

# CERTIFICATE

## of Product Conformity (QAL1)

Certificate number: 0000001016\_03

**Certified AMS:** FMD 09 for velocity

**Manufacturer:** Dr. Födisch Umweltmesstechnik AG  
Zwenkauer Straße 159  
04420 Markranstädt  
Germany

**Test Institute:** TÜV Rheinland Energy GmbH

**This is to certify that the AMS has been tested and certified  
according to the standards**

**EN 15267-1 (2009), EN 15267-2 (2009), EN 15267-3 (2007)  
and EN 14181 (2004)**

Certification is awarded in respect of the conditions stated in this certificate  
(this certificate contains 7 pages).



Suitability Tested  
EN 15267  
QAL1 Certified  
Regular  
Surveillance

www.tuv.com  
ID 0000001016

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

German Federal Environment Agency  
Dessau, 22 July 2016

This certificate will expire on:  
28 July 2021

TÜV Rheinland Energy GmbH  
Cologne, 21 July 2016



Dr. Marcel Langner  
Head of Section II 4.1



ppa. Dr. Peter Wilbring

[www.umwelt-tuv.eu](http://www.umwelt-tuv.eu)  
[tre@umwelt-tuv.eu](mailto:tre@umwelt-tuv.eu)  
Tel. + 49 221 806-5200

TÜV Rheinland Energy GmbH  
Am Grauen Stein  
51105 Köln

Test institute accredited to EN ISO/IEC 17025:2005 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

**Certificate:**  
0000001016\_03 / 22 July 2016

**Test report:** 936/21212361/C of 20 March 2012  
**Initial certification:** 29 July 2011  
**Expiry date:** 28 July 2021  
**Certificate:** renewal (previous certificate 0000001016\_02 dated from 20 August 2012 with validity up to the 28 July 2016)  
**Publication:** BAnz AT 20.07.2012 B11, chapter II, No. 2.2

### **Approved application**

The tested AMS is suitable for use at combustion plants according to Directive 2010/75/EU, chapter III (13. BImSchV), at waste incineration plants according to Directive 2010/75/EU, chapter IV (17. BImSchV) and other plants requiring official approval. The measured ranges have been selected considering the wide application range of the AMS.

The suitability of the AMS for this application was assessed on the basis of a laboratory test and a six-month field test at a waste incineration plant.

The AMS is approved for an ambient temperature range of -20 °C 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 valid at the time of performance testing. As changes in legal regulations are possible, any potential user should ensure that this AMS is suitable for monitoring the Flow 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.

### **Basis of the certification**

This certification is based on:

- test report 936/21212361/C of 20 March 2012 of TÜV Rheinland Energie und Umwelt GmbH
- suitability announced by the German Federal 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, chapter II, number 2.2,  
Announcement by UBA from 06 July 2012:

**AMS designation:**

FMD 09 for velocity

**Manufacturer:**

Dr. Födisch Umweltmesstechnik AG, Markranstädt

**Field of application:**

For measurements at plants requiring official approval and plants according to 27<sup>th</sup> BImSchV

**Measuring ranges during the performance test:**

Component	Certification range	supplementary measurement range	Unit
Velocity	2 – 30	2 – 60	m/s

**Software versions:**

Main Version: 2.0,  
I/O Version: 1.1

**Restriction:**

The lower limit of the velocity measuring range is 2 m/s.

**Notes:**

1. The maintenance interval is three months.
2. Subsequent to problems with filters due to high exposure to dust, the probe needs to be checked for contamination and cleaned if necessary.
3. The SMAR LD301 may be used as pressure transmitter in a range of 0 - 500 Pa or 0 - 1000 Pa.
4. Complementary testing (additional measuring ranges) to Federal Environmental Agency notice of 23 February 2012 (BAnz. p. 920, chapter II, No. 2.1).

**Test report:**

TÜV Rheinland Energie und Umwelt GmbH, Cologne  
Report No.: 936/21212361/C of 20 March 2012

Publication in the German Federal Gazette: BAnz AT 05.03.2013 B10, chapter V notification 25,  
Announcement by UBA from 12 February 2013:

**25 Notification as regards Federal Environment Agency (UBA) notices of  
6 July 2012 (Federal Gazette BAnz AT 20.07.2012 B11, chapter II, No. 2.2)**

The current software versions of the FMD 09 measuring system for exhaust gas velocity  
manufactured by Dr. Födisch Umweltmesstechnik AG are:

Main Version: 2.07  
I/O Version: 1.13

Statement of TÜV Rheinland Energie und Umwelt GmbH of 15 October 2012

### Certified product

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

The volumetric flow measurement FMD 09 is based on the determination of the differential pressure in drifty flue gas with help of a back pressure probe and a pressure sensor. The measurement device is an in-situ analyser. The measured values from the pressure transmitter are transferred as 4 - 20 mA measuring signal to the evaluation electronics which are located in the measuring device.

