

CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000024158_01

AMS designation: MIR 9000 for CO, HCl, SO₂ and NO

Manufacturer: Environnement S.A.
111 Boulevard Robespierre
78304 Poissy Cedex
France

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: 2004

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



Suitability Tested
EN 15267
QAL1 Certified
Regular
Surveillance

www.tuv.com
ID 0000024158

Publication in the German Federal Gazette
(BAnz) of 05 March 2013

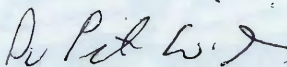
This certificate will expire on:
04 March 2023

German Federal Environment Agency
Dessau, 05 March 2018

TÜV Rheinland Energy GmbH
Cologne, 04 March 2018



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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.

Test Report:	936/21220780/A dated 05 October 2012
Initial certification:	05 March 2013
Expiry date:	04 March 2023
Certificate:	Renewal (of previous certificate 0000024158 dated 22 March 2013 valid until 04 March 2018)
Publication:	BAnz AT 05.03.2013 B10, chapter I no. 5.4

Approved application

The tested AMS is suitable for use at combustion plants according to EC Directive 2001/80/EC (13th BImSchV), at waste incineration plants according to EC Directive 2000/76/EC (17th BImSchV), the 27th BImSchV, the 30th BImSchV and TA Luft. The measured ranges have been selected so as to cater for 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 three-months field test at a municipal sewage-sludge incineration 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 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 936/21220780/A dated 05 October 2012 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 AT 05.03.2013 B10, chapter I no. 5.4,
UBA announcement dated 12 February 2013:

AMS designation:

MIR 9000 for CO, HCl, SO₂ and NO

Manufacturer:

Environnement S.A., Poissy Cedex, France

Field of application:

For plants requiring official approval and for plants according to the 27th BImSchV

Measuring ranges during performance testing:

Component	Certification range	Supplementary range	Unit
CO	0–75	0–500	mg/m ³
HCl	0–15	0–100	mg/m ³
SO ₂	0–75	0–200	mg/m ³
NO	0–100	0–500	mg/m ³

Software version:

V6.5

Restrictions:

During performance testing in accordance with EN 15267-3, the requirement for the degree of protection provided by the enclosure was not fulfilled. The measuring system has to be installed in an environment sheltered from dust and precipitation.

Notes:

1. The maintenance interval is two weeks.
2. Supplementary testing (migration to EN 15267) as regards Federal Environment Agency notice of 19 February 2009 (BAnz p. 899, chapter I no. 2.5).

Test Report:

TÜV Rheinland Energie und Umwelt GmbH, Cologne
Report no.: 936/21220780/A dated 5 October 2012

Publication in the German Federal Gazette: BAnz AT 26.08.2015 B4, chapter V notification 25,
UBA announcement dated 22 July 2015:

25 Notification as regards Federal Environment Agency (UBA) notice of 12 February 2013 (BAnz AT 05.03.2013 B10, chapter I number 5.4)

The current software version of the MIR 9000 measuring system for CO, HCl, SO₂ and NO manufactured by Environnement S.A. is:

v1.8.d (Calculation Process)

v3.4.d (Display Process)

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 14 March 2015.

Certified product

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

The MIR 9000 measuring system operates on the basis of infrared spectroscopy and correlation. Polyatomic gases absorb an electromagnetic radiation of a specific wavelength. The qualitative and quantitative analysis based on this phenomenon is known as absorption spectroscopy.

The measuring system comprises the following components:

An "SEC" probe

Unheated line (50 m standard)

Air-conditioned analyser cabinet with

- Processing and distribution unit for pressured air (M.D.S.)
- Junction box
- Automatic switch box for gas (TIG) with ports
- Heater with integrated thermostat
- Air conditioner

The current software version is:

v1.8.d (Calculation Process)

v3.4.d (Display Process)

The current manual version is:

February 2015

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.

Certification of the MIR 9000 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: 936/21206578/F dated 10 October 2008
TÜV Rheinland Immissionsschutz und Energiesysteme GmbH, Cologne
Publication: BAnz 11 March 2009 no. 38, p. 899, chapter I no. 2.5
UBA announcement dated 19 February 2009

Initial certification according to EN 15267

Certificate no. 0000024158: 22 March 2013
Expiry date of the certificate: 04 March 2018

Test report: 936/21220780/A dated 05. October 2012
TÜV Rheinland Energie und Umwelt GmbH, Cologne
Publication: BAnz AT 05.03.2013 B10, chapter I no. 5.4
UBA announcement dated 12 February 2013

Notification in accordance with EN 15267

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 14 March 2015
Publication: BAnz AT 26.08.2015 B4, chapter V notification 25
UBA announcement dated 22 July 2015
(New software version)

Renewal of the certificate

Certificate no. 0000024158_01: 05 March 2018
Expiry date of the certificate: 04 March 2023

