Umwelt Bundesamt

TÜVRheinland®
Precisely Right.

CERTIFICATE

of Product Conformity (QAL1)

Certificate No: 0000035014_02

Certified AMS:	PFM 06 ED for dust
Manufacturer:	Dr. Födisch Umweltmesstechnik AG Zwenkauer Str. 159 04420 Markranstädt Germany
Test Institute:	TÜV Rheinland Energy GmbH

This is to certify that the AMS has been tested and found to comply with the standards EN 15267-1 (2009), EN 15267-2 (2009), EN 15267-3 (2007) and EN 14181 (2015).

Certification is awarded in respect of the conditions stated in this certificate (this certificate contains 6 pages).
The present certificate replaces certificate 0000035014_01 dated 18 July 2017.

TÜVRheinland® CERTIFIED

Suitability Tested
EN 15267
QAL1 Certified
Regular Surveillance

www.tuv.com
ID 0000035014

Publication in the German Federal Gazette (BAnz) of 20 July 2012

German Environment Agency
Dessau, 20 July 2022

This certificate will expire on:
19 July 2027

TÜV Rheinland Energy GmbH
Cologne, 19 July 2022

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Test institute accredited to EN ISO/IEC 17025 by DAkkS (German Accreditation Body).
This accreditation is limited to the accreditation scope defined in the enclosure to the certificate D-PL-11120-02-00.

Test report:	936/21218036/A dated 23 March 2012
Initial certification:	20 August 2012
Expiry date:	19 July 2027
Certificate:	Renewal (of previous certificate 0000035014_01 dated 18. Juli 2017 valid until 19 July 2022)
Publication:	BAnz AT 20.07.2012 B11, Chap. I No. 1.2

Approved application
The tested AMS is suitable for use at plants according to Directive 2010/75/EU, chapter III (13th BImSchV:2009), chapter IV (17th BImSchV:2009), 30th BImSchV:2009, Directive 2015/2193/EC (44th BImSchV:2021), TA Luft:2002 and at plants according to the 27th BImSchV:1997. The measured ranges have been selected so as to ensure as broad a field of application as possible.

The suitability of the AMS for this application was assessed on the basis of a laboratory test and two three months field test at a municipal waste incinerator and a municipal heat and power plant (lignite-fired).

The AMS is approved for an ambient temperature range of -20° to +50°C.

The notification of suitability of the AMS, performance testing and the uncertainty calculation have been effected on the basis of the regulations applicable at the time of testing. As changes in legal provisions are possible, any potential user should ensure that this AMS is suitable for monitoring the emission limit values relevant to the application.

Any potential user should ensure, in consultation with the manufacturer, that this AMS is suitable for the installation at which it will be installed.

Note:
The legal regulations mentioned do not correspond to the current state of legislation in every case. Each user should, if necessary, in consultation with the competent authority, ensure that this AMS meets the legal requirements for the intended use. In addition, it cannot be ruled out that legal regulations governing the use of a measuring device for emission monitoring may change during the lifetime of the certificate.

Basis of the certification
This certification is based on:

- Test report 936/21218036/A dated 23 March 2012
  of TÜV Rheinland Energie und Umwelt GmbH
- Suitability announced by the German Environment Agency (UBA)
  as the relevant body
- The ongoing surveillance of the product and the manufacturing process

Publication in the German Federal Gazette: BAnz AT 20.07.2012 B11, Chap. I No. 1.2, Announcement by UBA dated 06 July 2012:

AMS designation:
PFM 06 ED for dust

Manufacturer:
Dr. Födisch Umweltmesstechnik AG, Markranstädt

Field of application:
For plants requiring official approval and for plants according to the 27th BImSchV

Measuring ranges during the performance test:

Component	Certification range	Supplementary measurement ranges	Unit
Total dust	0 - 15	0 – 100	mg/m³

Software version:
1.15h

Restriction/s:
None

Notes:
1. The maintenance interval is four weeks.
2. The requirement of the EN 15267-3 for the correlation coefficient R^2 of the calibration function was not met during the suitability test.

Test report:
TÜV Rheinland Energie und Umwelt GmbH, Cologne
Report No.: 936/21218036/A dated 23 March 2012

Publication in the German Federal Gazette: BAnz AT 26.08.2015 B4, chapter V notification 33, Announcement by UBA dated 22 July 2015:

33 Notification as regards Federal Environment Agency (UBA) notices of 6 July 2012 (BAnz AT 20.07.2012 B11, chapter I number 1.2)

The current software version for the PFM 06 ED measuring system for dust, manufactured by Dr. Födisch Umweltmesstechnik AG, is:
1.15j.

Statement of TÜV Rheinland Energie und Umwelt GmbH of 18 February 2015

Publication in the German Federal Gazette: BAnz AT 24.03.2020 B7, Chap. IV Note 11, Announcement by UBA dated 24 February 2020:

11 Notification as regards Federal Environment Agency (UBA) notices of 6 July 2012 (BAnz AT 20.07.2012 B11, chapter I number 1.2) and of 22 July 2015 (BAnz AT 26.08.2015 B4, chapter V notification 33)

The latest software version of the PFM 06 ED measuring system for dust manufactured by Dr. Födisch Umweltmesstechnik AG is:
1.15l

Statement issued by TÜV Rheinland Energy GmbH dated 21 January 2020

Certified product

This certificate applies to automated measurement systems conforming to the following description:

The PFM 06 ED measuring system is an optical, extractive instrument intended for the continuous measurement of dust concentrations. A defined sample flow is extracted from the gas flow. This partial flow is continuously heated and diluted with purged, heated ambient air (35 to 70%). The partial flow is optically measured in the measurement chamber.
The PFM 06 ED measuring system operates on basis of the scattered light measuring principle (forward scattering). A focused and modulated light beam of a laser diode travels through the gas flow. Via optical fibres, the scattered light is led to the receiver diode, where it is processed.
The tested measuring system PFM 06 ED consists of the following components:

- a special sampling probe;
- a laser-based dust measuring system (scattered light principle);
- Gas conditioning unit (dilution, heating);
- an injector for transporting gas;
- two blower systems (for injected air and diluting air);
- an electronic evaluation unit and
- a manual.

