Umwelt Bundesamt

TÜVRheinland®
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CERTIFICATE

of Product Conformity (QAL1)

Certificate No: 0000038494_03

Certified AMS:	LaserGas II for HF
Manufacturer:	NEO Monitors AS Prost Stabels Vei 22 N-2019 Skedsmokorset Norway
Test Institute:	TÜV Rheinland Energy 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 (2009), EN 15267-3 (2007) and EN 14181 (2014).

Certification is awarded in respect of the conditions stated in this certificate (this certificate contains 8 pages).
The present certificate replaces certificate 0000038494_02 dated 05 March 2018.

TÜVRheinland® CERTIFIED

Suitability Tested
EN 15267
QAL1 Certified
Regular
Surveillance

www.tuv.com
ID 0000038494

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

This certificate will expire on:
04 March 2028

German Environment Agency
Dessau, 02 March 2023

TÜV Rheinland Energy GmbH
Cologne, 01 March 2023

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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/D dated 08 October 2013
Initial certification:	05 March 2013
Expiry date:	04 March 2028
Certificate:	Renewal (of previous certificate 0000038494_02 of 05 March 2018 valid until 04 March 2023)
Publication:	BAnz AT 01.04.2014 B12, chapter I No. 2.2

Approved application
The tested AMS is suitable for use at plants according to Directive 2010/75/EC, chapter III (13th BImSchV:2013), chapter IV (17th BImSchV:2013), 30th BImSchV:2009, TA-Luft:2002 and 27th BImSchV:2013. 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 12 month field test at a waste incineration.

The AMS is approved for an ambient temperature range of -20° 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/D dated 08 October 2013 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 01.04.2014 B12, chapter I No. 2.2, Announcement by UBA dated 27 February 2014:

AMS designation:
LaserGas II for HF

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 performance testing:

Component	Certification range	Supplementary measuring ranges		Unit
HF	0 – 1*	0 – 1.5*	0 – 10*	mg/m³

* refered to a measuring path of 1.0 m

Software version:
GM6.1f1

Restrictions:
None

Notes:
1. Wet test gases must be used when testing for HF.
2. The maintenance interval is six months.
3. The measuring path was 0.50 m during the laboratory and field test.
4. Regular drift tests in the maintenance interval can also be performed with the test cell and the surrogate gas CH_4.
5. Supplementary testing (extension of the maintenance interval) as regards Federal Environment Agency (UBA) notice of 12 February 2013 (BAnz AT 05.03.2013 B10, chapter I number 3.1).

Test Report:
TÜV Rheinland Energie und Umwelt GmbH, Cologne
Report no.: 936/21212540/D dated 8 October 2013

Publication in the German Federal Gazette: BAnz AT 05.08.2014 B11, chapter V notification 11, Announcement by UBA dated 17 July 2014:

11 Notification as regards Federal Environment Agency notices of 12 February 2013 (BAnz AT 05.03.2013 B10, chapter I number 3.1) and of 3 July 2013 (BAnz AT 23.07.2013 B4 chapter V 6th notification)

The current software version for the LaserGas II measuring system for HF manufactured by NEO Monitors AS, Lørenskog, Norway is now designated as 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, chapter V notification 19, Announcement by UBA dated 22 July 2015:

19 Notification as regards Federal Environment Agency notices of 12 February 2013 (BAnz AT 05.03.2013 B10, chapter I number 3.1) and of 17 July 2014 (BAnz AT 05.08.2014 B11 chapter IV 11th notification)

The LaserGas II measuring system for HF manufactured by NEO Monitors AS may alternatively be equipped with a IG17X3000G1i detector manufactured by Laser Components.

