

# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

## ***OXYMAT 6 Oxygen analyser***

manufactured by:

### ***Siemens Production Automatisations S.A.S.***

*1 Chemin de la Sandlach  
B.P. 189  
F – 67506 Haguenau Cedex  
France*

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 3.4 dated July 2012,  
EN15267:2007,  
& QAL 1 as defined in EN 14181: 2004**

Certification Ranges :

O<sub>2</sub>      0 to 5 % vol      to      0 to 25 % vol

Project No: 674/0135A & 674/0374  
Certificate No: Sira MC040032/04  
Initial Certification: 25 February 2004  
This Certificate Issued: 24 February 2014  
Renewal Date: 24 February 2019

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: +44 (0)1322 520500 Fax: +44 (0)1322 520501



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Registered Office: Rake Lane, Eccleston, Chester, UK CH4 9JN*

## Approved Site Application

*Any potential user should ensure, in consultation with the manufacturer that the emission monitoring system is suitable for the process on which it will be installed.*

*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](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 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 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:

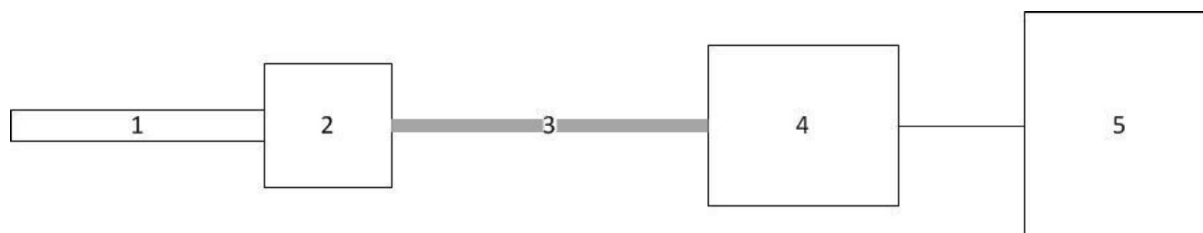
TÜV SÜddeutschland	Report Number 24019084 dated February 1999
TÜV SÜddeutschland	Report Number 13213066 dated April 2009
TÜV SÜddeutschland	Report Number 1701476b dated November 2011 (HCl interference)

Certificate No: Sira MC040032/04  
This Certificate Issued: 24 February 2014

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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: Sample Cooler M&C/Siemens 7MB1993	Model: OXYMAT 6

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

Certificate No: Sira MC040032/04  
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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: 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 O<sub>2</sub> 0 to 25 % vol

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time					38s	<200s
Repeatability standard deviation at zero point	0.01					<0.2%
Repeatability standard deviation at span point	0.02					<0.2%
Lack-of-fit						
O <sub>2</sub> 0-5 % vol	-0.08					<0.2%
O <sub>2</sub> 0-25 % vol	-0.05					<0.2%
Influence of ambient temperature zero point – E model	0.12					<0.50%
Influence of ambient temperature zero point – F model	-0.12					<0.50%
Influence of ambient temperature span point - E model	0.14					<0.50%
Influence of ambient temperature span point - F model	0.10					<0.50%
Influence of sample gas flow for extractive CEMS	<0.2					<0.2%
Influence of voltage variations 185 to 264V					No effect	<0.2%
Influence of vibration (10 to 60Hz (±0.3mm), 60 to 150Hz at 19.6m/s <sup>2</sup> )					Not tested	To be reported
Cross-sensitivity at zero	-0.11				Note 1	<0.40%

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Cross-sensitivity at span	0.17				Note 1	<0.40%
Measurement uncertainty (for a range of 25%vol)					0.32%vol	Guidance - at least 25% below max permissible uncertainty
Calibration function (field)					0.99	>0.90
Response time (field)					Note 2 38s	<200s
Lack of fit (field)					Note 3 <0.2%	<0.2%
Maintenance interval					4 weeks	>8 days
Zero and Span drift requirement  Clause 6.13 & 10.13 Manufacturer shall provide a description of the technique to determine and compensate for zero and span drift.	<p><u>Statement from manufacturer:</u></p> <p>The zero point is created by purging the measuring cell with an IR-inactive gas (e.g. N<sub>2</sub>) 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.</p> <p>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<sub>2</sub> (10-40%). The relevant measured concentration values are determined by means of the instrument's calibration function.</p>					
Change in zero point over maintenance interval	0.02					<0.2%
Change in span point over maintenance interval	0.01					<0.2%
Availability					99.3%	>98%
Reproducibility	0.02					<0.20%

