



ENVIRONMENT
AGENCY

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

***SIDOR Multi Gas Analyser
with
Modules OXOR-E & OXOR-P***

manufactured by:

SICK MAIHAK GmbH
*Poppenbottler Bogen 9b
22399 Hamburg
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, Version 2, Revision 1 (April 2003)**

Certification Ranges :

CO	0 to 75 mg/m ³
NO	0 to 125 mg/m ³
SO ₂	0 to 100 mg/m ³
O ₂	0 to 25 %vol
	0 to 10 %vol

Project No: 674/0237
Certificate No: Sira MC 070107/02
Initial Certification: 02 April 2007
This Certificate Issued: 28 August 2009
Renewal Date: 01 April 2012

Technical Director



ENVIRONMENT
AGENCY

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. This is 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 large coal-fired combustion plant applications.

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 Nord Report Number: 04CU035/8000607710 dated 30/06/06

TÜV reports are accepted on the basis of the Environment Agency's document 'MCERTS – Guidance on the acceptance of German type approval test reports for CEMS' Version 2 (October 2003)

Product Certified

The SIDOR measuring system can consist of a maximum of three analyser modules:

- 1 or 2 SIDOR modules (CO, NO, SO₂)
- OXOR E or OXOR P

The SIDOR measuring system consists of the following parts:

- Sampling system with probe and heated line
- SIDOR analyser within a cabinet
- Gas cooler, gas pump, filters, water trap and flow meters depending on application

This certificate applies to all instruments fitted with software version 1.6 onwards (serial number 760108 onwards).

Certificate No: Sira MC 070107/02
This Certificate Issued: 28 August 2009



ENVIRONMENT
AGENCY

Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: +5°C to +45°C

Unless otherwise stated the evaluation was carried out on the certification range CO 0 to 75 mg/m³, NO 0 to 125 mg/m³, SO₂ 0 to 100 mg/m³, O₂ 0 to 25%vol.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<4		
Linearity						
CO			1.4			<2%
NO			1.6			<2%
SO ₂			1.5			<2%
O ₂ (elec)	0.23					<0.3% vol
O ₂ (para)	0.22					<0.3% vol
Cross-sensitivity (O ₂ , H ₂ O, CO ₂ , CH ₄ , N ₂ O, NO, NO ₂ , NH ₃ , SO ₂ , HCl)						
CO			-2.0			<4%
NO			2.2			<4%
SO ₂				3.4		<4%
O ₂ (elec)	0.17					<4% vol
O ₂ (para)	-0.14					<4% vol
Temperature dependent zero shift						
CO	0.14					<0.3%/°C
NO	-0.17					<0.3%/°C
SO ₂	0.16					<0.3%/°C
O ₂ (elec)	0.02					<0.5%vol/°C
O ₂ (para)	<0.01					<0.5%vol/°C

Certificate No: Sira MC 070107/02
This Certificate Issued: 28 August 2009



ENVIRONMENT
AGENCY

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<4		
Temperature dependent upper reference point shift						
CO	0.13					<0.3%/°C
NO	0.13					<0.3%/°C
SO ₂	-0.11					<0.3%/°C
O ₂ (elec)	0.04					<0.5%vol/°C
O ₂ (para)	0.02					<0.5%vol/°C
Response time						
CO					131s	<200s
NO					87s	<200s
SO ₂					141s	<200s
O ₂ (elec)					78s	<200s
O ₂ (para)					71s	<200s
Detection Limit						
CO		0.94				<2%
NO	0.46					<2%
SO ₂			1.65			<2%
O ₂ (elec)	0.19					<0.2% vol
O ₂ (para)	0.16					<0.2% vol
Interference of test gas flow on the measurement signal						
CO		0.70				<1%
NO		0.80				<1%
SO ₂		0.80				<1%
O ₂ (elec)		0.70				<1%
O ₂ (para)		0.80				<1%

Certificate No: Sira MC 070107/02
This Certificate Issued: 28 August 2009



ENVIRONMENT
AGENCY

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<4		
Vibration test (10 to 60Hz ($\pm 0.3\text{mm}$), 60 to 150Hz at 19.6m/s^2)					Note 1	To be reported
Mains voltage (190V to 250V)						Not specified
CO		0.6				
NO		0.7				
SO ₂		1.0				
O ₂ (elec)		0.7				
O ₂ (para)	0.3					
Sample gas pressure					Note 2	To be reported
Sample gas temperature					Note 2	To be reported
Analysis function (field) ^{Note 3}						
CO					96.0%	>95%
NO					96.6%	>95%
SO ₂					98.4%	>95%
O ₂ (elec)					99.9%	>95%
O ₂ (para)					99.9%	>95%
Availability ^{Note 3}					98.9%	>95%
Zero drift during field trial ^{Note 3}						
CO	0.09					<2%/week
NO	0.18					<2%/week
SO ₂	0.14					<2%/week
O ₂ (elec)	0.02					<0.2%vol/week
O ₂ (para)	0.01					<0.2%vol/week

Certificate No: Sira MC 070107/02
This Certificate Issued: 28 August 2009



ENVIRONMENT
AGENCY

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<4		
Upper reference point drift during field trial ^{Note 3}						
CO	0.16					<4%/week
NO	0.17					<4%/week
SO ₂	0.17					<4%/week
O ₂ (elec)	0.02					<0.2%vol/week
O ₂ (para)	0.01					<0.2%vol/week
Maintenance Interval ^{Note 3}					Note 4 3 months	To be reported

Note 1: Extractive analyser test not applicable.

Note 2: Extractive analyser test not applicable.

Note 3: Field test: The field test was assessed on the basis of a three month field trial mounted on a coal fired power station.

Note 4: CO, NO, SO₂ require weekly single point auto calibration at zero with ambient air or N₂ and O₂ require a single point auto calibration with ambient air every 3 days; gas has to be delivered over the cooler.

Certificate No: Sira MC 070107/02
This Certificate Issued: 28 August 2009



ENVIRONMENT
AGENCY

Description:

The analyser SIDOR is a continuously measuring modular device for the extractive measurement of CO, NO, SO₂ and O₂ in stack gas. The photometric SIDOR analyser for CO, NO and SO₂ is based on the NDIR double beam principle. In addition an electrochemical cell (OXOR-E) or a paramagnetic cell (OXOR-P) is used to measure oxygen.

The SIDOR analyser was designed to establish a high long-term stability of sensitivity in order to avoid the use of calibration cells. At the same time an acceptable zero point stability had to be provided. The solution is a combination of the double-beam-in-space procedure with a special signal processing which is able to compensate sensitivity changes.

The sample gas is extracted by the heated probe and flows through the heated sample line to the analyser cabinet. The cabinet may include valves, sample gas pump, gas cooler, filters, flow meters, needle valves and SIDOR analysers, as required for the specific application.

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 070107/02.
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 MC 070107/02
This Certificate Issued: 28 August 2009