CERTIFICATE

of Product Conformity (QAL1)

Certificate No: 0000028732_04

Certified AMS:	LaserGas II HCl for HCl and H_2O
Manufacturer:	NEO Monitors AS Prost Stabels vei 22 2019 Skedsmokorset Norway
Test Institute:	TÜV Rheinland Energy & Environment GmbH

This is to certify that the AMS has been tested and found to comply with the standards EN 15267-1 (2009), EN 15267-2 (2023), EN 15267-3 (2007), as well as EN 14181 (2014).

Certification is awarded in respect of the conditions stated in this certificate (this certificate contains 11 pages).
The present certificate replaces certificate 0000028732_03 dated 25 January 2021.

TÜVRheinland® CERTIFIED
Suitability Tested
EN 15267
QAL1 Certified
Regular Surveillance
www.tuv.com
ID 0000028732

Publication in the German Federal Gazette (BAnz) of 2 March 2012

German Environment Agency

Dessau, 26 January 2026

This certificate will expire on:
25 January 2031

TÜV Rheinland
Energy & Environment GmbH
Cologne, 25 January 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:	936/21212540/B dated 9 September 2011
Initial certification:	26 January 2011
Expiry date:	25 January 2031
Certificate:	Renewal (of previous certificate 0000028732_03 of 25 January 2021 valid until 25 January 2026)
Publication:	BAnz. 02 March 2012, No. 36, p. 920, chapter I No. 4.6

Approved application

The tested AMS is suitable for use at plants according to Directive 2010/75/EU, chapter III (combustion plants / 13th BImSchV:2009), chapter IV (waste incineration plants / 17th BImSchV:2009), Directive 2015/2193/EC (44th BImSchV:2019), TA Luft:2021 and 30th BImSchV:2009. The measured ranges have been selected so as to ensure 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 twelve month field test at a municipal waste incineration.

The AMS is approved for an ambient temperature range of -20 °C to +50 °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 emission 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.

Note

The legal regulations mentioned correspond to the current state of legislation during certification. Each user should, if necessary, in consultation with the competent authority, ensure that this AMS meets the legal requirements for the intended use. In addition, it cannot be ruled out that legal regulations governing the use of a measuring device for emission monitoring may change during the lifetime of the certificate.

Basis of the certification

This certification is based on:

- Test report 936/21212540/B dated 9 September 2011 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. 02 March 2012, No. 36, p. 920, chapter I No. 4.6, Announcement by UBA dated 23 February 2012:

AMS designation:
LaserGas II for HCl and H_2O

Manufacturer:
NEO Monitors AS, Lørenskog, Norway

Field of application:
For plants requiring official approval and for plants according to the 27th BImSchV

Measuring ranges during the performance test:

Component	Certification range	supplementary measuring ranges	Unit
HCl	0 – 15	0 – 90	mg/m³*
H_2O	0 - 40	0 – 30	vol.-%*

* at 1 m measurement path length

Software version:
GM6.1d5

Restrictions:
None

Notes:
1. The measuring system includes an internal cell for the automatic span check of HCl.
2. The maintenance interval is six months.
3. The AMS has been tested at an active measurement path of 0.513 m in the laboratory test.
4. The AMS has been tested at an active measurement path of 1.0 m in the field test.
5. Supplementary testing (extension of the maintenance interval) as regards Federal Environment Agency notice of 10 January 2011 (BAnz. p. 294, chapter I number 3.2)

Test Institute: TÜV Rheinland Energie und Umwelt GmbH, Cologne
Report No.: 936/21212540/B dated 9 September 2011

Publication in the German Federal Gazette: BAnz AT 20.07.2012 B11, Chap. IV notification 7, Announcement by UBA dated 6 July 2012:

7 Notification as regards Federal Environment Agency notice of 2 March 2012 (BAnz. p. 920, chapter I number 4.6)

The latest software version of the LaserGas II measuring system for HCl and H_2O manufactured by NEO Monitors AS is:
6.1f1

Statement of TÜV Rheinland Energie und Umwelt GmbH dated 20 March 2012

Publication in the German Federal Gazette: BAnz AT 23.07.2013 B4, Chap. V notification 7, Announcement by UBA dated 3 July 2013:

7 Notification as regards Federal Environment Agency notices of 23 February 2012 (BAnz. p. 920, chapter I number 4.6) and of 6 July 2012 (BAnz AT 20.07.2012 B11, chapter IV notification 7)

The LaserGas II measuring system for HCl and H_2O manufactured by NEO Monitors AS may also be used with the explosion-proof housing versions Ex-n and Ex-p.

