

# CERTIFICATE

## of Product Conformity (QAL1)

Certificate No: 0000062063\_03

**Certified AMS:** O2000N for O<sub>2</sub>

**Manufacturer:** Opsis AB  
Skytteskogsvägen 16  
24402 Furulund  
Sweden

**Test Institute:** TÜV Rheinland Energy & Environment 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 (2023), EN 15267-3 (2007)  
as well as EN 14181 (2014).**

Certification is awarded in respect of the conditions stated in this certificate  
(this certificate contains 7 pages).  
The present certificate replaces certificate 0000062063\_02 dated 2 June 2021.



Suitability Tested  
EN 15267  
QAL1 Certified  
Regular  
Surveillance

www.tuv.com  
ID 0000062063

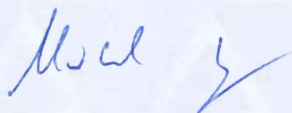
Publication in the German Federal Gazette  
(BAnz) of 3 May 2021

German Environment Agency

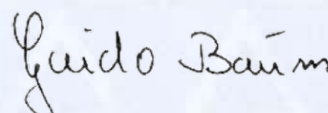
Dessau, 3 May 2026

This certificate will expire on:  
2 May 2031

TÜV Rheinland  
Energy & Environment GmbH  
Cologne, 2 May 2026



Dr. Marcel Langner  
Head of Section II 4



i. V. Guido Baum

www.tuv.com  
qal1-info@tuv.com  
Tel. + 49 221 806-5200

TÜV Rheinland Energy & Environment GmbH  
Am Grauen Stein  
51105 Köln

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.

<b>Test report:</b>	936/21241138/C dated 15 July 2020
<b>Initial certification:</b>	26 March 2019
<b>Expiry date:</b>	2 May 2031
<b>Certificate:</b>	Renewal (of previous certificate 0000062063_02 of 2 June 2021 valid until 2 May 2026)
<b>Publication:</b>	BAnz AT 03.05.2021 B9, chapter II No. 1.1

### Approved application

The tested AMS is suitable for use at plants according to Directive 2010/75/EC, chapter III (combustion plants / 13th BImSchV:2020), chapter IV (waste incineration plants / 17th BImSchV:2013), Directive 2015/2193/EC (44th BImSchV:2019), TA Luft:2002, 30th BImSchV:2019 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 twenty-four month field test at a waste incineration.

The AMS is approved for an ambient temperature range of -20 °C 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 and oxygen concentration 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 936/21241138/C dated 15 July 2020 of TÜV Rheinland Energy 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 03.05.2021 B9, chapter II No. 1.1,  
Announcement by UBA dated 31 March 2021:

**AMS designation:**

O2000N for oxygen

**Manufacturer:**

Opsis AB, Furulund, Sweden

**Field of application:**

Measurements at plants requiring official approval and for plants according to the  
27th BImSchV

**Measuring range during the performance test:**

Component	Certification range	Unit
O <sub>2</sub>	0 – 25	Vol.-%

**Software version:**

Firmware 1.09

**Restrictions:**

None

**Notes:**

1. The maintenance interval is twelve months.
2. The measuring system determines gas concentrations in wet stack gas.
3. Supplementary testing (extension of the maintenance interval) as regards Federal Environment Agency (UBA) notice of 27 February 2019 (BAnz AT 26.03.2019 B7, chapter II number 1.1).

**Test Report:** TÜV Rheinland Energy GmbH, Cologne

Report No.: 936/21241138/C dated 15 July 2020

### **Certified product**

This certificate applies to automated measurement systems conforming to the following description:

The O2000N is an oxygen analyser which uses zirconium dioxide as its measuring principle.

Since zirconium dioxide measurement cells are only conductible for oxygen ions for temperatures above 600°C, the voltage generated between the electrodes (cell output) is a function of the relationship between the oxygen partial pressure between the reference electrode and the measuring electrode. A change in oxygen partial pressure of the flue gas and the corresponding electrode according to the Nernst equation therefore result in change of the output voltage.

The O2000N measuring system certified here consists of two components: The analyser (O2000N) which processes measured signals and provides control and adjustment functions; and a measurement probe (model 502) c/w zirconium dioxide cell. This is where the signal is produced on the basis of the oxygen content.

The model 502 zirconium dioxide measurement probe is used to measure the oxygen content of flue gas in-situ without extracting sample gas. The oxygen content is measured in wet stack gas.

