

# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

## ***D-R 820F extractive dust monitor***

Manufactured by:

### ***DURAG GmbH***

*Kollaustraße 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 3.5 dated June 2016**

**EN15267-3:2007,  
& QAL 1 as defined in EN 14181: 2004**

Certification Ranges :

Particulate concentration:

0 to 15 mg/m<sup>3</sup>  
0 to 100 mg/m<sup>3</sup>

Project No. : 16A28272/ 70164333  
Certificate No : Sira MC120204/01  
Initial Certification : 01 October 2012  
This Certificate issued : 04 December 2017  
Renewal Date : 30 September 2022

Joe Prince, MSc, MInst MC  
Certification Manager

MCERTS is operated on behalf of the Environment Agency by

## **Sira Certification Service**

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



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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.

Two field tests were conducted. The first was on a municipal power plant from 16 December 2009 to 16 March 2010. The second was conducted on a local municipal waste incinerator from 10 August 2011 to 09 January 2012 (interrupted from 27 September 2011 to 28 November 2011).

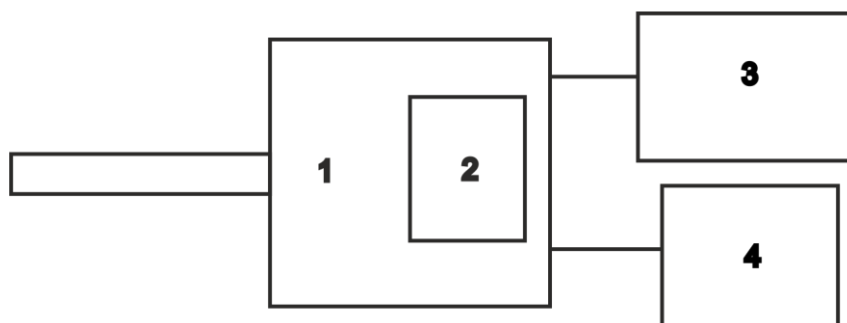
## Basis of Certification

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 936/21210225/A dated 21 March 2012

## Product Certified

The D-R 820F measuring system consists of the following parts:



1. Sample Probe incl. gas conditioning	2. Analyser	3. Supply Unit	4. Blower Unit
Model: D-R 820F P	Model: D-R 800F	Model: D-R 820F SU	Model: D-R 820F BL

This certificate applies to all instruments fitted with software version 1.15h (from manufacturing date November 2008).

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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

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.

Unless otherwise stated, testing was done on the range 0 to 15 mg/m<sup>3</sup>

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time					<16 s	<200s
Repeatability standard deviation at zero point			1.5			<2.0%
Repeatability standard deviation at reference point				5.0	Note 1	<5.0%
Lack-of-fit 0 to 15 mg/m <sup>3</sup> 0 to 100 mg/m <sup>3</sup>			1.2	-2.9		<3.0% <3.0%
Influence of ambient temperature zero point				2.1		<5.0%
Influence of ambient temperature reference point	0.2					<5.0%
Influence of voltage variations 196 to 253V	-0.2					<2.0%
Measurement uncertainty					Guidance - at least 25% below max permissible uncertainty 12.3%	<22.5%
Calibration function (field)					0.75-0.93 Note 2	>0.90
Response time (field)					<14 s	<200s
Lack of fit (field)			1.2			<2.0%
Maintenance interval					4 weeks	>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	It is possible to record zero and span drift. This complies with the requirements of the QAL3 according to EN 14181. On reaching the limits of automatic drift correction, a status signal is set.					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	0.3					<3.0%
Change in reference point		0.8				<3.0%
Availability					98.2%	>95%
Reproducibility for concentrations >20 mg/m <sup>3</sup>			1.8			<2.0%
Reproducibility for concentrations <20 mg/m <sup>3</sup>				3.3		<3.3%

Note 1: Reported as a percentage of daily average emission limit value (ELV) of 10 mg/m<sup>3</sup>.

Note 2: The calibration function/R<sub>2</sub> values are between 0.75 and 0.93 due to relatively constant dust levels during the field test. The CEMS pass the EN14181 criteria, but not the requirement for EN15267-3 under these circumstances.

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## Description

The D-R 820F is a sensitive system for continuous extractive dust concentration measurement in accordance with the scattered light principle.

Wet sample gas is extracted from the process, diluted by hot dilution gas, heated to vaporize water droplets and analysed by help of a scattered light dust monitor D-R 800F. The measuring device D-R 800F operates according to the forward scattering principle. The concentrated and modulated light of a laser diode penetrates the measuring volume. The light scattered by the dust particles is largely scattered forwards. The light is scattered in proportion to the dust concentration present and guided by an optical waveguide to the receiving diode, where it is processed to the desired end variable by sensing electronics.

The approved version of the D-R 820F consists of a special sampling probe, a gas conditioning unit (dilution, tempering), the laser dust monitor, an injector, two fans and an electronic evaluation unit. The sampling probe and the measuring chamber form an assembly. During the automatic zero point and span check cycle a contamination measurement of all optical components is performed and the measurement values are corrected automatically. The dilution ratio is determined and used to correct the signal of the D-R 800F.

The D-R 820F is suited for monitoring dust concentration in wet gases, e.g. measurements in saturated gas after desulphurization plants, measurement behind wet gas scrubbers, and measurement at waste incineration plants.

## 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 120204/01
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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