Note 1 – Cross sensitivity test has been conducted with the following 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> and HCl

Note 2 – Result stated from laboratory test

Note 3 – Test data derived from calibration function test

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### Description:

The OXYMAT 6 gas analysers are based on the paramagnetic alternating pressure sensing method and are used to measure oxygen for 0-5 and 0-25 % vol ranges. This certificate covers three versions of the OXYMAT 6:

- OXYMAT 6E (19 inch rack version)
- OXYMAT 6F (field mounted version)
- OXYMAT 6F (ATEX version) for use in Ex zones 1, 2 and safe areas

The sample chamber is directly in the reference gas stream and has a small volume. Thereby resulting in a short response time.

Corrosion resistance is minimised by the sensor not being exposed to the direct influence of the sample gas. The cell can be cleaned rather than replaced.

Auto calibration is available. Auto or manual range change between four ranges is available. Remote operation of the range change is also possible.

Outputs of 0- 20mA or 4-20mA are standard and a PROFIBUS version can be supplied.

### 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 MC040032/00
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.

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# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

***SIPROCESS UV600***

manufactured by:

***Siemens Sensors & Communications***

*Century House  
Bridgewater Road  
Worcester  
Worcestershire  
WR4 9ZQ*

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 3.4 dated July 2012,  
EN15267-3:2007,  
& QAL 1 as defined in EN 14181: 2004**

Certification Ranges :

**NO** : 0 to 50 mg/m<sup>3</sup>

**NO<sub>2</sub>** : 0 to 50 mg/m<sup>3</sup>

**SO<sub>2</sub>** : 0 to 75 mg/m<sup>3</sup>

*\*\*See description for additional measuring ranges\*\**

Project No: 16A23053  
Certificate No: Sira MC120202/01  
Initial Certification: 21 December 2010  
This Certificate Issued: 17 March 2016  
Renewal Date: 20 December 2020

Technical Director

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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## 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:

TÜV Rheinland Immissionsschutz und Energiesysteme GmbH test report

Report No.: 936/21211670/B  
March 26th 2010

Sira Report 16A23053 Rev 1 dated 19/10/10

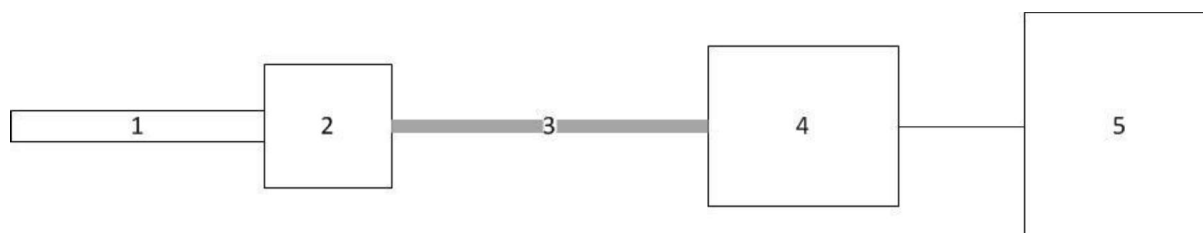
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This Certificate Issued: 17 March 2016

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## Product Certified

The SIPROCESS UV600 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	Model: N/A – Heated filter is integrated with M&C SP 2000 sample probe	Model: Not Stated Length: 50m	Model: MAK 10-2 or CSS-V2SK	Model: SIPROCESS UV600 DEFOR

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 T825\_090707\_1000 onwards. PC Software - Sopas ET 2.20 Build 2766 onwards, (serial number 10440002 onwards).

