

# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

## ***D-FL 220 measuring system***

Manufactured by:

### ***DURAG GmbH***

*Kollastraße 105  
22453 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 3.4 dated July 2012  
EN15267-3:2007,  
& QAL 1 as defined in EN 14181: 2004**

Certification Ranges :

Waste gas velocity 0 to 30 m/s

Project No. : 70005521  
Certificate No : Sira MC140252/00  
Initial Certification : 13 July 2014  
This Certificate issued : 13 July 2014  
Renewal Date : 12 July 2019

R Cooper | Eng MInst MC  
Technical Director

MCERTS is operated on behalf of the Environment Agency by

## **Sira Certification Service**

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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](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.

The field test took place for 6 months in the exhaust gas of a waste incineration plant.

## 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:

TUV Rheinland Report Number 936/21218490/B dated 28 March 2014

TUV Rheinland Report Number 936/21218490/B English Summary dated 28 March 2014

## Product Certified

The D-FL 220 measuring system\*\* consists of the following parts:

- D-FL 220 M: Sensor unit (2 pieces)
- D-TB 101: Terminal box for power supply
- D-BL: Purge air unit
- D-ESI 100: Software for parameterization and visualization of the measuring values and for AST, QAL 2 and QAL 3
- D-ISC 100: Display and control unit (option)

Allowable variations could include:

- D-ISC 100 could also be used as power supply unit (instead of D-TB 101) if mounted near the sensor units (max. 25m)

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This certificate applies to all D-FL 220 instruments fitted with software version V.01.05R0042, (serial number 1219202 onwards);

D-ISC 100 control unit fitted with software version 01.00R0000 onwards (serial number 1230662 onwards) and;

D-ESI 100 software version 1.1.006 onwards.

\*\* The D-FL 220 evaluation unit does not have a display or a control panel. Measured values and parameters are presented using the D-ESI 100 software. There is also an option to connect the system to a universal D-ISC 100 control unit to present measured values and parameters. When used with universal control unit D-ISC 100, the D-FL 220 evaluation unit's Modbus interface cannot be used.

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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: IP65

Results are expressed as error % certification range 0 to 30m/s, unless otherwise stated.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time					Note 1	
Velocity					30s	<200s
Repeatability standard deviation at zero point						
Velocity	0.10					<2.0%
Repeatability standard deviation at reference point						
Velocity	0.10					<2.0%
Lack-of-fit						
Velocity (D-FL 220)	0.33					<2.0%
Velocity (D-FL 220 with D-ISC 100)			1.5			<2.0%
Influence of ambient temperature zero point						
Velocity (D-FL 220)	0.10					<5.0%
Velocity (D-FL 220 with D-ISC 100)	-0.10					<5.0%
Influence of ambient temperature reference point						
Velocity (D-FL 220)		-0.70				<5.0%
Velocity (D-FL 220 with D-ISC 100)	0.30					<5.0%
Influence of voltage variations 190 to 250V						
Velocity	0.0					<2.0%
Influence of vibration (10 to 60Hz (±0.3mm), 60 to 160Hz at 1g)						
Velocity	-0.04					To be reported
Measurement uncertainty					Guidance - at least 25% below max permissible uncertainty	
Velocity					2.3%	<7.5% (10%)

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Calibration function (field) Velocity					>0.99	>0.90
Response time (field) Velocity					Note 1 30s	<200s
Lack of fit (field) Velocity	-0.43					<2.0%
Maintenance interval (field)					3 months	>8 days
Zero and Span drift requirement	<p>The recording of zero and span point drift is possible and meets the requirements of QAL3 in accordance with EN 14181. The measuring system has an internal checking cycle for checking zero point, span point and linearity. The measuring system itself does not perform any compensation.</p>					<p>Clause 6.13 &amp; 10.13</p> <p>Manufacturer shall provide a description of the technique to determine and compensate for zero and span drift.</p>
Change in zero point over maintenance interval (field) Velocity		0.94				<3.0%
Change in reference point over maintenance interval (field) Velocity			1.2			<3.0%
Availability (field)					99.9%	>95%
Reproducibility (field) Velocity			1.1			<3.3%

Note 1: No lag time (in-situ) – internal integration time was set at 30s for testing.

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## Description

The ultrasonic flow monitor D-FL 220 works on the acoustic pulse differential method. Two identical measuring heads alternately transmit and receive ultrasonic pulses and measure their transit time. The measuring heads are installed at an angle of 30° to 60° to the flow direction. There is a directionally-dependent difference in the transit time of the ultrasonic pulses, from which the system precisely calculates the gas velocity and the temperature of the gas that is measured. By reference to the cross-section, the gas temperature, and the absolute pressure, the D-FL 220 calculates the volumetric flow and the standardised flow.

The D-FL 220 flow monitor is suitable for use in a wide range of applications such as power plants, incineration plants, cement industry, iron and steel manufacturing and other industries to monitor gas velocities for process control measurements and for emission monitoring purposes.

The D-FL 220 is especially designed for flow monitoring below the dew point and for aggressive gases. The sensors are completely decoupled from the gas by means of purge air.

## 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 MC140252/00.
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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