Statement issued by 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 15, Announcement by UBA dated 03 July 2018:

15 Notification as regards Federal Environment Agency (UBA) notices of 12 February 2013 (BAnz AT 05.03.2013 B10, chapter I number 3.1) and of 22 July 2015 (BAnz AT 26.08.2015 B4, chapter V notification 19)

The current software version of the LaserGas II measuring system for HF 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 15, Announcement by UBA dated 27 May 2020:

15 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter I number 2.2) and of 3 July 2018 (BAnz AT 17.07.2018 B9, chapter III, notification 15)

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

Statement issued by TÜV Rheinland Energy GmbH dated 10 March 2020

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 straight 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 tested system comprises the following parts:

- Transmitter with purge gas device and evaluation system
- Receiver unit with purge unit
- Data cable of 5 m length for connecting the sender and receiver unit
- Voltage supply
- Heated measuring path

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 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 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 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 for HF 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. 0000038494_00: 22 March 2013
Expiry date of the certificate: 04 March 2018
Test report 936/21212540/C dated 2 October 2012
TÜV Rheinland Energie und Umwelt GmbH
Publication BAnz AT 05.03.2013 B10, chapter I number 3.1
UBA announcement dated 12 February 2013

Notifications
Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 27 March 2013
Publication BAnz AT 23.07.2013 B4, chapter V notification 6
UBA announcement dated 3 July 2013
(Soft- and hardware changes)

Supplementary testing according to EN 15267
Certificate No. 0000038494_01: 29 April 2014
Expiry date of the certificate: 04 March 2018
Test report 936/21212540/D dated 8 October 2013
TÜV Rheinland Energie und Umwelt GmbH
Publication BAnz AT 01.04.2014 B12, chapter I number 2.2
UBA announcement dated 27 February 2014

Notifications
Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 2 April 2014
Publication BAnz AT 05.08.2014 B11, chapter V notification 11
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 19
UBA announcement dated 22 July 2015
(Hardware option)

Renewal of certificate
Certificate No. 0000038494_02: 05 March 2018
Expiry date of the certificate: 04 March 2023

Notifications
Statement issued by TÜV Rheinland Energy GmbH dated 21 February 2018
Publication BAnz AT 17.07.2018 B9, chapter III notification 15
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 15
UBA announcement dated 27 May 2020
(Software changes)

Renewal of certificate
Certificate No. 0000038494_03: 02 March 2023
Expiry date of the certificate: 04 March 2028

Umwelt Bundesamt

Certificate:
0000038494_03 / 02 March 2023

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

Measuring system				
Manufacturer	NEO Monitors AS			
Name of measuring system	LaserGas II			
Serial number of the candidates	6319 / 6320			
Measuring principle	Single-line spectroscopy			
Test report	936/21212540/D			
Test laboratory	TÜV Rheinland			
Date of report	2013-10-08			
Measured component	HF			
Certification range	0 - 2	mg/m³	with 0.5 m path length	

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	0.04	mg/m³
Sum of negative CS at reference point	0.00	mg/m³
Maximum sum of cross sensitivities	0.04	mg/m³
Uncertainty of cross sensitivity	0.020	mg/m³

Calculation of the combined standard uncertainty

Tested parameter				u^2	
Standard deviation from paired measurements under field conditions *	u_D	0.027	mg/m³	0.001	(mg/m³)²
Lack of fit	u_{lof}	0.017	mg/m³	0.000	(mg/m³)²
Zero drift from field test	$u_{d,z}$	0.008	mg/m³	0.000	(mg/m³)²
Span drift from field test	$u_{d,s}$	0.019	mg/m³	0.000	(mg/m³)²
Influence of ambient temperature at span	u_t	0.021	mg/m³	0.000	(mg/m³)²
Influence of supply voltage	u_v	0.001	mg/m³	0.000	(mg/m³)²
Cross sensitivity (interference)	u_i	0.020	mg/m³	0.000	(mg/m³)²
Influence of sample pressure	u_p	0.000	mg/m³	0.000	(mg/m³)²
Uncertainty of reference material at 70% of certification range	u_{rm}	0.016	mg/m³	0.000	(mg/m³)²
Excursion of measurement beam	u_{mb}	-0.022	mg/m³	0.000	(mg/m³)²

* The larger value is used :
"Repeatability standard deviation at span" or
"Standard deviation from paired measurements under field conditions"

$$u_c = \sqrt{\sum \left(u_{max,\,j}\right)^2}$$

Combined standard uncertainty (u_C)		0.06	mg/m³
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.11	mg/m³

Relative total expanded uncertainty	**U in % of the ELV 1 mg/m³**	**10.8**
Requirement of 2000/76/EC and 2001/80/EC	**U in % of the ELV 1 mg/m³**	**40.0**
Requirement of EN 15267-3	U in % of the ELV 1 mg/m³	30.0