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## Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: +5 to +45°C with MAK 10-2 Cooler (air conditioned enclosure only)  
+10 to +40°C with CSS-V2SK Cooler

*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.*

Instrument IP rating: IP 54  
Cooler IP rating: IP 34

Unless otherwise stated the evaluation was carried out on the following certification range NO (DEFOR) 0 to 50 mg/m<sup>3</sup>, NO<sub>2</sub> (DEFOR) 0 to 50 mg/m<sup>3</sup> & SO<sub>2</sub> (DEFOR) 0 to 75 mg/m<sup>3</sup>

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time						
NO (DEFOR)					33s	<200s
NO <sub>2</sub> (DEFOR)					61s	<200s
SO <sub>2</sub> (DEFOR)					133s	<200s
NO (DEFOR) – (0 to 1000mg/m <sup>3</sup> )					43s	<200s
NO (DEFOR) – (0 to 2000mg/m <sup>3</sup> )					37s	<200s
NO <sub>2</sub> (DEFOR) – (0 to 500mg/m <sup>3</sup> )					57s	<200s
SO <sub>2</sub> (DEFOR) – (0 to 287mg/m <sup>3</sup> )					51s	<200s
SO <sub>2</sub> (DEFOR) – (0 to 2000mg/m <sup>3</sup> )					41s	<200s
Supplementary test (Cooler CSS-V2SK)					Note 1	
NO (DEFOR)					63s	<200s
NO <sub>2</sub> (DEFOR)					74s	<200s
SO <sub>2</sub> (DEFOR)					144s	<200s
Repeatability standard deviation at zero point						
NO (DEFOR)	0.10					<2.0%
NO <sub>2</sub> (DEFOR)	0.00					<2.0%
SO <sub>2</sub> (DEFOR)	0.20					<2.0%

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Repeatability standard deviation at reference point						
NO (DEFOR)	0.20					<2.0%
NO <sub>2</sub> (DEFOR)			1.00			<2.0%
SO <sub>2</sub> (DEFOR)	0.20					<2.0%
Lack of fit						
NO (DEFOR)	0.40					<2.0%
NO <sub>2</sub> (DEFOR)		-0.80				<2.0%
SO <sub>2</sub> (DEFOR)		-0.93				<2.0%
NO (DEFOR) – (0 to 1000mg/m <sup>3</sup> )	0.48					<2.0%
NO (DEFOR) – (0 to 2000mg/m <sup>3</sup> )		-0.65				<2.0%
NO <sub>2</sub> (DEFOR) – (0 to 500mg/m <sup>3</sup> )	0.34					<2.0%
SO <sub>2</sub> (DEFOR) – (0 to 287mg/m <sup>3</sup> )		-0.98				<2.0%
SO <sub>2</sub> (DEFOR) – (0 to 2000mg/m <sup>3</sup> )	0.50					<2.0%
<i>Supplementary test (Cooler CSS-V2SK)</i>					Note 1	
NO (DEFOR)		0.80				<2.0%
NO <sub>2</sub> (DEFOR)		0.60				<2.0%
SO <sub>2</sub> (DEFOR)		0.60				<2.0%
Influence of ambient temperature zero and reference point						
NO (DEFOR)		0.60				<5.0%
NO <sub>2</sub> (DEFOR)			1.80			<5.0%
SO <sub>2</sub> (DEFOR)				2.40		<5.0%
Influence of sample gas pressure					N/A	<i>Test not applicable to extractive systems</i>

