PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

LaserGas II Monitor

Manufactured by:

NEO Monitors AS

Prost Stabels Vei 22
N-2019 Skedsmokorset
Norway

has been assessed by Sira Certification Service
And for the conditions stated on this certificate complies with:

MCERTS Performance Standards for Continuous Emission Monitoring Systems (CEMS), Version 4 dated July 2018
EN15267-3:2007,
& QAL 1 as defined in EN 14181: 2014

Certification Ranges :

HF 0 to 1 mg/m^3
HF 0 to 3 mg/m^3
HF 0 to 5 mg/m^3

Certification is awarded in respect of the conditions stated in this certificate

Project No.	:	16A32992/70212880
Certificate No	:	Sira MC140244/03
Initial Certification	:	26 March 2014
This Certificate issued	:	25 March 2019
Renewal Date	:	25 March 2024

Emily Alexander
Environmental Project Engineer

MCERTS is operated on behalf of the Environment Agency by

Sira Certification Service
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
Tel: +44 (0)1244 670 900

Form 1335
Issue 5

Certificate Contents

Approved Site Application

Any potential user should ensure, in consultation with the manufacturer, that the monitoring system is suitable for the intended application. For general guidance on monitoring techniques refer to the Environment Agency Monitoring Technical Guidance Notes available at www.mcerts.net

On the basis of the assessment and the ranges required for compliance with EU Directives this instrument is considered suitable for use on waste incineration and large coal-fired combustion plant applications. This CEM has been proven suitable for its measuring task (parameter and composition of the flue gas) by use of the QAL 1 procedure specified in EN14181, for IED Chapter III and IED Chapter IV applications for the ranges specified. The lowest certified range for each determinand shall not be more than 1.5X the daily average emission limit value (ELV) for IED Chapter IV applications, and not more than 2.5X the ELV for IED Chapter III and other types of application.

The field test was conducted at a municipal waste incinerator between 28th March 2012 and 7th October 2013.

Basis of Certification

This certification is based on the following Test Report(s) and on Sira's assessment and ongoing surveillance of the product and the manufacturing process:

TUV Report Report Number: 936/21212540/C dated 02.10.2012
TUV Report Report Number: 936/21212540/D dated 08.10. 2013

Product Certified

The LaserGas II measuring system for HF consists of the following parts:

- Transmitter with purge gas device and evaluation system
- Receiver unit with purge gas device and internal purgeable volume for reference
- Signal cable for connecting the sender and receiver unit
- Voltage supply

This certificate applies to all instruments fitted with software version GM6.1d5 onwards (serial number 6319 onwards).

Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: -20°C to +50°C
Instrument IP rating: IP66

Note: For outdoor installations the analyser needs to be mounted into an IP65 environment. If the instrument is supplied with an enclosure, then the ambient temperature shall be monitored inside the enclosure to ensure that it stays within the above ambient temperature range.

Unless otherwise stated the evaluation was carried out on the certification range HF 0 to 1mg/m^3

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time					Note 1	
HF					2s	<400s
Repeatability standard deviation at zero point						
HF	0.20					<2.0%
Repeatability standard deviation at reference point						
HF			1.10			<2.0%
Lack-of-fit						
HF 0 to 2 mg/m^3			1.50			<2.0%
HF 0 to 3 mg/m^3			1.67			<2.0%
HF 0 to 5 mg/m^3			1.80			<2.0%
Influence of ambient temperature zero point						
HF	0.10					<5.0%
Influence of ambient temperature reference point						
HF				-2.00		<5.0%
Influence of sample gas pressure						
HF	0.00					<2.0%
Influence of voltage variations 190 to 250V						
HF	0.10					<2.0%
Influence of vibration (10 to 60Hz (±0.3mm), 60 to 150Hz at 19.6m/s^2)					No effect	To be reported

