

# CERTIFICATE

## of Product Conformity (QAL1)

Certificate No.: 000038494\_01

**Certified AMS:** LaserGas II for HF

**Manufacturer:** NEO Monitors AS  
Solheimveien 62A  
1473 Lørenskog  
Norway

**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).

The present certificate replaces Certificate No. 000038494 of 22 March 2013



Suitability Tested  
EN 15267  
QAL1 Certified  
Regular  
Surveillance

www.tuv.com  
ID 000038494

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

German Federal Environment Agency  
Dessau, 29 April 2014

This certificate will expire on:  
04 March 2018

TÜV Rheinland Energie und Umwelt GmbH  
Cologne, 28 April 2014



i. A. Dr. Marcel Langner



ppa. Dr. Peter Wilbring

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Accreditation according to EN ISO/IEC 17025 and certified according to ISO 9001:2008.

<b>Test report:</b>	936/21212540/D of 08 October 2013
<b>Initial certification:</b>	05 March 2013
<b>Expiry date:</b>	04 March 2018
<b>Publication:</b>	BAnz AT 01 April 2014 B12, chapter I, No. 2.2

#### **Approved application**

The tested AMS is suitable for use at combustion plants according to Directive 2010/75/EU, chapter III, at waste incineration plants according to Directive 2010/75/EU, chapter IV and other plants requiring official approval. The tested ranges have been chosen with respect to 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 twelve-month field test at a municipal waste incinerator.

The AMS is approved for an ambient temperature range of -20 °C to 50 °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 936/21212540/D of 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 April 2014 B12, chapter I, No. 2.2, Announcement by UBA from 27 February 2014)



**AMS designation:**

LaserGas II for HF

**Manufacturer:**

NEO Monitors AS, Lørenskog, Norway

**Field of application:**

For measurements at plants requiring official approval (Directive 2010/75/EU on industrial emissions, chapter III and IV)

**Measuring ranges during the performance test:**

Component	Certification range	Supplementary ranges		Unit
HF	0 - 1*	0 - 1.5*	0 - 10*	mg/m <sup>3</sup>

\* with reference 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. The regular drift tests in the maintenance interval can also be performed with the test cell and the surrogate gas CH<sub>4</sub>.
5. Supplementary testing (extension of the maintenance interval) to the announcement of the Federal Environment Agency (UBA) of 12 February 2013, Federal Gazette (BAnz) AT 05 March 2013 B10, chapter I, number 3.1).

**Test report:**

TÜV Rheinland Energie und Umwelt GmbH, Cologne  
Report No.: 936/21212540/D of 08 October 2013

### **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 tested system comprises the following parts:

- transmitter with purge gas device and evaluation system
- receiver unit with purge gas device
- 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 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](http://qal1.de).

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: 22 March 2013  
Expiry date of the certificate: 04 March 2018  
Test report: 936/21212540/C of 02 October 2012  
TÜV Rheinland Energie und Umwelt GmbH, Cologne  
Publication: BAnz AT 05 March 2013 B10, chapter I, No. 3.1  
Announcement by UBA from 12 February 2013

**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 of 08 October 2013  
TÜV Rheinland Energie und Umwelt GmbH, Cologne  
Publication: BAnz AT 01 April 2014 B12, chapter I, No. 2.2  
Announcement by UBA from 27 February 2014

**Notification**

Publication: BAnz AT 23 July 2013 B4, chapter V, notification 6  
Announcement by UBA from 03 July 2013



### 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

Test laboratory	936/21212540/C	936/21212540/D
Date of report	TÜV Rheinland	TÜV Rheinland
	2012-02-10	2013-08-10

#### Measured component

Certification range	HF	
	0 - 2 mg/m <sup>3</sup>	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/m <sup>3</sup>
Sum of negative CS at zero point	0.00 mg/m <sup>3</sup>
Sum of positive CS at reference point	0.04 mg/m <sup>3</sup>
Sum of negative CS at reference point	0.00 mg/m <sup>3</sup>
Maximum sum of cross sensitivities	0.04 mg/m <sup>3</sup>
Uncertainty of cross sensitivity	0.020 mg/m <sup>3</sup>

#### Calculation of the combined standard uncertainty

##### Tested parameter

			u <sup>2</sup>
Standard deviation from paired measurements under field conditions *	u <sub>D</sub>	0.027 mg/m <sup>3</sup>	0.001 (mg/m <sup>3</sup> ) <sup>2</sup>
Lack of fit	u <sub>lof</sub>	0.017 mg/m <sup>3</sup>	0.000 (mg/m <sup>3</sup> ) <sup>2</sup>
Zero drift from field test	u <sub>d,z</sub>	0.008 mg/m <sup>3</sup>	0.000 (mg/m <sup>3</sup> ) <sup>2</sup>
Span drift from field test	u <sub>d,s</sub>	0.019 mg/m <sup>3</sup>	0.000 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of ambient temperature at span	u <sub>t</sub>	0.021 mg/m <sup>3</sup>	0.000 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of supply voltage	u <sub>v</sub>	0.001 mg/m <sup>3</sup>	0.000 (mg/m <sup>3</sup> ) <sup>2</sup>
Cross sensitivity (interference)	u <sub>i</sub>	0.020 mg/m <sup>3</sup>	0.000 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of sample pressure	u <sub>b</sub>	0.000 mg/m <sup>3</sup>	0.000 (mg/m <sup>3</sup> ) <sup>2</sup>
Uncertainty of reference material at 70% of certification range	u <sub>rm</sub>	0.016 mg/m <sup>3</sup>	0.000 (mg/m <sup>3</sup> ) <sup>2</sup>
Excursion of measurement beam	u <sub>mb</sub>	-0.022 mg/m <sup>3</sup>	0.000 (mg/m <sup>3</sup> ) <sup>2</sup>

\* The larger value is used :

"Repeatability standard deviation at span" or

"Standard deviation from paired measurements under field conditions"

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

Combined standard uncertainty (u <sub>c</sub> )		0.06 mg/m <sup>3</sup>
Total expanded uncertainty	U = u <sub>c</sub> * k = u <sub>c</sub> * 1.96	0.11 mg/m <sup>3</sup>

#### Relative total expanded uncertainty

Requirement of 2010/75/EU	U in % of the ELV 1 mg/m <sup>3</sup>	10.8
Requirement of EN 15267-3	U in % of the ELV 1 mg/m <sup>3</sup>	40.0
	U in % of the ELV 1 mg/m <sup>3</sup>	30.0