

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

FWE200DH Dust Monitor

Manufactured by:

SICK Engineering GmbH

Bergener Ring 27
01458 Ottendorf-Okrilla

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), Version 4 dated July 2018
EN15267-1:2009, EN15267-2:2009, EN15267-3:2007,
& QAL 1 as defined in EN 14181: 2014**

Certification Ranges :

Dust 0 to 7.5 mg/m³
 0 to 15 mg/m³
 0 to 50 mg/m³
 0 to 100 mg/m³
 0 to 500 mg/m³

Project No. : 70162811/70219144
Certificate No : Sira MC0140249/03
Initial Certification : 25 April 2014
This Certificate issued : 24 April 2019
Renewal Date : 24 April 2024

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MCERTS is operated on behalf of the Environment Agency by

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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 IED Chapter III and IED Chapter IV 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 IED Chapter IV applications, and not more than 2.5X the ELV for IED Chapter III and other types of application.

The field test took place in the laboratory of TÜV Rheinland Energy GmbH in Cologne as well as in the waste gas of a large lignite power station (>8 months from June 2015 to February 2016) and 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

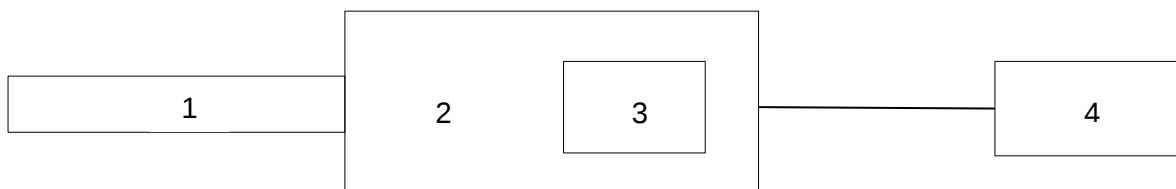
TUV Rheinland Report Number 936/21225956/A dated 25 February 2016

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Product Certified

The FWE200DH Dust Monitoring system measuring system consists of the following parts:



1. Sample Probe	2. Heated Filter	3. Analyser	4. Blower Unit
Model: Test gas probe FWE200DH*	Model: Measurement and Control unit FWE200DH	Model: DHSP200**	Model: SLV7 (2BH1100)

*The sampling line (length during test 1.2m) always has to be laid downwards to the sampling probe.

**The previous FW101 probe/sensor has been replaced by the DHSP200 probe/sensor. Therefore, the previous sensor is still valid for software version FWE200 standard 03003224 Apr 14 2010 (serial number 13488380).

This certificate applies to all instruments fitted with software versions:

- FWE200DH (control) V 01.02.06 onwards
- DHSP100/SP200 (measuring cell) V 01.06.04 onwards
- MCU V 01.12.02 onwards

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.

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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: 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.

Results are expressed as error % of certification range, 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 7.5 mg/m ³					16s	<200s
Dust 0 to 15 mg/m ³					17s	<200s
Dust 0 to 50 mg/m ³					14s	<200s
Dust 0 to 100 mg/m ³					17s	<400s
Dust 0 to 500 mg/m ³					17s	<400s
Repeatability standard deviation at zero point						
Dust	0.4					<2.0%
Repeatability standard deviation at reference point						
Dust		0.6				<5%
Lack-of-fit						
Dust 0 to 7.5 mg/m ³			1.2			<3.0%
Dust 0 to 15 mg/m ³		0.67				<3.0%
Dust 0 to 50 mg/m ³			-1.2			<3.0%
Dust 0 to 100 mg/m ³		-0.9				<3.0%
Dust 0 to 500 mg/m ³			1.2			<3.0%

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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 (-20°C to +50°C) Dust	0.3					<5.0%
Influence of ambient temperature reference point (-20°C to +50°C) Dust			-1.3			<5.0%
Influence of sample gas flow for extractive CEMS Dust		0.9				<2.0%
Influence of voltage variations (196V to 253V) Dust (196V to 253V) Dust (98V – 126V)		-0.7 -0.7			No influence No influence	<2.0% <2.0%
Measurement uncertainty Dust (For and ELV of 5 mg/m ³)					Guidance - at least 25% below max permissible uncertainty 7.2	<15% (20%)
Calibration function (field) Dust					<u>Note 1</u> 0.71	>0.90
Response time (field) Dust					17s	<200s
Lack of fit (field) Dust			1.6			<3.0%
Maintenance interval					<u>Note 2</u> 3 months	>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 200DH 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 Dust	0.5					<3.0%
Change in reference point over maintenance interval Dust				2.5		<3.0%
Availability					99.5	>95%
Reproducibility Dust				2.5		<10% Class 3

Note 1: The calibration function / R2 value was <0.9. However this was due to the relatively low dust levels during the field trial. The instrument passed the variability tests for the limit value 5mg/m³

Note 2: The FWE200DH has a maintenance interval of 3 months. The work detailed as per the manufacturer's instructions has to be carried out at regular intervals, depending on local conditions (quote TUV maintenance work, functional check and calibration (QAL2) information).

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Description

FWE200DH is an extractive dust monitor using 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 thermos 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.

FWE200DH 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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