

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

FWE 200 Dust Monitor

Manufactured by:

SICK AG

*Bergener Ring 27
01458 Ottendorf-Okrilla
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 3.4 dated July 2012
EN15267-1:2009, EN15267-2:2009, EN15267-3:2007
& QAL 1 as defined in EN 14181: 2004**

Certification Ranges :

Dust	0 to 15 mg/m ³
	0 to 50 mg/m ³
	0 to 100 mg/m ³
	0 to 200 mg/m ³

Project No. : 16A33224
Certificate No : Sira MC140249/01
Initial Certification : 25 April 2014
This Certificate issued : 12 January 2015
Renewal Date : 24 April 2019

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Technical Director

MCERTS is operated on behalf of the Environment Agency by

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*The MCERTS certificate consists of this document in its entirety.
For conditions of use, please consider all the information within.*

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

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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

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.

The field test took place in the exhaust gas of a zinc and lead production plant (28 March to 05 July 2001).

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 Report Number 936/21223498/A dated 20 January 2014

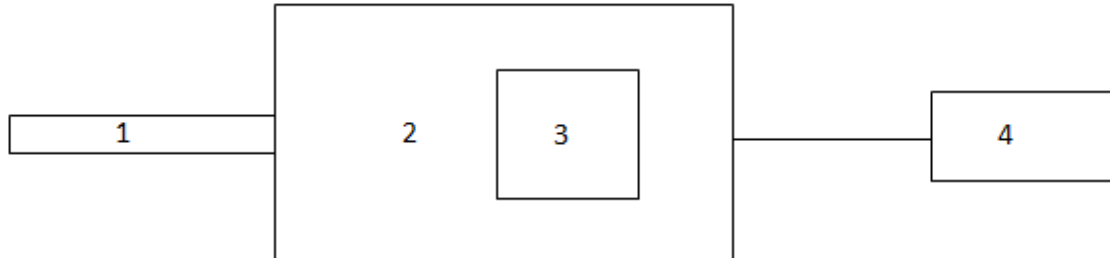
TÜV Rheinland Report Number 936/801004/A dated 6 August 2001

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Product Certified

The FWE 200 Dust Monitoring System consists of the following parts:



1. Sample Probe	2. Sample conditioning & Control	3. Analyser	4. Blower Unit
Model: Test gas probe FWE200	Model: Measurement and Control unit FWE200	Model: FWSE200	Model: 2BH1300

This certificate applies to all instruments fitted with software version FWE200 standard 03003224 Apr 14 2010 (serial number 13488380 onwards).

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Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: -20°C to +50°C

Instrument IP rating: IP54

Note: The measuring system is limited to installation in areas with shelter against precipitation, for example a porch roof, but precipitation may reach the instrument due to wind.

Results are expressed as error % certification range 0 to 15 mg/m³, unless otherwise stated.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time						
Dust (0 to 15 mg/m ³)					<66s	<200s
Dust (0 to 50 mg/m ³)					<66s	<200s
Dust (0 to 100 mg/m ³)					<65s	<200s
Dust (0 to 200 mg/m ³)					<65s	<400s
Repeatability standard deviation at zero point						
Dust	0.10					<2.0%
Repeatability standard deviation at reference point						
Dust			1.5		Note 1	<5.0%
Lack-of-fit						
Dust (0 to 15 mg/m ³)		0.67				<3.0%
Dust (0 to 50 mg/m ³)			-1.0			<3.0%
Dust (0 to 100 mg/m ³)		-0.50				<3.0%
Dust (0 to 200 mg/m ³)	-0.45					<3.0%
Influence of ambient temperature zero point						
Dust	-0.20					<5.0%
Influence of ambient temperature reference point						
Dust			-1.3			<5.0%

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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 Dust			1.3			<2.0%
Influence of voltage variations 190 to 250V Dust	0.3					<2.0%
Extractive CEMS for particulate matter Dust					Note 2	<2.0%
Measurement uncertainty Dust (For and ELV of 10 mg/m ³)					Guidance - at least 25% below max permissible uncertainty 6.2%	<22.5% (30%)
Calibration function (field) Dust					0.90 Note 3	>0.90
Response time (field) Dust					Note 4 <66s	<200s
Lack of fit (field) Dust (0 to 20 mg/m ³) Dust (0 to 45 mg/m ³) Dust (0 to 50 mg/m ³)	0.40	-0.50	1.0			<3.0% <3.0% <3.0%
Maintenance interval					One month Note 5	>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	The CEMS allows for recording zero and span drift and thus fulfils the requirements of QAL3 according to EN 14181. FWE 200 is equipped with an automatic contamination compensation function. A status signal is produced when the contamination runs out of specification or if zero or span values run out of the specified limit.					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 (field) Dust	<0.1					<3.0%
Change in reference point over maintenance interval (field) Dust	<0.1					<3.0%
Availability (field)					99.4%	>95%
Reproducibility (field) Dust				2.4		<3.3%

Note 1: Reported as % ELV (10 mg/m³ for dust).

Note 2: Extraction shall be in accordance with EN 13284-1.

Note 3: The calibration function result / R² values are between 0.90 and 0.98

Note 4: Field data taken from the original suitability report TÜV Rheinland Report No: 936/801004/A dated 6th August 2001 (FWE 200).

Note 5:

The following work is to be performed during the maintenance interval

- Visual inspection, check of span/zero, contamination, control cycle, temperature checks of sampling systems/flow.
- Monthly span check (QAL3 using check cycle or reference filters)
- For other work, the manufacturer's recommendations shall be followed.

The following procedures are recommended as a functional check and to be performed before calibration:

- Visual inspection of the instrument and sampling system (temperature, contamination etc.), detailed information can be found in the user manual.
- Linearity checks with reference materials
- Determination of lag and response time.
- Check of data transmission (analogue and status signals) to the evaluation system.
- Manufacturer's instructions should be followed.
- For details refer to EN 14181.

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Description

FWE 200 is an extractive dust monitor using the scattered light principle for dust concentration measurement in wet gas. The instrument extracts a sample flow from the flue gas duct via a probe. The extracted gas is superheated in a thermo cyclone before it is supplied to the scattered light cell.

By the use of different nozzles it is possible to perform an isokinetic or over isokinetic sampling which means the flow in the nozzle of the sampling probe is equal or higher than the gas velocity in the duct. The manufacturer states this minimizes the loss of particles.

FWE 200 is designed for applications where temperatures inside the exhaust gas duct are below the water dew point.

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 MC140249/00.
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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