Umwelt Bundes Amt
For our Environment

TÜVRheinland®
Precisely Right.

CERTIFICATE

on Product Conformity (QAL1)

Certificate No.: 0000024158

Certified AMS:	MIR9000 for CO, HCl, SO_2 and NO
Manufacturer:	Environnement S.A. 111 Boulevard Robespierre 78304 Poissy Cedex France
Test Institute:	TÜV Rheinland Energie und Umwelt GmbH

This is to certify that the AMS has been tested and found to comply with:

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 (see also the following pages).

www.tuv.com TÜVRheinland® ID: 0000024158

- EN 15267-3 tested
- QAL1 certified
- TUV approved
- Annual inspection

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

This certificate will expire on: 04 March 2018

German Federal Environment Agency
Dessau, 22 March 2013

i. A. Dr. Marcel Langner

TÜV Rheinland Energie und Umwelt GmbH
Cologne, 21 March 2013

ppa. Dr. Peter Wilbring

www.umwelt-tuv.de / www.eco-tuv.com teu@umwelt-tuv.de Tel. +49 221 806-2756	TÜV Rheinland Energie und Umwelt GmbH Am Grauen Stein 51105 Cologne
Accreditation according to EN ISO/IEC 17025 and certified according to ISO 9001:2008.	

Test report:	936/21220780/A of 05 October 2012
Initial certification:	05 March 2013
Expiry date:	04 March 2018
Publication:	BAnz AT 05 March 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, at waste incineration plants according to EC Directive 2000/76/EC and other plants requiring official approval. The measured ranges have been selected considering the wide application range of the AMS.

The suitability of the AMS for this application was assessed on the basis of a laboratory test and a threemonth field test at municipal sewage sludge incineration.

The AMS is approved for an ambient temperature range of +5 °C to +40 °C.

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 of 05 October 2012 of 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 March 2013 B10, chapter I, No. 5.4

AMS designation:
MIR 9000 for CO, HCl, SO_2 and NO

Manufacturer:
Environnement S.A., Poissy Cedex, France

Field of application:
Measurement at plants requiring official approval as well as plants within the scope of 2000/76/EC (waste incineration directive) and 2001/80/EC (large combustion plants directive)

Measuring ranges during the performance test:

Components	Certification range	Supplementary range	Unit
CO	0 - 75	0 - 500	mg/m³
HCl	0 - 15	0 - 100	mg/m³
SO_2	0 - 75	0 - 200	mg/m³
NO	0 - 100	0 - 500	mg/m³

Software version:
V6.5

Restriction:
During performance testing, the DIN EN 15267-3 requirement for the degree of protection of the enclosure was not complied with. The measuring system needs to be installed in such a way that it is protected from dust and precipitation.

Notes:
1. The maintenance interval is two weeks.
2. Supplementary testing (transposition into DIN EN 15267) as regards Federal Environmental Agency notices of 19. Februar 2009 (Federal Gazette (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

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

MIR9000 is a measuring system which operates under the principle of infrared spectroscopy and correlation. Every polyatomic gas absorbs electromagnetic radiation at a certain wavelength. The qualitative and quantitative analyses based on this phenomenon are called absorption spectroscopy.

The measuring system comprises the following parts:

A SEC-probe

An unheated line (50m, standard)

An air-conditioned analyser cabinet with:

- unit for processing and distribution of compressed air (M.D.S.)
- junction box
- gas changeover unit (TIG) with electrical connections
- heater with integrated thermostat
- air-conditioning 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 Energie und Umwelt 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 can be applied to the product or used in publicity material for the certified product.

This document as well as the certification mark remains property of TÜV Rheinland Energie und Umwelt GmbH. With revocation of the publication the certificate loses its validity. After the expiration of the certificate and on requests of the TÜV Rheinland Energie und Umwelt 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**.