Statement of TÜV Rheinland Energie und Umwelt GmbH dated 27 March 2013

Publication in the German Federal Gazette: BAnz AT 05.08.2014 B11, Chap. V notification 10, Announcement by UBA dated 17 July 2014:

10 Notification as regards Federal Environment Agency notices of 23 February 2012 (BAnz. p. 920, chapter I number 4.6) and of 3 July 2013 (BAnz AT 23.07.2013 B4, chapter V notification 7)

The latest software version of the LaserGas II measuring system for H_2O and HCl manufactured by NEO Monitors AS Lørenskog, Norway, now is
GM 6.1f1-6.

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 2 April 2014

Publication in the German Federal Gazette: BAnz AT 26.08.2015 B4, Chap. V notification 18, Announcement by UBA dated 22 July 2015:

18 Notification as regards Federal Environment Agency (UBA) notices of 23 February 2012 (BAnz. p. 920, chapter I number 4.6) and of 17 July 2014 (BAnz AT 05.08.2014 B11, chapter IV notification 10)

The LaserGas II for H_2O and HCl manufactured by NEO Monitors AS may alternatively be operated with a G12181-020K detector manufactured by Hamamatsu.

Statement of TÜV Rheinland Energie und Umwelt GmbH dated 19 March 2015

Publication in the German Federal Gazette: BAnz AT 17.07.2018 B9, Chap. III notification 13, Announcement by UBA dated 3 July 2018:

13 Notification as regards Federal Environment Agency (UBA) notices of 23 February 2012 (BAnz. p. 920, chapter I number 4.6) and of 22 July 2015 (BAnz AT 26.08.2015 B4, chapter V notification 18)

The latest software version of the LaserGas II measuring system for H_2O and HCl manufactured by NEO Monitors AS is:
6.1f1-10

Statement issued by TÜV Rheinland Energy GmbH dated 21 February 2018

Publication in the German Federal Gazette: BAnz AT 31.07.2020 B10, Chap. II notification 13, Announcement by UBA dated 27 May 2020:

13 Notification as regards Federal Environment Agency (UBA) notices of 23 February 2012 (BAnz. p. 920, chapter I number 4.6) and of 3 July 2018 (BAnz AT 17.07.2018 B9, chapter III, notification 13)

The latest software version of the LaserGas II measuring system for HCl and H_2O manufactured by NEO Monitors AS is:
6.1g-2.

Statement issued by TÜV Rheinland Energy GmbH dated 10 March 2020

Publication in the German Federal Gazette: BAnz AT 10.05.2024 B7, Chap. V notification 26, Announcement by UBA dated 19 March 2024:

26 Notification as regards Federal Environment Agency (UBA) notices of 23 February 2012 (BAnz. p. 920, chapter I number 4.6) and of 27 May 2020 (BAnz AT 31.07.2020 B10, chapter II notification 13)

The LaserGas II measuring system for HCl and H_2O from NEO Monitors AS will in future be equipped with modified microprocessor boards. The new boards have the internal designation

Main-Board G2.1
AUX board B0.1
Receiver board B2.0

Statement issued by TÜV Rheinland Energy GmbH dated 15 December 2023

Publication in the German Federal Gazette: BAnz AT 31.10.2024 B9, Chap. IV notification 26, Announcement by UBA dated 21 August 2024:

26 Notification as regards Federal Environment Agency (UBA) notices of 23 February 2012 (BAnz. p. 920, chapter I number 4.6) and of 19 March 2024 (BAnz AT 10.05.2024 B7, chapter V notification 26)

The current software version for the LaserGas II measuring system for HCl and H_2O from the company NEO Monitors AS is:
6.1g-3

Statement issued by TÜV Rheinland Energy GmbH dated 10 May 2024

Certified product

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

The LaserGas II is an optical instrument based on transmitting infrared laser light from a transmitter unit of one side of the stack to a receiver unit on the diametrically opposite side of the stack. The measuring technique is based on measuring the absorption of light by the gas molecules present in the stack.

