Umwelt Bundesamt

TÜVRheinland®
Precisely Right.

CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000040331_02

AMS designation:	O342M for O_3
Manufacturer:	ENVEA 111 Boulevard Robespierre 78304 Poissy Cedex France
Test Laboratory:	TÜV Rheinland Energy GmbH

This is to certify that the AMS has been tested and found to comply with the standards: VDI 4202-1 (2002), VDI 4203-3 (2004), EN 14625 (2012), EN 15267-1 (2009) and EN 15267-2 (2009).

Certification is awarded in respect of the conditions stated in this certificate (this certificate contains 11 pages).
The present certificate replaces certificate 0000040331_01 of 01 April 2019.

TÜVRheinland®
CERTIFIED

Suitability Tested
Equivalent to
2008/50/EC
EN 15267
Regular Surveillance

www.tuv.com
ID 0000040331

Publication in the German Federal Gazette (BAnz) of 01 April 2014

This certificate will expire on:
30 June 2025

German Federal Environment Agency
Dessau, 01 July 2020

TÜV Rheinland Energy GmbH
Cologne, 30 June 2020

Dr. Marcel Langner
Head of Section II 4.1

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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 certificate D-PL-11120-02-00.

Test Report:	936/21205818/B dated 08 December 2006
Initial certification:	01 April 2014
Expiry date:	30 June 2025
Certificate:	Renewal (of previous certificate 0000040331_01 dated 01 April 2019 valid until 30 June 2020)
Publication:	BAnz AT 01.04.2014 B12, chapter VI notification 21

Approved application
The certified AMS is suitable for continuous ambient air monitoring of ozone (stationary operation).

The suitability of the AMS for this application was assessed on the basis of a laboratory test and a three-months field test.

The AMS is approved for an ambient temperature range of 0 °C to +30 °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, in consultation with the manufacturer, that this AMS is suitable for monitoring the AMS readings relevant to the application.

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

Basis of the certification
This certification is based on:

- Test report no. 936/21205818/B dated 08 December 2006 issued by TÜV Rheinland Immissionsschutz und Energiesysteme GmbH and Addendum 936/21221709/C dated 28 September 2013 issued by TÜV Rheinland Energie und Umwelt 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. 20 April 2007, no. 75, p. 4139, chapter III no. 3.1, UBA announcement dated 12 April 2007:

AMS designation:
O342M

Manufacturer:
Environnement S.A., Poissy Cedex, France and Ansyco GmbH Karlsruhe, Germany

Field of application:
For continuous ambient air monitoring of ozone (stationary operation)

Measuring ranges during performance testing

O_3	0–360 µg/m³
	0–500 µg/m³

Software version:
V1.28

Test Laboratory:
TÜV Rheinland Immissionsschutz und Energiesysteme GmbH, Cologne,
TÜV Rheinland Group
Report no.: 936/21205818/B dated 8 December 2006

Publication in the German Federal Gazette: BAnz AT 01.04.2014 B12, chapter VI notification 21, UBA announcement dated 27 February 2014:

21 Notification as regards Federal Environment Agency (UBA) notices of 12 April 2007 (BAnz. S. 4139, chapter III number 3.1)

The Model O342M air quality monitor for O_3 manufactured by Environnement complies with the requirements of EN 14625 (August 2012 version). Furthermore, the manufacturing process and the quality management for the Model O342M for O_3 measuring system meet the requirements of EN 15267.

The test report on performance testing No. 936/21205818/B and the addendum no. 936/21221709/C as an integral part of this report are available online at www.qal1.de.

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 28 September 2013

Publication in the German Federal Gazette: BAnz AT 26.08.2015 B4, chapter V notification 46, UBA announcement dated 22 July 2015:

46 **Notification as regards Federal Environment Agency (UBA) notices of 12 April 2007 (BAnz. p. 4139, chapter III number 3.1) and of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter VI 21st notification)**

The latest software version of the O342M measuring system for O_3 manufactured by Environnement S.A. is:

v1.0.5 (calculation process)
v3.6.b (display process)

To extend the means of communication, the measuring system will be equipped with a USB port and a TCP/IP interface.