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Influence of sample gas flow for extractive CEMS						
NO (DEFOR)		0.60				<2.0%
NO <sub>2</sub> (DEFOR)	0.40					<2.0%
SO <sub>2</sub> (DEFOR)	0.10					<2.0%
Influence of voltage variations 190 to 250V					No influence	<2.0% all gases
Influence of vibration (10 to 60Hz (±0.3mm), 60 to 150Hz at 19.6m/s <sup>2</sup> )					N/A	<i>Test not applicable to extractive systems</i>
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						
NO (DEFOR)				3.72		<4.0%
NO <sub>2</sub> (DEFOR)				2.46		<4.0%
SO <sub>2</sub> (DEFOR)			-1.08			<4.0%
<i>Supplementary test (Cooler CSS-V2SK)</i>					Note 1	
Interferent: H <sub>2</sub> O						
NO (DEFOR)	<0.5				Note 2	<4.0%
NO <sub>2</sub> (DEFOR)	<0.5				Note 2	<4.0%
SO <sub>2</sub> (DEFOR)	<0.5				Note 2	<4.0%
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						
NO (DEFOR)				-3.40		<4.0%
NO <sub>2</sub> (DEFOR)				3.86		<4.0%
SO <sub>2</sub> (DEFOR)				-3.88		<4.0%
<i>Supplementary test (Cooler CSS-V2SK)</i>					Note 1	
Interferent: H <sub>2</sub> O						
NO (DEFOR)	<0.5				Note 2	<4.0%
NO <sub>2</sub> (DEFOR)	<0.5				Note 2	<4.0%
SO <sub>2</sub> (DEFOR)	<0.5				Note 2	<4.0%

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Measurement uncertainty						
NO (DEFOR)					11.06%	15%
NO <sub>2</sub> (DEFOR)					6.99%	15%
SO <sub>2</sub> (DEFOR)					10.95%	15%
Field Trial						
Calibration function (field)						
NO (DEFOR)					0.9848-0.9983	>0.90
NO <sub>2</sub> (DEFOR)					0.9405-0.9969	>0.90
SO <sub>2</sub> (DEFOR)					0.9453-0.9626	>0.90
Response time (field)					Maximum response time recorded was for  SO <sub>2</sub> 0-250 mg/m <sup>3</sup> T <sub>90</sub> = 187 secs	<200s
Lack of fit (field)					Relative residuals do not exceed 2.0% (or 0.2% for O <sub>2</sub> ) of the certification range.	<2.0%
Maintenance interval					Note 3	>8 days
Change in zero point over maintenance interval						
NO (DEFOR)			1.30			<3.0%
NO <sub>2</sub> (DEFOR)				-2.40		<3.0%
SO <sub>2</sub> (DEFOR)			-1.40			<3.0%
Change in reference point over maintenance interval						
NO (DEFOR)				2.40		<3.0%
NO <sub>2</sub> (DEFOR)				2.70		<3.0%

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
SO <sub>2</sub> (DEFOR)				-2.50		<3.0%
Availability					At least 98.9%	>95%
Reproducibility						
NO (DEFOR)				2.90		<3.3%
NO <sub>2</sub> (DEFOR)		1.00				<3.3%
SO <sub>2</sub> (DEFOR)				3.20		<3.3%

*Note 1* - The measuring system may be operated with cooler type MAK10-2 by AGT Thermotechnik (original testing done on this model) as well as with cooler type CSS-V2SK by company M&C (Supplementary test).

*Note 2* - <0.5% of test gas concentration.

*Note 3* – NO and NO<sub>2</sub> have maintenance intervals of 4 weeks. SO<sub>2</sub> has a maintenance interval of 2 weeks.

Automatic calibration of zero point shall be carried out at least once a week for all components by using humidified ambient air. This procedure can be done automatically, controlled by the analyser.

Automatic calibration of reference point shall be carried out at least once a week for all components by using humidified ambient air. This procedure can be done automatically, controlled by the analyser.

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## Description:

The SIPROCESS UV600 measuring system is a modular, multiple-component measuring system for continuous monitoring of flue gases. The sample gas is taken from the gas duct with the help of a sampling probe for gas and led to the measuring system via a heated sample gas tube.

Subsequent analysis of the gas concentrations is carried out by gas analysing modules which can be individually adapted to the purposed application.

