with 2008/50/EC
EN 15267
Regular Surveillance
www.tuv.com
ID 0000087855

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:	EuL/21269536/A dated 20 February 2025
Initial certification:	23 March 2026
Expiry date:	22 March 2031
Publication:	BAnz AT 31.10.2025 B5, chapter III No. 5.1

Approved application
The tested AMS is suitable for continuous ambient air measurement of PM_{10} and $PM_{2.5}$ in stationary use.

The suitability of the AMS for this application was assessed on the basis of a laboratory test and a field test at four different locations with different time periods.

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 20 February 2025 of TÜV Rheinland Energy & Environment 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 31.10.2025 B5, chapter III No. 5.1, Announcement by UBA dated 27 August 2025:

AMS designation:
OPM250 for suspended particulate matter $PM_{2.5}$ and PM_{10}

Manufacturer:
ENVEA, Poissy, France

Field of application:
For continuous parallel ambient air monitoring of PM_{10} and $PM_{2.5}$ (stationary operation)

Measuring ranges during the performance test:

Component	Certification range	Unit
$PM_{2.5}$	0 – 5,100	µg/m³
PM_{10}	0 – 12,000	µg/m³

Software versions:
1.03 (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 test report on the suitability test can be viewed on the internet at www.qal1.de.

Test Report:
TÜV Rheinland Energy & Environment GmbH, Cologne
Report No.: EuL/21269536/A dated 20 February 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 uses scattered light analysis on the individual particles to determine the particle size distribution 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 system 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 l/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 minimised.

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 PM_{10} and $PM_{2.5}$, further extensive measurement data is available (suspended particulate matter fractions TSP, PM4, PM1 and PMCoarse, 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, plus wind direction and wind speed) or WS600 (like WS300, plus wind direction, wind speed and precipitation).

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 OPM250 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. 0000087855_00: 23 March 2026
Expiry date of the certificate: 22 March 2031
Test report: EuL/21269536/A dated 20 February 2025
TÜV Rheinland Energy & Environment GmbH
Publication: BAnz AT 31.10.2025 B5, chapter III number 5.1
UBA announcement dated 27 August 2025

Expanded uncertainty $PM_{2.5}$

Comparison candidate with reference according to Standard EN 16450:2017				
Candidate	OPM250	SN	FE111 & FE114	
		Limit value	30	µg/m³
Status of measured values	Slope and offset corrected	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**	**%**		

Comparison candidate with reference according to Standard EN 16450:2017					
Candidate	OPM250		SN	FE111 & FE114	
			Limit value	30	µg/m³
Status of measured values	Slope and offset corrected		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	%	

Expanded uncertainty PM_{10}

Comparison candidate with reference according to Standard EN 16450:2017				
Candidate	OPM250	SN	FE111 & FE114	
		Limit value	50	µg/m³
Status of measured values	Slope and offset corrected	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**	**%**		

Comparison candidate with reference according to Standard EN 16450:2017					
Candidate	OPM250		SN	FE111 & FE114	
			Limit value	50	µg/m³
Status of measured values	Slope and offset corrected		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**	**%**	