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 16 March 2015

Publication in the German Federal Gazette: BAnz AT 26.03.2019 B7, chapter IV notification 31, UBA announcement dated 27 February 2019:

31 **Notification as regards Federal Environment Agency (UBA) notices of 12 April 2007 (BAnz. p. 4139, chapter III number 3.1) and of 22 July 2015 (BAnz AT 26.08.2015 B4, chapter V 46th notification)**

The latest software version of the O342M measuring system for ozone manufactured by Environnement S.A. is:

v1.0.5 (calculation process)
v3.6.e (display process)

Statement issued by TÜV Rheinland Energy GmbH dated 27 September 2018

Publication in the German Federal Gazette: BAnz AT 24.03.2020 B7, chapter IV notification 36, , UBA announcement dated 24 February 2020:

36 Notification as regards Federal Environment Agency (UBA) notices of 12 April 2007 (BAnz. p. 4139, chapter III number 3.1) and of 27 February 2019 (BAnz AT 26.03.2019 B7, chapter IV 31st notification)

Environnement S.A., Poissy, France have changed their company name to ENVEA.
The latest software version of the O342M measuring system for ozone manufactured by ENVEA is:
v1.0.5 (calculation process)
v3.8.b (display process)

Statement issued by TÜV Rheinland Energy GmbH dated 1 October 2019

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

The O342M analyser measures ozone (O_3) in ambient air. It works by absorbing ozone in the UV range. The broad UV absorption spectrum of ozone has a maximum of approx. 254 nm. This wavelength precisely coincides with the strongest emission line of a mercury low-pressure lamp of 253.7 nm as well as with the maximum spectral sensitivity of the UV detector, a caesium telluride vacuum UV diode. This is an ideal requirement for photometric measurement of ozone.

This measuring principle corresponds to the standard reference method as described in EN 14625.

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**.

Document history

Certification of the O342M measuring system is based on the documents listed below and the regular, continuous surveillance of the manufacturer's quality management system:

Basic testing

Test Report: 936/21205818/B dated 8 December 2006
TÜV Rheinland Immissionsschutz und Energiesysteme GmbH
Publication: BAnz. 20 April 2007, No. 75, p. 4139, chapter III number 3.1
UBA announcement dated 12 April 2007

Initial certification according to EN 15267

Certificate no. 0000040331: 29 April 2014
Expiry date of the certificate: 31 March 2019
Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 28 September 2013
Test Report: 936/21221709/C dated 28 September 2013
Publication: BAnz AT 01.04.2014 B12, chapter IV notification 21
UBA announcement dated 27 February 2014

Notifications in accordance with EN 15267

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 16 March 2015
Publication: BAnz AT 26.08.2015 B4, chapter V notification 46
UBA announcement dated 22 July 2015
(Design and software changes)

Renewal of the certificate

Certificate no. 0000040331_01: 01 April 2019
Expiry date of the certificate: 30 June 2020

Notifications in accordance with EN 15267

Statement issued by TÜV Rheinland Energy GmbH dated 27 September 2018
Publication: BAnz AT 26.03.2019 B7, chapter IV notification 31
UBA announcement dated 27 February 2019
(software updates)

Statement issued by TÜV Rheinland Energy GmbH dated 1 October 2019
Publication: BAnz AT 24.03.2020 B7, chapter IV notification 36
UBA announcement dated 24 February 2020
(New company name, software changes)

Renewal of the certificate

Certificate no. 0000040331_02:	01 July 2020
Expiry date of the certificate:	30 June 2025

Expanded uncertainty from the results obtained in the laboratory tests for analyser 1

Measuring device: Environnement O342M — Serial-No.: Gerät 1

Measured component: O_3 — 1h-alert threshold: 120 nmol/mol

No.	Performance characteristic		Performance criterion	Result	Partial uncertainty		Square of partial uncertainty	
1	Repeatability standard deviation at zero	≤	1.0 nmol/mol	0.400	$u_{r,z}$	0.05	0.0025	
2	Repeatability standard deviation at 1h-alert threshold	≤	3.0 nmol/mol	1.000	$u_{r,lh}$	0.13	0.0161	
3	"lack of fit" at 1h-alert threshold	≤	4.0% of measured value	-0.200	$u_{l,lh}$	-0.14	0.0192	
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold	≤	2.0 nmol/mol/kPa	-0.010	u_{gp}	-0.09	0.0089	
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold	≤	1.0 nmol/mol/K	0.023	u_{gt}	0.27	0.0705	
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold	≤	1.0 nmol/mol/K	0.035	u_{st}	0.28	0.0768	
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold	≤	0.30 nmol/mol/V	-0.040	u_V	-0.54	0.2904	
8a	Interferent H_20 with 21 mmol/mol	≤	10 nmol/mol (Zero)	1.000	u_{H2O}	0.82	0.6737	
		≤	10 nmol/mol (Span)	1.100				
8b	Interferent Toluene with 0,5 µmol/mol	≤	5.0 nmol/mol (Zero)	0.100	$u_{int,pos}$	2.94	8.6700	
		≤	5.0 nmol/mol (Span)	2.600	or			
8c	Interferent Xylene with 0.5 µmol/mol	≤	5.0 nmol/mol (Zero)	0.200	$u_{int,\ neg}$			
		≤	5.0 nmol/mol (Span)	2.500				
9	Averaging effect	≤	7.0% of measured value	3.000	u_{av}	2.08	4.3200	
18	Difference sample/calibration port	≤	1.0%	0.000	$u_{\Delta sc}$	0.00	0.0000	
21	Uncertainty of test gas	≤	3.0%	2.000	u_{cg}	1.20	1.4400	