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

Measuring system

Manufacturer	Environnement S.A.
Name of measuring system	MIR 9000
Serial number of the candidates	1912 / 1913
Measuring principle	Infrarotkorrelation

Test report

Test laboratory	TÜV Rheinland
Date of report	2012-10-05

Measured component

Certification range	CO 0 - 75 mg/m ³
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Evaluation of the cross sensitivity (CS)

(system with largest CS)

Sum of positive CS at zero point	0.00 mg/m ³
Sum of negative CS at zero point	-0.43 mg/m ³
Sum of positive CS at reference point	1.40 mg/m ³
Sum of negative CS at reference point	-1.00 mg/m ³
Maximum sum of cross sensitivities	1.40 mg/m ³
Uncertainty of cross sensitivity	0.810 mg/m ³

Calculation of the combined standard uncertainty

Tested parameter

			u ²
Standard deviation from paired measurements under field conditions *	u _D	0.342 mg/m ³	0.117 (mg/m ³) ²
Lack of fit	u _{lof}	-0.377 mg/m ³	0.142 (mg/m ³) ²
Zero drift from field test	u _{d,z}	0.260 mg/m ³	0.068 (mg/m ³) ²
Span drift from field test	u _{d,s}	0.606 mg/m ³	0.367 (mg/m ³) ²
Influence of ambient temperature at span	u _t	0.551 mg/m ³	0.304 (mg/m ³) ²
Influence of supply voltage	u _v	0.210 mg/m ³	0.044 (mg/m ³) ²
Cross sensitivity (interference)	u _i	0.810 mg/m ³	0.656 (mg/m ³) ²
Influence of sample gas flow	u _o	-0.087 mg/m ³	0.008 (mg/m ³) ²
Uncertainty of reference material at 70% of certification range	u _{rm}	0.606 mg/m ³	0.368 (mg/m ³) ²

* The larger value is used :

"Repeatability standard deviation at span" or

"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u_c)

$$u_c = \sqrt{\sum (u_{max,j})^2} \quad 1.44 \text{ mg/m}^3$$

Total expanded uncertainty

$$U = u_c * k = u_c * 1.96 \quad 2.82 \text{ mg/m}^3$$

Relative total expanded uncertainty

U in % of the ELV 50 mg/m³ 5.6

Requirement of 2000/76/EC and 2001/80/EC

U in % of the ELV 50 mg/m³ 10.0

Requirement of EN 15267-3

U in % of the ELV 50 mg/m³ 7.5

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

Measuring system

Manufacturer	Environnement S.A.
Name of measuring system	MIR 9000
Serial number of the candidates	1912 / 1913
Measuring principle	Infrarotkorrelation

Test report

Test laboratory	TÜV Rheinland
Date of report	2012-10-05

Measured component

Certification range	HCl	0 - 15 mg/m ³
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Evaluation of the cross sensitivity (CS)

(system with largest CS)

Sum of positive CS at zero point	0.07 mg/m ³
Sum of negative CS at zero point	-0.43 mg/m ³
Sum of positive CS at reference point	0.28 mg/m ³
Sum of negative CS at reference point	-0.32 mg/m ³
Maximum sum of cross sensitivities	-0.43 mg/m ³
Uncertainty of cross sensitivity	-0.248 mg/m ³

Calculation of the combined standard uncertainty

Tested parameter

			u ²
Standard deviation from paired measurements under field conditions *	u _D	0.151 mg/m ³	0.023 (mg/m ³) ²
Lack of fit	u _{lof}	0.098 mg/m ³	0.010 (mg/m ³) ²
Zero drift from field test	u _{d,z}	0.121 mg/m ³	0.015 (mg/m ³) ²
Span drift from field test	u _{d,s}	0.268 mg/m ³	0.072 (mg/m ³) ²
Influence of ambient temperature at span	u _t	0.231 mg/m ³	0.053 (mg/m ³) ²
Influence of supply voltage	u _v	0.053 mg/m ³	0.003 (mg/m ³) ²
Cross sensitivity (interference)	u _i	-0.248 mg/m ³	0.061 (mg/m ³) ²
Influence of sample gas flow	u _b	-0.046 mg/m ³	0.002 (mg/m ³) ²
Uncertainty of reference material at 70% of certification range	u _{rm}	0.121 mg/m ³	0.015 (mg/m ³) ²

* The larger value is used :

"Repeatability standard deviation at span" or

"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u _c)	$u_c = \sqrt{\sum (u_{max,j})^2}$	0.50 mg/m ³
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.99 mg/m ³

Relative total expanded uncertainty

Requirement of 2000/76/EC and 2001/80/EC

Requirement of EN 15267-3

U in % of the ELV 10 mg/m³	9.9
U in % of the ELV 10 mg/m³	40.0
U in % of the ELV 10 mg/m ³	30.0

