



# 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 Sira Certification Service  
and for the conditions stated on this certificate complies with:

**MCERTS Performance Standards for Continuous Emission  
Monitoring Systems, Version 3.3 dated January 2011,  
EN15267-3:2007,  
& QAL 1 as defined in EN 14181: 2004**

Certification Ranges

O<sub>2</sub> 0 to 25 %vol

Project No: 16A24051  
Certificate No: Sira MC020012/04  
Initial Certification: 01 March 2002  
This Certificate Issued: 04 April 2011  
Renewal Date: 28 March 2016

Technical Director

*MCERTS is operated on behalf of the Environment Agency by*

## **Sira Certification Service**

12 Acorn Industrial Park, Crayford Road, Crayford  
Dartford, Kent, UK, DA1 4AL  
Tel: 01322 520500 Fax: 01322 520501



## 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](http://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 LCPD and WID 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 WID applications, and not more than 2.5X the ELV for LCPD and other types of application.

## 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:

### Original certification:

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

### Recertification:

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

Certificate No: Sira MC020012/04  
This Certificate Issued: 04 April 2011

*This certificate may only be reproduced in its entirety and without change  
To authenticate the validity of this certificate please see [www.siraenvironmental.com](http://www.siraenvironmental.com)*



## Product Certified

The O2000 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).

Certificate No: Sira MC020012/04  
This Certificate Issued: 04 April 2011

*This certificate may only be reproduced in its entirety and without change  
To authenticate the validity of this certificate please see [www.siraenvironmental.com](http://www.siraenvironmental.com)*



## Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: Stack components -20°C to +50°C  
Control unit -20°C to +50°C

IP rating: IP 66

Unless otherwise stated the evaluation was carried out on the certification ranges, O<sub>2</sub> 0 to 25%vol.

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

Certificate No: Sira MC020012/04

This Certificate Issued: 04 April 2011

*This certificate may only be reproduced in its entirety and without change  
To authenticate the validity of this certificate please see [www.siraenvironmental.com](http://www.siraenvironmental.com)*



Test	Results expressed as % volume fraction				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Cross-sensitivity at zero with interferents: O <sub>2</sub> , H <sub>2</sub> O, CO, CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, NO, NO <sub>2</sub> , NH <sub>3</sub> , SO <sub>2</sub> , HCl O <sub>2</sub>	0.00					<0.4%
Cross-sensitivity at reference with interferents: O <sub>2</sub> , H <sub>2</sub> O, CO, CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, NO, NO <sub>2</sub> , NH <sub>3</sub> , SO <sub>2</sub> , HCl O <sub>2</sub>	0.00					<0.4%
Excursion of measurement beam of cross-stack in-situ CEMS O <sub>2</sub>					N/A	<2.0%
Converter Efficiency					N/A	>95%

Certificate No: Sira MC020012/04  
 This Certificate Issued: 04 April 2011

*This certificate may only be reproduced in its entirety and without change  
 To authenticate the validity of this certificate please see [www.siraenvironmental.com](http://www.siraenvironmental.com)*



Test	Results expressed as % volume fraction				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Measurement uncertainty O <sub>2</sub>					4.8%	<7.5%
Calibration function (field) O <sub>2</sub>					>0.9320	>0.90
Response time (field) O <sub>2</sub>					32s Note 1	<200s
Lack of fit (field) O <sub>2</sub>					<0.2% Note 2	<0.2%
Maintenance interval O <sub>2</sub>					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.
Change in zero point over maintenance interval O <sub>2</sub>	0.04				Note 3	<0.2%
Change in reference point over maintenance interval O <sub>2</sub>	-0.15				Note 3	<0.2%
Availability O <sub>2</sub>					>99.6%	>98%

Certificate No: Sira MC020012/04  
 This Certificate Issued: 04 April 2011

*This certificate may only be reproduced in its entirety and without change  
 To authenticate the validity of this certificate please see [www.siraenvironmental.com](http://www.siraenvironmental.com)*



Test	Results expressed as % volume fraction				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Reproducibility O <sub>2</sub>	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 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.

Certificate No: Sira MC020012/04  
 This Certificate Issued: 04 April 2011

*This certificate may only be reproduced in its entirety and without change  
 To authenticate the validity of this certificate please see [www.siraenvironmental.com](http://www.siraenvironmental.com)*



### Description:

The system continuously measures O<sub>2</sub> 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<sub>2</sub> 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 Sira Certificates'. The design of the product certified is defined in the Sira Design Schedule for certificate No. Sira MC 020012/00
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.

Certificate No: Sira MC020012/04  
This Certificate Issued: 04 April 2011

*This certificate may only be reproduced in its entirety and without change  
To authenticate the validity of this certificate please see [www.siraenvironmental.com](http://www.siraenvironmental.com)*