The measuring principle is called infrared single-line absorption spectroscopy and is based on the fact that most gases absorb light at certain wavelengths. The absorption is a direct function of the gas concentration in the stack.

The LaserGas II measuring system under test consists of the following components.

- Transmitter with purge gas device and evaluation system
- Receiver unit with purge gas device and internal reference cuvette
- Data cable of 5 m length for connecting the sender and receiver unit
- Voltage supply
- Heated measurement path (active measurement path: 0.513 m)

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 & 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 LaserGas II HCl 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. 0000028732_00: 9 February 2011
Expiry date of the certificate: 25 January 2016
Test report: 936/21212540/A dated 6 October 2010
TÜV Rheinland Energie und Umwelt GmbH
Publication: BAnz. 26 January 2011, No. 14, p. 294, chapter I number 3.2
UBA announcement dated 10 January 2011

Supplementary testing according to EN 15267
Certificate No. 0000028732_01: 16 March 2012
Expiry date of the certificate: 25 January 2016
Test report: 936/21212540/B dated 9 September 2011
TÜV Rheinland Energie und Umwelt GmbH
Publication: BAnz. 02 March 2012, No. 36, p. 920, chapter I number 4.6
UBA announcement dated 23 February 2012

Notifications
Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 20 March 2012
Publication: BAnz AT 20.07.2012 B11, chapter IV notification 7
UBA announcement dated 6 July 2012
(Software changes)

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 27 March 2013
Publication: BAnz AT 23.07.2013 B4, chapter V notification 7
UBA announcement dated 3 July 2013
(Hardware changes)

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 2 April 2014
Publication: BAnz AT 05.08.2014 B11, chapter V notification 10
UBA announcement dated 17 July 2014
(Software changes)

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 19 March 2015
Publication: BAnz AT 26.08.2015 B4, chapter V notification 18
UBA announcement dated 22 July 2015
(Hardware changes)

Renewal of certificates
Certificate No. 0000028732_02: 21 January 2016
Expiry date of the certificate: 25 January 2021

Notifications
Statement issued by TÜV Rheinland Energy GmbH dated 21 February 2018
Publication: BAnz AT 17.07.2018 B9, chapter III notification 13
UBA announcement dated 3 July 2018
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 10 March 2020
Publication: BAnz AT 31.07.2020 B10, chapter II notification 13
UBA announcement dated 27 May 2020
(Software changes)

Renewal of certificates
Certificate No. 0000028732_03: 25 January 2021
Expiry date of the certificate: 25 January 2026

Notifications
Statement issued by TÜV Rheinland Energy & Environment GmbH dated 15 December 2023
Publication: BAnz AT 10.05.2024 B7, chapter V notification 26
UBA announcement dated 19 March 2024
(Hardware changes)

Statement issued by TÜV Rheinland Energy & Environment GmbH dated 10 May 2024
Publication: BAnz AT 31.10.2024 B9, chapter IV notification 26
UBA announcement dated 21 August 2024
(Software changes)

Renewal of certificates
Certificate No. 0000028732_04: 26 January 2026
Expiry date of the certificate: 25 January 2031

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

Measuring system			
Manufacturer		NEO Monitors	
Name of measuring system		LaserGas II	
Serial number of the candidates		4266 / 4267	
Measuring principle		Single-line spectroscopy	
Test report		936/21212540/A	936/21212540/B
Test laboratory		TÜV Rheinland	TÜV Rheinland
Date of report		2010-10-06	2011-09-09
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		0.00 mg/m³	
Sum of negative CS at zero point		0.00 mg/m³	
Sum of postive CS at reference point		0.00 mg/m³	
Sum of negative CS at reference point		0.00 mg/m³	
Maximum sum of cross sensitivities		0.00 mg/m³	
Uncertainty of cross sensitivity		0.000 mg/m³	