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

Measuring system

Manufacturer	Environnement S.A.
Name of measuring system	MIR 9000
Serial number of the candidates	1912 / 1913
Measuring principle	Infrarotkorrelation

Test report

Test laboratory	936/21220780/A TÜV Rheinland
Date of report	2012-10-05

Measured component

Certification range	SO ₂ 0 - 75 mg/m ³
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Evaluation of the cross sensitivity (CS)

(system with largest CS)

Sum of positive CS at zero point	0.50 mg/m ³
Sum of negative CS at zero point	-1.55 mg/m ³
Sum of positive CS at reference point	0.90 mg/m ³
Sum of negative CS at reference point	-1.80 mg/m ³
Maximum sum of cross sensitivities	-1.80 mg/m ³
Uncertainty of cross sensitivity	-1.039 mg/m ³

Calculation of the combined standard uncertainty

Tested parameter

			u ²
Standard deviation from paired measurements under field conditions *	u _D	0.667 mg/m ³	0.445 (mg/m ³) ²
Lack of fit	u _{lof}	-0.403 mg/m ³	0.162 (mg/m ³) ²
Zero drift from field test	u _{d,z}	0.476 mg/m ³	0.227 (mg/m ³) ²
Span drift from field test	u _{d,s}	0.823 mg/m ³	0.677 (mg/m ³) ²
Influence of ambient temperature at span	u _t	0.896 mg/m ³	0.803 (mg/m ³) ²
Influence of supply voltage	u _v	0.053 mg/m ³	0.003 (mg/m ³) ²
Cross sensitivity (interference)	u _i	-1.039 mg/m ³	1.080 (mg/m ³) ²
Influence of sample gas flow	u _b	-0.069 mg/m ³	0.005 (mg/m ³) ²
Uncertainty of reference material at 70% of certification range	u _{rm}	0.606 mg/m ³	0.368 (mg/m ³) ²

* The larger value is used :

"Repeatability standard deviation at span" or

"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u _c)	$u_c = \sqrt{\sum (u_{max,j})^2}$	1.94 mg/m ³
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	3.81 mg/m ³

Relative total expanded uncertainty

Requirement of 2000/76/EC and 2001/80/EC

Requirement of EN 15267-3

U in % of the ELV 50 mg/m³	7.6
U in % of the ELV 50 mg/m³	20.0
U in % of the ELV 50 mg/m ³	15.0

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

Measuring system

Manufacturer	Environnement S.A.
Name of measuring system	MIR 9000
Serial number of the candidates	1912 / 1913
Measuring principle	Infrarotkorrelation

Test report

Test laboratory	TÜV Rheinland
Date of report	2012-10-05

Measured component

Certification range	NO 0 - 100 mg/m ³
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Evaluation of the cross sensitivity (CS)

(system with largest CS)

Sum of positive CS at zero point	0.00 mg/m ³
Sum of negative CS at zero point	-1.13 mg/m ³
Sum of positive CS at reference point	1.70 mg/m ³
Sum of negative CS at reference point	-2.30 mg/m ³
Maximum sum of cross sensitivities	-2.30 mg/m ³
Uncertainty of cross sensitivity	-1.328 mg/m ³

Calculation of the combined standard uncertainty

Tested parameter

			u ²
Standard deviation from paired measurements under field conditions *	u _D	0.428 mg/m ³	0.183 (mg/m ³) ²
Lack of fit	u _{lof}	0.346 mg/m ³	0.120 (mg/m ³) ²
Zero drift from field test	u _{d,z}	0.404 mg/m ³	0.163 (mg/m ³) ²
Span drift from field test	u _{d,s}	0.693 mg/m ³	0.480 (mg/m ³) ²
Influence of ambient temperature at span	u _t	1.415 mg/m ³	2.002 (mg/m ³) ²
Influence of supply voltage	u _v	0.097 mg/m ³	0.009 (mg/m ³) ²
Cross sensitivity (interference)	u _i	-1.328 mg/m ³	1.763 (mg/m ³) ²
Influence of sample gas flow	u _b	-0.098 mg/m ³	0.010 (mg/m ³) ²
Uncertainty of reference material at 70% of certification range	u _{rm}	0.808 mg/m ³	0.653 (mg/m ³) ²

* The larger value is used :

"Repeatability standard deviation at span" or

"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u_c)

$$u_c = \sqrt{\sum (u_{max,j})^2} \quad 2.32 \text{ mg/m}^3$$

Total expanded uncertainty

$$U = u_c * k = u_c * 1.96 \quad 4.55 \text{ mg/m}^3$$

Relative total expanded uncertainty

U in % of the ELV 131 mg/m³ 3.5

Requirement of 2000/76/EC and 2001/80/EC

U in % of the ELV 131 mg/m³ 20.0

Requirement of EN 15267-3

U in % of the ELV 131 mg/m³ 15.0