Certification of MIR9000 for CO, HCl, SO_2 and NO is based on the documents listed below and the regular, continuous monitoring of the Quality Management System of the manufacturer:

Basic test:

Test report: 936/21206578/F of 10 October 2008
TÜV Rheinland Immissionsschutz und Energiesysteme GmbH, Cologne

Publication: BAnz 11 March 2009, No. 38, p. 899, chapter I, No. 2.5
Announcement by UBA from 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 March 2013 B10, chapter I, No. 5.4
Announcement by UBA from 12 February 2013

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			936/21220780/A		
Test laboratory			TÜV Rheinland		
Date of report			2012-10-05		
Measured component			CO		
Certification range			0 - 75	mg/m³	
Evaluation of the cross sensitivity (CS)					
(system with largest CS)					
Sum of positive CS at zero point			0.00	mg/m³	
Sum of negative CS at zero point			-0.43	mg/m³	
Sum of postive CS at reference point			1.40	mg/m³	
Sum of negative CS at reference point			-1.00	mg/m³	
Maximum sum of cross sensitivities			1.40	mg/m³	
Uncertainty of cross sensitivity			0.810	mg/m³	

Calculation of the combined standard uncertainty

Tested parameter				u²	
Standard deviation from paired measurements under field conditions *	u_D	0.342	mg/m³	0.117	(mg/m³)²
Lack of fit	u_{lof}	-0.377	mg/m³	0.142	(mg/m³)²
Zero drift from field test	$u_{d,z}$	0.260	mg/m³	0.068	(mg/m³)²
Span drift from field test	$u_{d,s}$	0.606	mg/m³	0.367	(mg/m³)²
Influence of ambient temperature at span	u_t	0.551	mg/m³	0.304	(mg/m³)²
Influence of supply voltage	u_v	0.210	mg/m³	0.044	(mg/m³)²
Cross sensitivity (interference)	u_i	0.810	mg/m³	0.656	(mg/m³)²
Influence of sample gas flow	u_p	-0.087	mg/m³	0.008	(mg/m³)²
Uncertainty of reference material at 70% of certification range	u_{rm}	0.606	mg/m³	0.368	(mg/m³)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)	$u_c = \sqrt{\sum (u_{max\ j})^2}$	1.44	mg/m³
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	2.82	mg/m³

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	936/21220780/A		
Test laboratory	TÜV Rheinland		
Date of report	2012-10-05		
Measured component	HCl		
Certification range	0 - 15	mg/m³	

Evaluation of the cross sensitivity (CS)
(system with largest CS)

Sum of positive CS at zero point	0.07	mg/m³
Sum of negative CS at zero point	-0.43	mg/m³
Sum of postive CS at reference point	0.28	mg/m³
Sum of negative CS at reference point	-0.32	mg/m³
Maximum sum of cross sensitivities	-0.43	mg/m³
Uncertainty of cross sensitivity	-0.248	mg/m³

Calculation of the combined standard uncertainty

Tested parameter				u^2	
Standard deviation from paired measurements under field conditions *	u_D	0.151	mg/m³	0.023	(mg/m³)²
Lack of fit	u_{lof}	0.098	mg/m³	0.010	(mg/m³)²
Zero drift from field test	$u_{d,z}$	0.121	mg/m³	0.015	(mg/m³)²
Span drift from field test	$u_{d,s}$	0.268	mg/m³	0.072	(mg/m³)²
Influence of ambient temperature at span	u_t	0.231	mg/m³	0.053	(mg/m³)²
Influence of supply voltage	u_v	0.053	mg/m³	0.003	(mg/m³)²
Cross sensitivity (interference)	u_i	-0.248	mg/m³	0.061	(mg/m³)²
Influence of sample gas flow	u_D	-0.046	mg/m³	0.002	(mg/m³)²
Uncertainty of reference material at 70% of certification range	u_{rm}	0.121	mg/m³	0.015	(mg/m³)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/m³
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.99	mg/m³

Relative total expanded uncertainty	**U in % of the ELV 10 mg/m³**	**9.9**
Requirement of 2000/76/EC and 2001/80/EC	**U in % of the ELV 10 mg/m³**	**40.0**
Requirement of EN 15267-3	U in % of the ELV 10 mg/m³	30.0