In the evaluation electronics transfers of the differential pressure signal for the boundary conditions and the stack cross section take place. The stack temperature is continuously measured by a temperature sensor (PT100) which is integrated in the back pressure probe. The flow signal can be corrected by the measured temperature in the evaluation electronic.

The output of the volume flow- or rather the velocity signal is carried out by different free selectable 4 – 20 mA analog outputs. The measurement ranges of these outputs can be diversified. In addition the stack temperature can be outputted by the analog outputs. It is possible to show either the actual measurement value or a line chart on the instrument display.

The control- and display unit is integrated into a weather protected housing. The display shows all measured values, the status information and parameters. Using a keyboard it is possible to configure the display and to adapt the parameters specific for the instrument.

Optional the possibility exists to connect an absolute pressure transmitter, through which the absolute pressure at the measurement area can be determined. This one has not been included in the version for the aptitude test. The signal of the absolute pressure transmitter can be used as offset in the emission calculation. An offset of the evaluation electronics of the FMD 09 has not been tested.

### 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 can be applied to the product or used in publicity material for the certified product.

This document as well as 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](http://qal1.de).

Certification of FMD 09 for velocity 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. 0000001016: 19 August 2011  
Expiry date of the certificate: 28 July 2016

Test report: 936/21212361/A of 23 March 2011  
TÜV Rheinland Energie und Umwelt GmbH, Cologne  
Publication: BAnz. 29 July 2011, No. 113, p. 2725, chapter II, Nr. 1.1  
Announcement by UBA from 15 July 2011

**Supplementary testing according to EN 15267**

Certificate No. 0000001016\_01: 16 March 2012  
Expiry date of the certificate: 28 July 2016

Test report: 936/21212361/B of 19 October 2011  
TÜV Rheinland Energie und Umwelt GmbH, Cologne  
Publication: BAnz. 02 March 2012, No. 36, p. 920, chapter II, No. 2.1  
Announcement by UBA from 23 February 2012

Certificate No. 0000001016\_02: 20 August 2012  
Expiry date of the certificate: 28 July 2016

Test report: 936/21212361/C of 20 March 2012  
TÜV Rheinland Energie und Umwelt GmbH, Cologne  
Publication: BAnz AT 20.07.2012 B11, chapter II, No. 2.2  
Announcement by UBA from 06 July 2012

**Notifications according to EN 15267**

Statement of TÜV Rheinland Energie und Umwelt GmbH of 15 October 2012  
Publication BAnz AT 05.03.2013 B10, chapter V notification 25  
Announcement by UBA from 12 February 2013  
(new software version)

**Renewal of the certificate**

Zertifikat Nr. 0000001016\_03: 22 July 2016  
Gültigkeit des Zertifikats: 28 July 2021

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

**Measuring system**

Manufacturer	Dr. Födisch Umweltmesstechnik AG
Name of measuring system	FMD 09
Serial number of the candidates	09130 / 09131
Measuring principle	Differential pressure measurement

**Test report**

Test laboratory	936/21212361/A / 936/21212361/B / 936/21212361/C
Date of report	TÜV Rheinland 2011-03-23 / 2011-10-19 / 2012-03-20

**Measured component**

Certification range	Volume 0 - 30 m/s
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**Calculation of the combined standard uncertainty**

**Tested parameter**

	u	u <sup>2</sup>
Standard deviation from paired measurements under field conditions *	u <sub>D</sub> 0.127 m/s	0.016 (m/s) <sup>2</sup>
Lack of fit	u <sub>lof</sub> -0.196 m/s	0.038 (m/s) <sup>2</sup>
Zero drift from field test	u <sub>d,z</sub> 0.000 m/s	0.000 (m/s) <sup>2</sup>
Span drift from field test	u <sub>d,s</sub> 0.173 m/s	0.030 (m/s) <sup>2</sup>
Influence of ambient temperature at span	u <sub>t</sub> 0.058 m/s	0.003 (m/s) <sup>2</sup>
Influence of supply voltage	u <sub>v</sub> 0.059 m/s	0.003 (m/s) <sup>2</sup>

\* The larger value is used :

"Repeatability standard deviation at span" or

"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u <sub>c</sub> )	$u_c = \sqrt{\sum (u_{max j})^2}$	0.30 m/s
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.59 m/s

**Relative total expanded uncertainty**

Requirement of 2000/76/EC and 2001/80/EC	<b>U in % of the ELV 30 m/s</b>	<b>2.0</b>
Requirement of EN 15267-3	<b>U in % of the ELV 30 m/s</b>	<b>10.0 **</b>
	<b>U in % of the ELV 30 m/s</b>	<b>7.5</b>

\*\* For this component no requirements in the EC-directives 2001/80/EG und 2000/76/EG are given.  
A value of 10.0 % was used for this.