The model 502 measurement probe operates in combination with the O2000N analyser. The analyser comprises a metal box (degree of protection IP 66), which contains an OLED display, alarm functions, a micro controller for calculating signals and operation, a reference air pump as well as solenoid valves and connections for the purpose of automatic functional checks. An integrated pump supplies the reference air required for operation.

### **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 & Environment 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 & Environment 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 & Environment 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: [gal1.de](http://gal1.de).

### **History of documents**

Certification of O2000N 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. 0000062063\_00: 12 June 2019  
Expiry date of the certificate: 25 March 2024  
Test report: 936/21241138/A dated 14 September 2018  
TÜV Rheinland Energy GmbH  
Publication: BAnz AT 26.03.2019 B7, chapter II number 1.1  
UBA announcement dated 27 February 2019

#### **Supplementary testing according to EN 15267**

Certificate No. 0000062063\_01: 17 June 2020  
Expiry date of the certificate: 6 May 2025  
Test report: 936/21241138/B dated 31 May 2019  
TÜV Rheinland Energy GmbH  
Publication: BAnz AT 07.05.2020 B8, chapter I number 1.1  
UBA announcement dated 31 March 2020

#### **Supplementary testing according to EN 15267**

Certificate No. 0000062063\_02: 2 June 2021  
Expiry date of the certificate: 2 May 2026  
Test report: 936/21241138/C dated 15 July 2020  
TÜV Rheinland Energy GmbH  
Publication: BAnz AT 03.05.2021 B9, chapter II number 1.1  
UBA announcement dated 31 March 2021

#### **Renewal of certificates**

Certificate No. 0000062063\_03: 3 May 2026  
Expiry date of the certificate: 2 May 2031

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

**Measuring system**

Manufacturer	Opsis AB
AMS designation	O2000N
Serial number of units under test	17-001 / 17-002
Measuring principle	zirconiadioxide principle

**Test report**

Test laboratory	936/21241138/A	936/21241138/C
Date of report	TÜV Rheinland	TÜV Rheinland
	2018-09-14	2020-07-15

**Measured component**

Certification range	O <sub>2</sub>	0 - 25 Vol.-%
---------------------	----------------	---------------

**Evaluation of the cross-sensitivity (CS)**

(system with largest CS)

Sum of positive CS at zero point	0.00	Vol.-%
Sum of negative CS at zero point	0.00	Vol.-%
Sum of positive CS at span point	0.00	Vol.-%
Sum of negative CS at span point	0.00	Vol.-%
Maximum sum of cross-sensitivities	0.00	Vol.-%
Uncertainty of cross-sensitivity	u <sub>i</sub>	0.000 Vol.-%

**Calculation of the combined standard uncertainty**

**Tested parameter**

			u <sup>2</sup>
Standard deviation from paired measurements under field conditions *	u <sub>D</sub>	0.056 Vol.-%	0.003 (Vol.-%) <sup>2</sup>
Lack of fit	u <sub>lof</sub>	-0.058 Vol.-%	0.003 (Vol.-%) <sup>2</sup>
Zero drift from field test	u <sub>d,z</sub>	0.087 Vol.-%	0.008 (Vol.-%) <sup>2</sup>
Span drift from field test	u <sub>d,s</sub>	0.098 Vol.-%	0.010 (Vol.-%) <sup>2</sup>
Influence of ambient temperature at span	u <sub>t</sub>	0.055 Vol.-%	0.003 (Vol.-%) <sup>2</sup>
Influence of supply voltage	u <sub>v</sub>	0.006 Vol.-%	0.000 (Vol.-%) <sup>2</sup>
Cross-sensitivity (interference)	u <sub>i</sub>	0.000 Vol.-%	0.000 (Vol.-%) <sup>2</sup>
Influence of sample gas pressure	u <sub>p</sub>	0.015 Vol.-%	0.000 (Vol.-%) <sup>2</sup>
Uncertainty of reference material at 70% of certification range	u <sub>rm</sub>	0.202 Vol.-%	0.041 (Vol.-%) <sup>2</sup>

\* The larger value is used :

"Repeatability standard deviation at set point" or

"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u <sub>c</sub> )	$u_c = \sqrt{\sum (u_{max,j})^2}$	0.26	Vol.-%
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.51	Vol.-%

**Relative total expanded uncertainty**

<b>Requirement of 2010/75/EU</b>	<b>U in % of the range 25 Vol.-%</b>	<b>2.0</b>
Requirement of EN 15267-3	U in % of the range 25 Vol.-%	10.0 **
	U in % of the range 25 Vol.-%	7.5

\*\* The EU-directive 2010/75/EC on industrial emissions does not define requirements for this component.  
A value of 10.0 % was used instead.