Certificate No : Sira MC140244/03
This Certificate issued : 25 March 2019

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Cross-sensitivity at zero with interferents: O_2, H_2O, CO, CO_2, CH_4, N_2O, NO, NO_2, NH_3, SO_2, HCl	<0.5					<4.0%
Cross-sensitivity at reference with interferents: O_2, H_2O, CO, CO_2, CH_4, N_2O, NO, NO_2, NH_3, SO_2, HCl				2.10		<4.0%
Excursion of measurement beam of cross-stack in-situ CEMS HF			1.13			<2.0%
Measurement uncertainty HF (For and ELV of 1 mg/m^3)					Guidance - at least 25% below max permissible uncertainty 10.8%	<30% (40%)
Calibration function (field) HF					0.9294	>0.90
Response time (field) HF					2s	<400s
Lack of fit (field) HF			1.50			<2.0%
Maintenance interval					Note 2 6 months	>8 days
Zero and Span drift requirement	The CEMS comprises a zero check for HF and a span check for HF. This allows zero and span check of the mounted system without dismounting from the duct. For zero checks, the modulation of the signal is switched off. TuV certified analysers are checked in the same way. For span checks, CH_4 test gas is applied into the span check cell. The span check cell (internal volume of the analyser or 10 cm external cell) on the receiver side. Prior to span check the CEM calculates the absorption signal of the gas concentration subtracted from the absorption signal during the span check. The resulting signal corresponds to the constant gas concentration multiplied with a factory-set span reference constant within the internal/external cell. The span check reference value is normally set to 80% of max HF.					Clause 6.13 & 10.13 Manufacturer shall provide a description of the technique to determine and compensate for zero and span drift.

Certificate No : Sira MC140244/03
This Certificate issued : 25 March 2019

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Cross-sensitivity at zero with interferents: O_2, H_2O, CO, CO_2, CH_4, N_2O, NO, NO_2, NH_3, SO_2, HCl	<0.5					<4.0%
Cross-sensitivity at reference with interferents: O_2, H_2O, CO, CO_2, CH_4, N_2O, NO, NO_2, NH_3, SO_2, HCl				2.10		<4.0%
Excursion of measurement beam of cross-stack in-situ CEMS HF			1.13			<2.0%
Measurement uncertainty HF (For and ELV of 1 mg/m^3)					Guidance - at least 25% below max permissible uncertainty 10.8%	<30% (40%)
Calibration function (field) HF					0.9294	>0.90
Response time (field) HF					2s	<400s
Lack of fit (field) HF			1.50			<2.0%
Maintenance interval					Note 2 6 months	>8 days
Zero and Span drift requirement	The CEMS comprises a zero check for HF and a span check for HF. This allows zero and span check of the mounted system without dismounting from the duct. For zero checks, the modulation of the signal is switched off. TuV certified analysers are checked in the same way. For span checks, CH_4 test gas is applied into the span check cell. The span check cell (internal volume of the analyser or 10 cm external cell) on the receiver side. Prior to span check the CEM calculates the absorption signal of the gas concentration subtracted from the absorption signal during the span check. The resulting signal corresponds to the constant gas concentration multiplied with a factory-set span reference constant within the internal/external cell. The span check reference value is normally set to 80% of max HF.					Clause 6.13 & 10.13 Manufacturer shall provide a description of the technique to determine and compensate for zero and span drift.

Certificate No : Sira MC140244/03
This Certificate issued : 25 March 2019

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Change in zero point over maintenance interval HF		0.70				<3.0%
Change in reference point over maintenance interval HF			1.60			<3.0%
Availability					99.4%	>95%
Reproducibility HF				2.60		<3.3%
Contamination check of in-situ systems					No effect	<2.0%

Note 1: The response time was determined in one range only as it is not affected by sample gas conditioning systems or gas concentrations.

Note 2: The LaserGas II monitor has a maintenance interval of 6 months. The work detailed below has to be carried out at regular intervals, depending on local conditions:

- Regular monitoring of the light transmission rate and misalignment.
- Zero and Span checks.
- Checks of the optical windows for pollution and debris.

Description

The LaserGas II monitor is an optical instrument based on transmitting infrared laser light from a transmitter unit on one side of the stack to a receiver unit on the diametrically opposite side of the stack.
The measuring technique is called infrared single-line spectroscopy and is based on measuring the absorption of light by the gas molecules present in the stack and the fact that most gases absorb light at certain wavelengths.
The absorption is a direct function of the gas concentration in the stack.

General Notes

1. This certificate is based upon the equipment tested. The Manufacturer is responsible for ensuring that on-going production complies with the standard(s) and performance criteria defined in this Certificate. 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 system shall be subject to regular surveillance according to 'Regulations Applicable to the Holders of Sira Certificates'. The design of the product certified is defined in the Sira Design Schedule for certificate No. Sira MC140244/00

2. If certified product is found not to comply, Sira Certification Service should be notified immediately at the address shown on this certificate.

3. The Certification Marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of Sira Certificates'.

4. This document remains the property of Sira and shall be returned when requested by the company.