Calculation of the combined standard uncertainty

Tested parameter		u		u²	
Standard deviation from paired measurements under field conditions *	u_D	0.242 mg/m³		0.059	(mg/m³)²
Lack of fit	u_{lof}	0.081 mg/m³		0.007	(mg/m³)²
Zero drift from field test	$u_{d,z}$	0.095 mg/m³		0.009	(mg/m³)²
Span drift from field test	$u_{d,s}$	-0.147 mg/m³		0.022	(mg/m³)²
Influence of ambient temperature at span	u_t	0.100 mg/m³		0.010	(mg/m³)²
Influence of supply voltage	u_v	0.025 mg/m³		0.001	(mg/m³)²
Cross sensitivity (interference)	u_i	0.000 mg/m³		0.000	(mg/m³)²
Influence of sample pressure	u_p	0.116 mg/m³		0.013	(mg/m³)²
Uncertainty of reference material at 70% of certification range	u_{rm}	0.121 mg/m³		0.015	(mg/m³)²
Excursion of measurement beam	u_{mb}	-0.146 mg/m³		0.021	(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)	$u_c = \sqrt{\sum (u_{max,j})^2}$	0.39	mg/m³
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.77	mg/m³

Relative total expanded uncertainty	**U in % of the ELV 10 mg/m³**	**7.7**
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

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

Measuring system		
Manufacturer	NEO Monitors	
Name of measuring system	LaserGas II	
Serial number of the candidates	4266 / 4267	
Measuring principle	Single-line spectroscopy	
Test report	936/21212540/A	936/21212540/B
Test laboratory	TÜV Rheinland	TÜV Rheinland
Date of report	2010-10-06	2011-09-09
Measured component	H_2O	
Certification range	0 - 40 Vol.-%	

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

Sum of positive CS at zero point	0.00 Vol.-%
Sum of negative CS at zero point	0.00 Vol.-%
Sum of postive CS at reference point	0.00 Vol.-%
Sum of negative CS at reference point	0.00 Vol.-%
Maximum sum of cross sensitivities	0.00 Vol.-%
Uncertainty of cross sensitivity	0.000 Vol.-%

Calculation of the combined standard uncertainty

Tested parameter		u		u²	
Standard deviation from paired measurements under field conditions *	u_D	0.622	Vol.-%	0.387	(Vol.-%)²
Lack of fit	u_{lof}	-0.058	Vol.-%	0.003	(Vol.-%)²
Zero drift from field test	$u_{d,z}$	0.185	Vol.-%	0.034	(Vol.-%)²
Span drift from field test	$u_{d,s}$	-0.323	Vol.-%	0.104	(Vol.-%)²
Influence of ambient temperature at span	u_t	0.115	Vol.-%	0.013	(Vol.-%)²
Influence of supply voltage	u_v	0.189	Vol.-%	0.036	(Vol.-%)²
Cross sensitivity (interference)	u_i	0.000	Vol.-%	0.000	(Vol.-%)²
Influence of sample pressure	u_p	0.077	Vol.-%	0.006	(Vol.-%)²
Uncertainty of reference material at 70% of certification range	u_{rm}	0.323	Vol.-%	0.105	(Vol.-%)²
Excursion of measurement beam	u_{mb}	-0.182	Vol.-%	0.033	(Vol.-%)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)	$u_c = \sqrt{\sum (u_{max,j})^2}$	0.85	Vol.-%
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	1.66	Vol.-%

Relative total expanded uncertainty	**U in % of the range 40 Vol.-%**	**4.2**
Requirement of 2000/76/EC and 2001/80/EC	**U in % of the range 40 Vol.-%**	**10.0** **
Requirement of EN 15267-3	U in % of the range 40 Vol.-%	7.5

** For this component no requirements in the EC-directives 2001/80/EG und 2000/76/EG are given.
A level of 10% was applied.