The tested measuring system comprised the following analyser modules:

- DEFOR (NO, NO<sub>2</sub> and SO<sub>2</sub>),

## Additional measuring ranges:

Component	Module	Certification Range	Additional Ranges		Unit
			1	2	
NO	SIPROCESS UV600 DEFOR for NO	<b>0-50</b>	0-1000	0-2000	mg/m <sup>3</sup>
NO <sub>2</sub>	SIPROCESS UV600 DEFOR for NO <sub>2</sub>	<b>0-50</b>	0-500	---	mg/m <sup>3</sup>
SO <sub>2</sub>	SIPROCESS UV600 DEFOR for SO <sub>2</sub>	<b>0-75</b>	0-287	0-2000	mg/m <sup>3</sup>

## 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 120202/01
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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# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

## ***ULTRAMAT 6 Multi-component analyser***

manufactured by:

### ***Siemens Production Automatisations S.A.S.***

*1 Chemin de la Sandlach  
B.P. 189  
F – 67506 Haguenau Cedex  
France*

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 3.4 dated July 2012,  
EN15267:2007,  
& QAL 1 as defined in EN 14181: 2004**

#### Certification Ranges :

NO	0-100 mg/m <sup>3</sup>	to	0-200 mg/m <sup>3</sup>
CO	0-50 mg/m <sup>3</sup>	to	0-75 mg/m <sup>3</sup>
SO <sub>2</sub>	0-75 mg/m <sup>3</sup>		

Project No: 674/0135C & 674/0374  
Certificate No: Sira MC040034/05  
Initial Certification: 25 February 2004  
This Certificate Issued: 24 February 2014  
Renewal Date: 24 February 2019

Technical Director

MCERTS is operated on behalf of the Environment Agency by

## **Sira Certification Service**

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Registered Office: Rake Lane, Eccleston, Chester, UK CH4 9JN*



## Approved Site Application

*Any potential user should ensure, in consultation with the manufacturer that the emission monitoring system is suitable for the process on which it will be installed.*

*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](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 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 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:

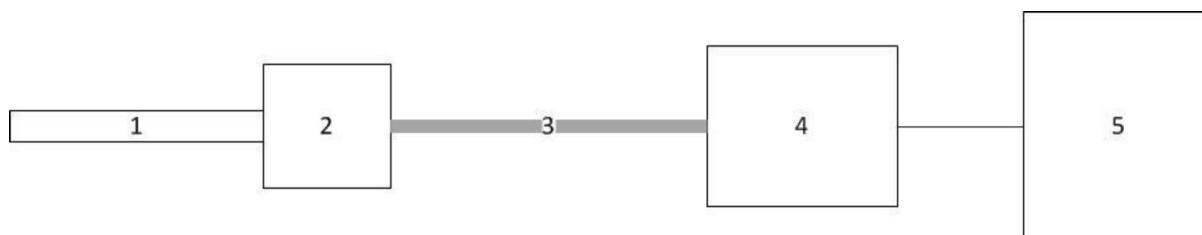
TÜV Süddeutschland	Report Number 24019084 dated February 1999
TÜV Süddeutschland	Report Number 13213066 dated April 2009
TÜV Süddeutschland	Report Number 1701476b dated November 2011 (HCl interference)

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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 6

This certificate applies to all instruments fitted with software version 4 (serial number X7-635 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: 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<sup>3</sup>, NO 0 to 100mg/m<sup>3</sup>, SO<sub>2</sub> 0 to 75mg/m<sup>3</sup>.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time						
SO <sub>2</sub>					120s	<200s
NO					81s	<200s
CO					75s	<200s
Repeatability standard deviation at zero point						
SO <sub>2</sub>	0.3					<2.0%
NO	0.4					<2.0%
CO	0.4					<2.0%
Repeatability standard deviation at span point						
SO <sub>2</sub>	0.2					<2.0%
NO	0.2					<2.0%
CO	0.3					<2.0%
Lack-of-fit						
SO <sub>2</sub> 0-400 mg/m <sup>3</sup>	-0.32					<2.0%
NO 0-100 mg/m <sup>3</sup>	-0.26					<2.0%
NO 0-200 mg/m <sup>3</sup>	0.45					<2.0%
CO 0-50 mg/m <sup>3</sup>	0.27					<2.0%
CO 0-75 mg/m <sup>3</sup>	-0.22					<2.0%

