PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

ULTRAMAT / OXYMAT 6 Multi-component analyser

Manufactured by:

Siemens AG
DE-76181
Karlsruhe,
Germany

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) and T-CEMS, Version 4 dated July 2018
EN15267-3:2007,
& QAL 1 as defined in EN 14181: 2014

Certification Ranges :

O_2	0 to 5 % vol	to	0 to 25 % vol
NO	0-100 mg/m^3	to	0-200 mg/m^3
CO	0-50 mg/m^3	to	0-75 mg/^{3}
SO_2	0-75 mg/m^3		

Project No.	:	674/0374/ 70211412
Certificate No	:	Sira MC040035/07
Initial Certification	:	25 February 2004
This Certificate issued	:	24 February 2019
Renewal Date	:	24 February 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

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Form 1335
Issue 5

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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 stack emission monitoring techniques refer to Environment Agency Technical Guidance Note M2: Monitoring of stack emissions to air. Operators with installations falling under the Large Combustion Plant Directive or Waste Incineration Directive must refer to Technical Guidance Note M20: Quality Assurance of Continuous Emission Monitoring Systems, for guidance on the suitability of CEMS for their installations. M2 and M20 are available on the Agency's website 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 LCPD and WID applications for the ranges specified. The lowest certified range for each determinand shall not be more than 1.5X the emission limit value (ELV) for WID applications, and not more than 2.5X the ELV for LCPD and other types of application.

The field trial was conducted over 6 months with the Ultramat / Oxymat 6 installed on a waste incinerator.

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:

TÜV Süddeutschland	Report Number 24019084 dated February 1999
TÜV Süddeutschland	Report Number 13213066 dated April 2009
TÜV Süddeutschland	Report Number 1701476b dated November 2011 (HCl Interference)

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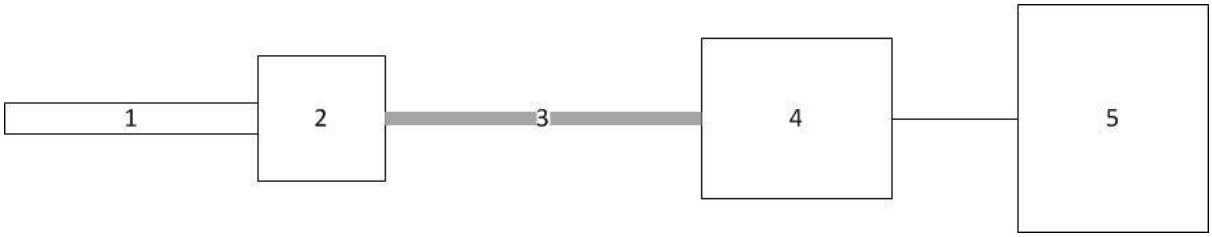
Product Certified

The measuring system consists of the following parts:



1. Sample Probe	2. Heated Filter	3. Heated Sample Line	4. Gas Conditioning	5. Analyser
Model: M&C SP 2000 HR	Model: Integrated in Sample Probe: S-2K-150	Model: H300 Integral Length: 16m	Model: M&C/Siemens 7MB1993	Model: Ultramat/Oxymat 6

Allowable variations could include:

- A different brand or model of sampling system of the same type, provided that there is evidence the alternative system works with similar types of CEM.
- Additional manifolds and heated valves used to allow more than one analyser to share a sampling system.

This certificate applies to all instruments fitted with software version 4 (serial number X2-635) onwards.

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Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: +5°C to +45°C
Instrument IP rating: 'E' model IP20
'F' model IP40

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 CO 0 to 50mg/m^3, NO 0 to 100mg/m^3, SO_2 0 to 75mg/m^3, and O_2 0 to 25%vol

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time						
SO_2					120s	<200s
NO					81s	<200s
CO					75s	<200s
O_2					38s	<200s
Repeatability standard deviation at zero point						
SO_2	0.3					<2.0%
NO	0.4					<2.0%
CO	0.4					<2.0%
O_2	0.01					<0.2%
Repeatability standard deviation at span point						
SO_2	0.2					<2.0%
NO	0.2					<2.0%
CO	0.3					<2.0%
O_2	0.02					<0.2%

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Test		Results expressed as % of the certification range				Other results	MCERTS specification
		<0.5	<1	<2	<5		
Lack-of-fit							
SO_2	0-400 mg/m^3	-0.32					<2.0%
NO	0-100 mg/m^3	-0.26					<2.0%
NO	0-200 mg/m^3	0.45					<2.0%
CO	0-50 mg/m^3	0.27					<2.0%
CO	0-75 mg/m^3	-0.22					<2.0%
O_2	0-5 % vol	-0.08					<0.2%
O_2	0-25 5 vol	-0.05					<0.2%
Influence of ambient temperature zero point – E model							
SO_2					-3.3		<5.0%
NO				1.9			<5.0%
CO					-2.2		<5.0%
O_2		0.12					<0.50%
Influence of ambient temperature zero point – F model							
SO_2					2.4		<5.0%
NO					4.3		<5.0%
CO				-1.7			<5.0%
O_2		-0.12					<0.50%
Influence of ambient temperature span point - E model							
SO_2					4.4		<5.0%
NO				1.6			<5.0%
CO					3.1		<5.0%
O_2		0.14					<0.50%