The sampling probe and the measuring chamber form an assembly. The probe i.e. the extracting tube is heated and double walled with an integrated dilution. Dilution is realized via a mixing nozzle. Processing of the extracted measuring gas and logging of the measured data takes place in the probe. The latter is integrated in a two-piece protecting enclosure made of glass-fibre amplified synthetic material. The protection enclosure is mounted directly to the flange.
The PFM 06 ED measuring system continuously extracts a partial sample flow from the gas flow. Test gas is diluted as defined. Simultaneously, the gas mixture is heated. Subsequently, the extracted, diluted and heated test gas passes through the measuring cell and is finally led out of the measuring system.
For diagnosis and cleaning purposes, the PFM 06 ED carries out cleaning activities automatically. Zero and span point checks and the cleaning of gas carrying parts are carried out. Moreover, the scattered light value of the optical sensor without dust is determined. In the event of excessive deviations, a warning signal is set.
Reference filters are available for QAL3 and AST activities.

General notes
This certificate is based upon the equipment tested. The manufacturer is responsible for ensuring that on-going production complies with the requirements of the EN 15267. 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 systems shall be subject to regular surveillance.

If a product of the current production does not conform to the certified product, TÜV Rheinland Energy GmbH must be notified at the address given on page 1.

A certification mark with an ID-Number that is specific to the certified product is presented on page 1 of this certificate. This certification mark may be applied to the product or used in advertising materials for the certified product.

This document and the certification mark remains property of TÜV Rheinland Energy GmbH. With revocation of the publication the certificate loses its validity. After the expiration of the certificate and on requests of the TÜV Rheinland Energy GmbH this document shall be returned and the certificate mark must not be employed anymore.

The relevant version of this certificate and its expiration is also accessible on the internet: **qal1.de**.

History of documents
Certification of PFM 06 ED is based on the documents listed below and the regular, continuous monitoring of the Quality Management System of the manufacturer:

Initial certification according to EN 15267

Certificate No. 0000035014_00: 20 August 2012
Expiry date of the certificate: 19 July 2017
Test report 936/21218036/A dated 23 March 2012
TÜV Rheinland Energie und Umwelt GmbH
Publication BAnz AT 20.07.2012 B11, chapter I number 1.2
UBA announcement dated 6 July 2012

Notifications
Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 18 February 2015
Publication BAnz AT 26.08.2015 B4, chapter V notification 33
UBA announcement dated 22 July 2015
(Software changes)

Renewal of certificate
Certificate No. 0000035014_01: 18 July 2017
Expiry date of the certificate: 19 July 2022

Notifications
Statement issued by TÜV Rheinland Energy GmbH dated 21 January 2020
Publication BAnz AT 24.03.2020 B7, chapter IV notification 11
UBA announcement dated 24 February 2020
(Software changes)

Renewal of certificate
Certificate No. 0000035014_02: 20 July 2022
Expiry date of the certificate: 19 July 2027

Calculation of overall uncertainty according to EN 14181 and EN 15267-3

Measuring system					
Manufacturer			Dr. Födisch Umweltmesstechnik AG		
Name of measuring system			PFM 06 ED		
Serial number of the candidates			EP 1 7196 / EP 2 7197		
Measuring principle			Scattered light (extractive sampling)		
Test report			936/21218036/A		
Test laboratory			TÜV Rheinland		
Date of report			2012-03-23		
Measured component			Dust		
Certification range			0 - 15 mg/m³		

Calculation of the combined standard uncertainty

Tested parameter				u^2	
Repeatability standard deviation at set point *	u_r		mg/m³	0.250	(mg/m³)²
Lack of fit	u_{lof}		mg/m³	0.065	(mg/m³)²
Zero drift from field test	$u_{d,z}$		mg/m³	0.003	(mg/m³)²
Span drift from field test	$u_{d,s}$	-0.140	mg/m³	0.020	(mg/m³)²
Influence of ambient temperature at span	u_t	0.015	mg/m³	0.000	(mg/m³)²
Influence of supply voltage	u_v	0.015	mg/m³	0.000	(mg/m³)²
Influence of sample gas flow	u_p		mg/m³	0.043	(mg/m³)²
Uncertainty of reference material at 70% of certification range	u_{rm}		mg/m³	0.015	(mg/m³)²

* The larger value is used :
"Repeatability standard deviation at span" or
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u_C)	$u_c = \sqrt{\sum (u_{max,j})^2}$	0.63	mg/m³
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	1.23	mg/m³

Relative total expanded uncertainty	**U in % of the ELV 10 mg/m³**	**12.3**
Requirement of 2000/76/EC and 2001/80/EC	**U in % of the ELV 10 mg/m³**	**30.0**
Requirement of EN 15267-3	U in % of the ELV 10 mg/m³	22.5