Combined standard uncertainty	u_c	3.9482	nmol/mol
Expanded uncertainty	U	7.8964	nmol/mol
Relative expanded uncertainty	W	6.58	%
Maximum allowed expanded uncertainty	W_{req}	15	%

Expanded uncertainty from the results obtained in the laboratory tests for analyser 2

Measuring device: Environnement O342M — Serial-No.: Gerät 2

Measured component: O_3 — 1h-alert threshold: 120 nmol/mol

No.	Performance characteristic		Performance criterion	Result	Partial uncertainty		Square of partial uncertainty	
1	Repeatability standard deviation at zero		≤ 1.0 nmol/mol	0.400	$u_{r,Z}$	0.05	0.0026	
2	Repeatability standard deviation at 1h-alert threshold		≤ 3.0 nmol/mol	0.800	$u_{r,Iv}$	0.10	0.0108	
3	"lack of fit" at 1h-alert threshold		≤ 4.0% of measured value	-1.300	$u_{l,Iv}$	-0.90	0.8112	
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold		≤ 2.0 nmol/mol/kPa	0.010	u_{gp}	0.09	0.0089	
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold		≤ 1.0 nmol/mol/K	0.040	u_{gt}	0.46	0.2133	
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold		≤ 1.0 nmol/mol/K	0.065	u_{st}	0.51	0.2649	
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold		≤ 0.30 nmol/mol/V	-0.045	u_V	-0.61	0.3675	
8a	Interferent H_20 with 21 mmol/mol		≤ 10 nmol/mol (Zero)	0.000	u_{H2O}	0.37	0.1392	
			≤ 10 nmol/mol (Span)	0.500				
8b	Interferent Toluene with 0,5 µmol/mol		≤ 5.0 nmol/mol (Zero)	0.100	$u_{int.pos}$	2.02	4.0833	
			≤ 5.0 nmol/mol (Span)	1.500				
8c	Interferent Xylene with 0,5 µmol/mol		≤ 5.0 nmol/mol (Zero)	0.400	or			
			≤ 5.0 nmol/mol (Span)	2.000	$u_{int.\ neg}$			
9	Averaging effect		≤ 7.0% of measured value	0.300	u_{av}	0.21	0.0432	
18	Difference sample/calibration port		≤ 1.0%	0.000	u_{Dsc}	0.00	0.0000	
21	Uncertainty of test gas		≤ 3.0%	2.000	ucg	1.20	1.4400	

Combined standard uncertainty	u_c	2.7175	nmol/mol
Expanded uncertainty	U	5.4351	nmol/mol
Relative expanded uncertainty	W	4.53	%
Maximum allowed expanded uncertainty	W_{req}	15	%

Expanded uncertainty from the results obtained in the laboratory and field tests for analyser 1