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Manufacturer	Environnement S.A.
Name of measuring system	MIR 9000
Serial number of the candidates	1912 / 1913
Measuring principle	Infrarotkorrelation
Test report	936/21220780/A
Test laboratory	TÜV Rheinland
Date of report	2012-10-05
Measured component	SO_2
Certification range	0 - 75 mg/m³

Evaluation of the cross sensitivity (CS)
(system with largest CS)

Sum of positive CS at zero point	0.50	mg/m³
Sum of negative CS at zero point	-1.55	mg/m³
Sum of postive CS at reference point	0.90	mg/m³
Sum of negative CS at reference point	-1.80	mg/m³
Maximum sum of cross sensitivities	-1.80	mg/m³
Uncertainty of cross sensitivity	-1.039	mg/m³

Calculation of the combined standard uncertainty

Tested parameter				u^2	
Standard deviation from paired measurements under field conditions *	u_D	0.667	mg/m³	0.445	(mg/m³)²
Lack of fit	u_{lof}	-0.403	mg/m³	0.162	(mg/m³)²
Zero drift from field test	$u_{d,z}$	0.476	mg/m³	0.227	(mg/m³)²
Span drift from field test	$u_{d,s}$	0.823	mg/m³	0.677	(mg/m³)²
Influence of ambient temperature at span	u_t	0.896	mg/m³	0.803	(mg/m³)²
Influence of supply voltage	u_v	0.053	mg/m³	0.003	(mg/m³)²
Cross sensitivity (interference)	u_i	-1.039	mg/m³	1.080	(mg/m³)²
Influence of sample gas flow	u_p	-0.069	mg/m³	0.005	(mg/m³)²
Uncertainty of reference material at 70% of certification range	u_{rm}	0.606	mg/m³	0.368	(mg/m³)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/m³
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	3.81	mg/m³

Relative total expanded uncertainty	**U in % of the ELV 50 mg/m³**	**7.6**
Requirement of 2000/76/EC and 2001/80/EC	**U in % of the ELV 50 mg/m³**	**20.0**
Requirement of EN 15267-3	U in % of the ELV 50 mg/m³	15.0

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Serial number of the candidates			1912 / 1913		
Measuring principle			Infrarotkorrelation		
Test report			936/21220780/A		
Test laboratory			TÜV Rheinland		
Date of report			2012-10-05		
Measured component			NO		
Certification range			0 - 100	mg/m³	
Evaluation of the cross sensitivity (CS)					
(system with largest CS)					
Sum of positive CS at zero point			0.00	mg/m³	
Sum of negative CS at zero point			-1.13	mg/m³	
Sum of postive CS at reference point			1.70	mg/m³	
Sum of negative CS at reference point			-2.30	mg/m³	
Maximum sum of cross sensitivities			-2.30	mg/m³	
Uncertainty of cross sensitivity			-1.328	mg/m³	

Calculation of the combined standard uncertainty

Tested parameter				u^2	
Standard deviation from paired measurements under field conditions *	u_D	0.428	mg/m³	0.183	(mg/m³)²
Lack of fit	u_{lof}	0.346	mg/m³	0.120	(mg/m³)²
Zero drift from field test	$u_{d,z}$	0.404	mg/m³	0.163	(mg/m³)²
Span drift from field test	$u_{d,s}$	0.693	mg/m³	0.480	(mg/m³)²
Influence of ambient temperature at span	u_t	1.415	mg/m³	2.002	(mg/m³)²
Influence of supply voltage	u_v	0.097	mg/m³	0.009	(mg/m³)²
Cross sensitivity (interference)	u_i	-1.328	mg/m³	1.763	(mg/m³)²
Influence of sample gas flow	u_p	-0.098	mg/m³	0.010	(mg/m³)²
Uncertainty of reference material at 70% of certification range	u_{rm}	0.808	mg/m³	0.653	(mg/m³)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)	$u_c = \sqrt{\sum (u_{max\ j})^2}$	2.32	mg/m³
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	4.55	mg/m³

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