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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 zero point – E model						
SO <sub>2</sub>				-3.3		<5.0%
NO			1.9			<5.0%
CO				-2.2		<5.0%
Influence of ambient temperature zero point – F model						
SO <sub>2</sub>				2.4		<5.0%
NO				4.3		<5.0%
CO			-1.7			<5.0%
Influence of ambient temperature span point - E model						
SO <sub>2</sub>				4.4		<5.0%
NO			1.6			<5.0%
CO				3.1		<5.0%
Influence of ambient temperature span point - F model						
SO <sub>2</sub>				2.4		<5.0%
NO				4.4		<5.0%
CO			1.3			<5.0%
Influence of sample gas flow for extractive CEMS						
SO <sub>2</sub> , NO, CO,		<1				<2.0%
Influence of voltage variations 185 to 264V					No effect	<2.0% <0.2% O <sub>2</sub>
Influence of vibration (10 to 60Hz (±0.3mm), 60 to 150Hz at 19.6m/s <sup>2</sup> )					Not tested	To be reported

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Cross-sensitivity at zero					Note 1	
SO <sub>2</sub>				3.4		<4.0%
NO				-2.7		<4.0%
CO				3.9		<4.0%
Cross-sensitivity at span					Note 1	
SO <sub>2</sub>				-2.7		<4.0%
NO				-2.7		<4.0%
CO				3.7		<4.0%
Measurement uncertainty					Guidance - at least 25% below max permissible uncertainty	
SO <sub>2</sub> (for an ELV of 50mg/m <sup>3</sup> )					7.60%	15%
NO (for an ELV of 32.6mg/m <sup>3</sup> )					10.61%	15%
CO (for an ELV of 50mg/m <sup>3</sup> )					7.32%	7.5%
Calibration function (field)						
SO <sub>2</sub>					0.99	>0.90
NO					0.99	>0.90
CO					0.99	>0.90
Response time (field)					Note 2	
SO <sub>2</sub>					120s	<200s
NO					81s	<200s
CO					75s	<200s
Lack of fit (field)					Note 3	
SO <sub>2</sub> , NO, CO					<2.0%	<2.0%
Maintenance interval						
NO, CO					4 weeks	>8 days
SO <sub>2</sub>					8 days	>8 days

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Zero and Span drift requirement  Clause 6.13 & 10.13  Manufacturer shall provide a description of the technique to determine and compensate for zero and span drift.	<u>Statement from manufacturer:</u>  <i>The zero point is created by purging the measuring cell with an IR-inactive gas (e.g. N<sub>2</sub>) 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.</i>  <i>The span point is created by purging the measuring cell with an gas consisting of the measured component in a concentration of 60-90% of the measuring range, residual gas is IR-inactive N<sub>2</sub> (10-40%). The relevant measured concentration values are determined by means of the instrument's calibration function.</i>					
Change in zero point over maintenance interval  SO <sub>2</sub> NO CO			1.6			<3.0%  <3.0%  <3.0%
Change in span point over maintenance interval  SO <sub>2</sub> NO CO			1.7			<3.0%  <3.0%  <3.0%
Availability  SO <sub>2</sub> CO, NO					99.3%  99.7%	>95%  (>98% for O <sub>2</sub> )
Reproducibility  SO <sub>2</sub> NO CO	0.2 0.2 0.3					<3.3%  <3.3%  <3.3%

Note 1 – Cross sensitivity test has been conducted with the following 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> and HCl.

Note 2 – Results stated are from laboratory test

Note 3 – Test data derived from calibration function test

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### Description:

The ULTRAMAT 6 gas analysers are based on the NDIR two-beam alternating light principle and can be used to measure such gases as CO, CO<sub>2</sub>, NO, SO<sub>2</sub>, NH<sub>3</sub>, H<sub>2</sub>O, CH<sub>4</sub> and other hydrocarbons. This certificate covers three versions of the ULTRAMAT 6:

- ULTRAMAT 6E (19 inch rack version)
- ULTRAMAT 6F (field mounted version)
- ULTRAMAT 6F (ATEX version) for use in Ex zones 1, 2 and safe areas

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

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

The measuring cell can be dismantled for cleaning (rather than replacement) and is alarm indicated. An option also available is a built-in flow and pressure control.

One electrically isolated output signal of 0-20mA or 4-20mA per component is 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 MC040034/01
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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