PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

O2000 Oxygen Analyser

Manufactured by:

Opsis AB
P.O. Box 244
S-244 02 Furulund
Sweden

has been assessed by CSA Group
and for the conditions stated on this certificate complies with:

Environment Agency Guidance
"MCERTS for stack emissions monitoring equipment at industrial installations"
- Continuous emissions monitoring systems (CEMS)
Updated 28 August 2024
EN 15267-1:2023, EN15267-2:2023, EN 15267-3:2007
& QAL 1 as defined in EN 14181: 2014

Certification range:

O_2 0 to 25 %vol

Project number:	80287225
Certificate number:	CSA MC020012/07
Initial certification:	01 March 2002
This certificate issued:	23 March 2026
Renewal date:	28 March 2031

Andrew Young
Environmental Team Manager

MCERTS is operated on behalf of the Environment Agency by

CSA Group Testing UK Ltd
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
Tel: +44 (0)1244 670 900

Form 1335
Issue 13

Certificate Contents

Approved Site Application

Any potential user should make sure, in consultation with the manufacturer, that the monitoring system is suitable for the intended application. For further information on stack emissions monitoring refer to the Environment Agency's guidance available at www.mcerts.net

This instrument is considered suitable for use on waste incineration and large combustion plant applications. This CEMS 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. The lowest certified range shall not be more than 1.5 times the daily average emission limit value (ELV) for incineration plants, and not more than 2.5 times the ELV for other types of applications.

The field test was performed using two complete measuring systems over a total period of six months in the waste gas of a waste incineration plant.

Basis of Certification

This certification is based on the following test report(s) and on CSA Group's assessment and ongoing surveillance of the product and the manufacturing process:

TÜV Rheinland report 936/808017/A dated 8/02/1999
Sira Report N 0394 dated February 2002

TÜV Rheinland report 936/21213004/B dated 13/09/2010
Sira Evaluation Report 16A24051 (O2000) dated 25/01/11

Product Certified

The O2000 Oxygen Analyser measuring system consists of the following parts:

- Sample probe (Model 502) with an in-situ sensor
- O2000 monitor unit

This certificate applies to all instruments fitted with software version 2.51 onwards (O2000 unit serial number 982115 onwards and Model 502 serial number 98111 onwards).

Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range:	Stack components	-20^{0}C to +50^{0}C
	Control unit	-20^{0}C to +50^{0}C
IP rating:	IP66	

Unless otherwise stated the evaluation was carried out on the certification ranges, O_2 0 to 25%vol.

Test	Results expressed as % volume fraction				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time O_2					32s	<200s
Repeatability standard deviation at zero point O_2	0.04					<0.2%
Repeatability standard deviation at reference point O_2	0.02					<0.2%
Lack-of-fit O_2	-0.08					<0.2%
Influence of ambient temperature zero point O_2	0.04					<0.5%
Influence of ambient temperature reference point O_2	-0.11					<0.5%
Influence of sample gas pressure O_2	0.02					<0.2%
Influence of voltage variations 190 to 250V O_2	0.07					<0.2%
Influence of vibration (10 to 60Hz (±0.3mm), 60 to 150Hz at 19.6m/s^2)	0.07					To be reported

Test	Results expressed as % volume fraction				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 O_2	0.00					<0.4%
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 O_2	0.00					<0.4%
Excursion of measurement beam of cross-stack in-situ CEMS O_2					N/A	<2.0%
Converter Efficiency					N/A	>95%
Measurement uncertainty O_2					4.8%	<7.5%
Calibration function (field) O_2					>0.9320	>0.90
Response time (field) O_2					32s Note 1	<200s
Lack of fit (field) O_2					<0.2% Note 2	<0.2%
Maintenance interval O_2					4-weeks	>8 days
Zero and Span drift requirement	The CEM does not contain an automatic correction of zero and span drift.					Clause 6.13 & 10.13 Manufacturer shall provide a description of the technique to determine and compensate for zero and span drift.

Test	Results expressed as % volume fraction				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Change in zero point over maintenance interval O_2	0.04				Note 3	<0.2%
Change in reference point over maintenance interval O_2	-0.15				Note 3	<0.2%
Availability O_2					>99.6%	>98%
Reproducibility O_2	0.10					<0.2%

For the recertification, no additional field test has been performed. The field test data has been taken from the TÜV report No. 936/8080017/A, dated 8/02/1999. This test data has been recalculated according to the requirements of EN 15267-3. For the original field test, the system was evaluated for 11 months on a municipal waste incinerator. The system was evaluated for 9 weeks mounted on a coal fired power station with particulate abatement.

Note 1: Based on laboratory response time test. The response time in the field must be verified during every check of installation of the CEM.
Note 2: Based on field calibration function test and laboratory lack of fit test. The lack of fit in the field must be verified during every check of installation of the CEM.
Note 3: Based on original certification.

Description

The system continuously measures O_2 in flue gas. The system comprises two components, a sample probe (Model 502) with an in-situ sensor and a control unit.

The zirconia sensor within the probe is controlled at about 700°C by an integral heated. This gives a Nernstian response to the ratio of the reference and measured partial pressure of O_2 across the sensor. A source of reference air is required for the probe.

This certificate applies only to a complete O2000 system. It does not apply to individual components.

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 CSA Group Testing UK Ltd Certificates'.

2. The design of the product certified is held and maintained by TÜV Rheinland for certificate No. CSA MC020012.

3. If a certified product is found not to comply, CSA Group should be notified immediately at the address shown on this certificate.

4. The certification marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of CSA Group Testing UK Ltd Certificates'.

5. This document remains the property of CSA Group and shall be returned when requested by CSA Group.