PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

FWE200DH Dust Monitor

Manufactured by:

Endress+Hauser SICK GmbH+Co. KG

Bergener Ring 27
01458 Ottendorf-Okrilla
Germany

has been assessed by CSA Group
and for the conditions stated on this certificate complies with:

Environment Agency Guidance
"MCERTS for stack emissions monitoring equipment at industrial installations"
- Continuous emissions monitoring systems (CEMS)
Published 20 October 2020
EN 15267-1:2009, EN15267-2:2009, EN 15267-3:2007
& QAL 1 as defined in EN 14181: 2014

Certification ranges:

Dust	0 to 7.5 mg/m^3
	0 to 15 mg/m^3
	0 to 50 mg/m^3
	0 to 100 mg/m^3
	0 to 500 mg/m^3

Project No.:	80252988
Certificate No:	CSA MC140249/05
Initial Certification:	25 April 2014
This Certificate issued:	24 April 2025
Renewal Date:	24 April 2029

Andrew Young
Environmental Team Manager

MCERTS is operated on behalf of the Environment Agency by

CSA Group Testing UK Ltd
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
Tel: +44 (0)1244 670 900

Form 1335
Issue 12

Certificate Contents

Approved Site Application

Any potential user should make sure, in consultation with the manufacturer, that the monitoring system is suitable for the intended application. For further information on stack emissions monitoring refer to the Environment Agency's guidance available at www.mcerts.net

This instrument is considered suitable for use on waste incineration and large combustion plants. This CEMS 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. The lowest certified range for the determinand shall not be more than 1.5 times the daily average emission limit value (ELV) for incineration plants, and not more than 2.5 times the ELV for other types of applications.

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 CSA Group'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

Product Certified

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

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

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/m3					16s	<200s
Dust	0 to 15 mg/m3					17s	<200s
Dust	0 to 50 mg/m3					14s	<200s
Dust	0 to 100 mg/m3					17s	<400s
Dust	0 to 500 mg/m3					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/m3			1.2			<3.0%
Dust	0 to 15 mg/m3		0.67				<3.0%
Dust	0 to 50 mg/m3			-1.2			<3.0%
Dust	0 to 100 mg/m3		-0.9				<3.0%
Dust	0 to 500 mg/m3			1.2			<3.0%

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)		-0.7			No influence	<2.0%
Dust (98V – 126V)		-0.7			No influence	<2.0%
Measurement uncertainty					Guidance - at least 25% below max permissible uncertainty	
Dust (For and ELV of 5 mg/m^3)					7.2	<15% (20%)
Calibration function (field)					Note 1	
Dust					0.71	>0.90
Response time (field)						
Dust					17s	<200s
Lack of fit (field)						
Dust			1.6			<3.0%
Maintenance interval					Note 2	
					3 months	>8 days

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/m^3

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).

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 CSA Group Testing UK Ltd Certificates'.

2. The design of the product certified is held and maintained by TÜV Rheinland for certificate No. CSA MC140249.

3. If a certified product is found not to comply, CSA Group should be notified immediately at the address shown on this certificate.

4. The certification marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of CSA Group Testing UK Ltd Certificates'.

5. This document remains the property of CSA Group and shall be returned when requested by CSA Group.