Measuring device:	Environnement O342M			Serial-No.:	Gerät 1		
Measured component:	O_3			1h-alert threshold:	120		nmol/mol
No.	**Performance characteristic**		**Performance criterion**	**Result**	**Partial uncertainty**		**Square of partial uncertainty**
1	Repeatability standard deviation at zero	≤	1.0 nmol/mol	0.400	$u_{r,z}$	0.05	0.0025
2	Repeatability standard deviation at 1h-alert threshold	≤	3.0 nmol/mol	1.000	$u_{r,lh}$	not considered, as ur,lh = 0.12 < ur,f	-
3	"lack of fit" at 1h-alert threshold	≤	4.0% of measured value	-0.200	$u_{l,lh}$	-0.14	0.0192
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold	≤	2.0 nmol/mol/kPa	-0.010	u_{gp}	-0.09	0.0089
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold	≤	1.0 nmol/mol/K	0.023	u_{gt}	0.27	0.0705
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold	≤	1.0 nmol/mol/K	0.035	u_{st}	0.28	0.0768
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold	≤	0.30 nmol/mol/V	-0.040	u_v	-0.54	0.2904
8a	Interferent H_2O with 21 mmol/mol	≤	10 nmol/mol (Zero)	1.000	u_{H2O}	0.82	0.6737
		≤	10 nmol/mol (Span)	1.100			
8b	Interferent Toluene with 0,5 µmol/mol	≤	5.0 nmol/mol (Zero)	0.100	$u_{int,pos}$ or $u_{int,\ neg}$	2.94	8.6700
		≤	5.0 nmol/mol (Span)	2.600			
8c	Interferent Xylene with 0,5 µmol/mol	≤	5.0 nmol/mol (Zero)	0.200			
		≤	5.0 nmol/mol (Span)	2.500			
9	Averaging effect	≤	7.0% of measured value	3.000	u_{av}	2.08	4.3200
10	Reproducibility standard deviation under field conditions	≤	5.0% of average over 3 months	3.240	$u_{r,f}$	3.89	15.1165
11	Long term drift at zero level	≤	5.0 nmol/mol	-0.580	$u_{d,l,z}$	-0.33	0.1121
12	Long term drift at span level	≤	5.0% of max. of certification range	2.280	$u_{d,l,lh}$	1.58	2.4952
18	Difference sample/calibration port	≤	1.0%	0.000	$u_{a,sc}$	0.00	0.0000
21	Uncertainty of test gas	≤	3.0%	2.000	u_{cg}	1.20	1.4400
					Combined standard uncertainty	u_c	5.7703 nmol/mol
					Expanded uncertainty	U	11.5405 nmol/mol
					Relative expanded uncertainty	W	9.62 %
					Maximum allowed expanded uncertainty	W_{req}	15 %

Expanded uncertainty from the results obtained in the laboratory and field tests for analyser 2

Measuring device:	Environnement O342M			Serial-No.:	Gerät 2		
Measured component:	O_3		1h-alert threshold:	120	nmol/mol		

No.	Performance characteristic		Performance criterion		Result	Partial uncertainty		Square of partial uncertainty
1	Repeatability standard deviation at zero	≤	1.0 nmol/mol		0.400	$u_{r,z}$	0.05	0.0026
2	Repeatability standard deviation at 1h-alert threshold	≤	3.0 nmol/mol		0.800	$u_{r,lh}$	not considered, as $u_{r,lh} = 0.1 < u_{r,f}$	-
3	"lack of fit" at 1h-alert threshold	≤	4.0% of measured value		-1.300	$u_{l,lh}$	-0.90	0.8112
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold	≤	2.0 nmol/mol/kPa		0.010	u_{gp}	0.09	0.0089
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold	≤	1.0 nmol/mol/K		0.040	u_{gt}	0.46	0.2133
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold	≤	1.0 nmol/mol/K		0.065	u_{st}	0.51	0.2649
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold	≤	0.30 nmol/mol/V		-0.045	u_V	-0.61	0.3675
8a	Interferent H_20 with 21 mmol/mol	≤	10 nmol/mol (Zero)		0.000	u_{H2O}	0.37	0.1392
		≤	10 nmol/mol (Span)		0.500			
8b	Interferent Toluene with 0,5 µmol/mol	≤	5.0 nmol/mol (Zero)		0.100	$u_{int,pos}$	2.02	4.0833
		≤	5.0 nmol/mol (Span)		1.500	or		
8c	Interferent Xylene with 0,5 µmol/mol	≤	5.0 nmol/mol (Zero)		0.400			
		≤	5.0 nmol/mol (Span)		2.000	$u_{int,\ neg}$		
9	Averaging effect	≤	7.0% of measured value		0.300	u_{av}	0.21	0.0432
10	Reproducibility standard deviation under field conditions	≤	5.0% of average over 3 months		3.240	$u_{r,f}$	3.89	15.1165
11	Long term drift at zero level	≤	5.0 nmol/mol		0.790	$u_{d,l,z}$	0.46	0.2080
12	Long term drift at span level	≤	5.0% of max. of certification range		3.550	$u_{d,l,lh}$	2.46	6.0492
18	Difference sample/calibration port	≤	1.0%		0.000	$u_{s,sc}$	0.00	0.0000
21	Uncertainty of test gas	≤	3.0%		2.000	u_{cg}	1.20	1.4400

Combined standard uncertainty	u_c	5.3617	nmol/mol
Expanded uncertainty	U	10.7234	nmol/mol
Relative expanded uncertainty	W	8.94	%
Maximum allowed expanded uncertainty	W_{req}	15	%