

CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000059868

AMS designation: FIDAMAT 6 MEASURING SYSTEM for TOC

Manufacturer: SIEMENS AG
Östliche Rheinbrückenstraße 50
76187 Karlsruhe
Germany

Test Laboratory: 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: 2015.

Certification is awarded in respect of the conditions stated in this certificate
(this certificate contains 6 pages).



Suitability Tested
EN 15267
QAL1 Certified
Regular
Surveillance

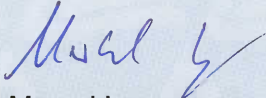
www.tuv.com
ID 0000059868

Publication in the German Federal Gazette
(BAnz) of 17 July 2018

This certificate will expire on:
16 July 2023

German Federal Environment Agency
Dessau, 4 September 2018

TÜV Rheinland Energy GmbH
Cologne, 3 September 2018


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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:
0000059868 / 4 September 2018

Test Report: 936/21235670/A dated 12 December 2017
Initial certification: 17 July 2018
Expiry date: 16 July 2023
Publication: BAnz AT 17.07.2018 B9, chapter I number 3.1

Approved application

The tested AMS is suitable for use at combustion plants according to Directive 2010/75/EU, chapter III (13th BImSchV), the 30th and 31st BImSchV and TA Luft. The measured ranges have been selected so as to cater for 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 a three-months field test at a waste incineration plant.

The AMS is approved for an ambient temperature range of +5 °C to +40 °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 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.

Basis of the certification

This certification is based on:

- Test report 936/21235670/A dated 12 December 2017 issued by TÜV Rheinland Energy 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 17.07.2018 B9, chapter I number 3.1, UBA announcement dated 3 July 2018:

AMS designation:

FIDAMAT 6 MEASURING SYSTEM for TOC

Manufacturer:

SIEMENS AG, Karlsruhe

Field of application:

For plants according to 13th BImSchV, 30th BImSchV, 31st BImSchV and TA Luft

Measuring ranges during performance testing:

Component	Certification range	Supplementary measuring ranges			Unit
TOC	0–15	0–50	0–150	0–500	mg/m ³

Software version:

1.3.6

Restriction:

To operate this measuring system, an oxygen analyser is required at the same measurement point to compensate for cross-sensitivity. That oxygen analyser must be certified to EN 15267 and operated in accordance with EN 14181.

Note:

The maintenance interval is four weeks.

Test Report:

TÜV Rheinland Energy GmbH, Cologne
Report no.: 936/21235670/A dated 12 December 2017

Certified product

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

The AMS FIDAMAT 6 MEASURING SYSTEM is a flame ionisation detector (FID). The conductivity of a hydrogen flame in which the sample gas is burned serves as a physical indicator. Sample gas is ionised in that flame. Ions thus released are collected and their number determined. The quantity of detected ions serves as an indicator for the number of organic carbon atoms present in the sample gas.

The tested AMS consists of:

- FIDAMAT 6 analyser
- Analyser cabinet
- Heated sample probe (180 °C) c/w controller, M&C SP2000
- Heated line (180 °C), max 50 m, c/w controller, inner liner made of Teflon
- Software version: 1.3.6

An integrated diaphragm pump supplies the sample gas to the FIDAMAT 6 measuring system via a heated line and an additional filter, and to the flame ionisation detector via a clog-resistant quartz glass limiter. Inside the detector, hydrocarbons present in the sample gas are burned in an oxygen-hydrogen flame. Organic hydrocarbons are ionised during the combustion process.

Ions thus released are converted into an ion current as a result of the polarisation potential between the electrodes and are measured with the help of a highly-sensitive amplifier. The measured current is proportional to the number of organic C atoms of the hydrocarbons present in the sample gas.

A pressure controller keeps the hydrogen pressure at a constant level. A dove-tailed system consisting of a pump, capillaries and combustion-air pressure control ensures constant sample gas pressure.

General remarks

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 manufacturing process for 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 document as well as the certification mark remains property of TÜV Rheinland Energy GmbH. Upon revocation of the publication the certificate loses its validity. After the expiration of the certificate and on request of TÜV Rheinland Energy GmbH this document shall be returned and the certificate mark must no longer be used.

The relevant version of this certificate and its expiration date are also accessible on the internet at qal1.de.

Certification of the FIDAMAT 6 MEASURING SYSTEM is based on the documents listed below and the regular, continuous surveillance of the manufacturer's quality management system:

Initial certification according to EN 15267

Certificate no. 0000059868: 4 September 2018
Expiry date of the certificate: 16 July 2023
Test report: 936/21235670/A dated 12 December 2017
TÜV Rheinland Energy GmbH, Cologne
Publication: BAnz AT 17.07.2018 B9, chapter I number 3.1
UBA announcement dated 3 July 2018

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

Measuring system

Manufacturer	Siemens AG
AMS designation	FIDAMAT 6 MEASURING SYSTEM
Serial number of units under test	H5-301 / H5-302
Measuring principle	FID

Test report

Test laboratory	936/21235670/A
Date of report	TÜV Rheinland
	2017-12-12

Measured component

Certification range	TOC	0 - 15 mg/m ³
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Evaluation of the cross-sensitivity (CS)

(system with largest CS)

Sum of positive CS at zero point	0.43 mg/m ³
Sum of negative CS at zero point	0.00 mg/m ³
Sum of positive CS at span point	0.50 mg/m ³
Sum of negative CS at span point	-0.20 mg/m ³
Maximum sum of cross-sensitivities	0.50 mg/m ³
Uncertainty of cross-sensitivity	u_i 0.289 mg/m ³

Calculation of the combined standard uncertainty

Tested parameter

			u^2
Standard deviation from paired measurements under field conditions *	u_D	0.022 mg/m ³	0.000 (mg/m ³) ²
Lack of fit	u_{lof}	0.017 mg/m ³	0.000 (mg/m ³) ²
Zero drift from field test	$u_{d,z}$	-0.104 mg/m ³	0.011 (mg/m ³) ²
Span drift from field test	$u_{d,s}$	0.260 mg/m ³	0.068 (mg/m ³) ²
Influence of ambient temperature at span	u_t	0.115 mg/m ³	0.013 (mg/m ³) ²
Influence of supply voltage	u_v	0.040 mg/m ³	0.002 (mg/m ³) ²
Cross-sensitivity (interference)	u_i	0.289 mg/m ³	0.084 (mg/m ³) ²
Influence of sample gas flow	u_p	-0.040 mg/m ³	0.002 (mg/m ³) ²
Uncertainty of reference material at 70% of certification range	u_{rm}	0.121 mg/m ³	0.015 (mg/m ³) ²
Variation of response factors (TOC)	u_{rf}	0.456 mg/m ³	0.208 (mg/m ³) ²

* The larger value is used :

"Repeatability standard deviation at set point" 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/m ³
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	1.24 mg/m ³

Relative total expanded uncertainty

Requirement of 2010/75/EU	U in % of the ELV 6 mg/m³	20.7
Requirement of EN 15267-3	U in % of the ELV 6 mg/m³	30.0
	U in % of the ELV 6 mg/m³	22.5