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Influence of ambient temperature span point - F model						
SO_2				2.4		<5.0%
NO				4.4		<5.0%
CO			1.3			<5.0%
O_2	0.10					<0.50%
Influence of sample gas flow for extractive CEMS						
SO_2, NO, CO,		<1				<2.0%
O_2	<0.2					<0.2%
Influence of voltage variations 185 to 264V					No effect	<2.0% <0.2% O_2
Influence of vibration (10 to 60Hz (±0.3mm), 60 to 150Hz at 19.6m/s^2)					Not tested	To be reported
Cross-sensitivity at zero					Note 1	
SO_2				3.4		<4.0%
NO				-2.7		<4.0%
CO				3.9		<4.0%
O_2	-0.11					<0.40%
Cross-sensitivity at span					Note 1	
SO_2				-2.7		<4.0%
NO				-2.7		<4.0%
CO				3.7		<4.0%
O_2	0.17					<0.40%
Measurement uncertainty					Guidance - at least 25% below max permissible uncertainty	
SO_2 (for an ELV of 50mg/m^3)					7.60%	15%
NO (for an ELV of 32.6mg/m^3)					10.61%	15%
CO (for an ELV of 50mg/m^3)					7.32%	7.5%
O_2 (for a range of 25%vol)					0.32%vol	-

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Calibration function (field)						
SO_2					0.99	>0.90
NO					0.99	>0.90
CO					0.99	>0.90
O_2					0.99	>0.90
Response time (field)					Note 2	
SO_2					120s	<200s
NO					81s	<200s
CO					75s	<200s
O_2					38s	<200s
Lack of fit (field)					Note 3	
SO_2, NO, CO					<2.0%	<2.0%
O_2					<0.2%	<0.2%
Maintenance interval						
NO, CO, O_2					4 weeks	>8 days
SO_2					8 days	>8 days
Zero and Span drift requirement	*Statement from manufacturer:* *The zero point is created by purging the measuring cell with an IR-inactive gas (e.g. N_2) The resulting spectrum corresponds to measurement on a gas free measurement path. The relevant measured concentration values are determined by means of the instrument's calibration function.* *The span point is created by purging the measuring cell with a gas consisting of the measured component in a concentration of 60-90% of the measuring range, residual gas is IR-inactive N_2 (10-40%). The relevant measured concentration values are determined by means of the instrument's calibration function.*					Clause 6.13 & 10.13 Manufacturer shall provide a description of the technique to determine and compensate for zero and span drift.

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Change in zero point over maintenance interval						
SO_2			1.6			<3.0%
NO		0.9				<3.0%
CO	0.4					<3.0%
O_2	0.02					<0.2%
Change in span point over maintenance interval						
SO_2			1.7			<3.0%
NO		0.7				<3.0%
CO		0.6				<3.0%
O_2	0.01					<0.2%
Availability						
SO_2 , O_2					99.3%	>95% (>98% for O_2)
CO, NO					99.7%	
Reproducibility						
SO_2	0.2					<3.3%
NO	0.2					<3.3%
CO	0.3					<3.3%
O_2	0.02					<0.20%
SO_2	0.2					<3.3%

Note 1: Cross sensitivity test has been conducted with the following interferents: O_2, H_2O, CO, CO_2, CH_4, N_2O, NO, NO_2, NH_3, SO_2 and HCl.

Note 2: Results stated are from the laboratory test

Note 3: Test data derived from calibration function test

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Description

The ULTRAMAT / OXYMAT 6 gas analysers are based on the NDIR two-beam alternating light principle and can be used to measure such gases as CO, CO_2, NO, SO_2, NH_3, H_2O, CH_4 and other hydrocarbons. The OXYMAT part of the system measures O_2 using the paramagnetic alternating pressure sensing method. The ULTRAMAT / OXYMAT 6 is a 19-inch multi gas analyser.

Single-channel analysers measure up to 2 gas components simultaneously. Dual-channel analysers can measure up to 4 gas components simultaneously.

The measuring cell can be dismantled for cleaning (rather than replacement) and is alarm indicated.

Auto calibration is available. For the ULTRAMAT 6 auto or manual range changing is available over a minimum ratio 10:1 between maximum and minimum ranges. As four measuring ranges are available, two intermediate ranges are available between these maximum and minimum limits. For the OXYMAT 6 auto or manual range changing between four ranges is available. Remote operation of the range change is also possible.

One electrically isolated signal output 0-20mA or 4-20mA per component are standard and a PROFIBUS version can be supplied as an option.

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 MC040032/01

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.

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