

CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000074629_00

AMS designation: CEMSelect FID for TOC

Manufacturer: Bühler Technologies GmbH
Harkortstraße 29
40880 Ratingen
Germany

Test Laboratory: 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)
EN 12619 (2013) and EN 14181 (2014).**

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

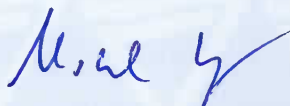
www.tuv.com
ID 0000074629

Publication in the German Federal Gazette
(BAnz) of 05 August 2021

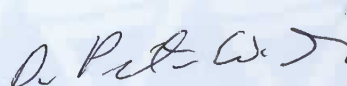
This certificate will expire on:
04 August 2026

German Federal Environment Agency
Dessau, 03 September 2021

TÜV Rheinland Energy GmbH
Cologne, 02 September 2021



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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 certificate D-PL-11120-02-00.

Test Report:	936/21251816/A of 03 May 2021
Initial certification:	03 September 2021
Expiry date:	04 August 2026
Publication:	BAnz AT 05.08.2021 B5, chap. I No. 2.1

Approved application

The tested AMS is suitable for use at combustion plants according to Directive 2010/75/EU, chapter III (13th BImSchV), chapter IV (17th BImSchV), 30th BImSchV, 44th BImSchV, plants in compliance with TA Luft and plants according to the 27th BImSchV. 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 a three-months field test at a municipal waste incinerator.

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 intended purpose.

Basis of the certification

This certification is based on:

- Test report 936/21251816/A of 03 May 2021 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 05.08.2021 B5, chap. I No. 2.1 ,
UBA announcement dated 29 June 2021 :

AMS designation:

CEMSelect FID for TOC

Manufacturer:

Bühler Technologies GmbH, Ratingen

Field of application:

For plants requiring official approval and for plants according to the 27th BImSchV

Measuring ranges during performance testing:

Component	Certification range	Supplementary measuring ranges				Unit
TOC	0 – 15	0 – 50	0 – 150	0 – 500	0 – 3000	mg/m ³

Software version:

1.3.8

Restriction:

None

Notes:

1. The maintenance interval is four weeks.
2. The ending -37 on the type plate identifies the Fidamat 6 analyser module.
3. The automatic zero and span check must be deactivated for operation.

Test Report:

TÜV Rheinland Energy GmbH, Cologne
Report no.: 936/21251816/A of 03 May 2021

Certified product

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

The test gas is fed to the CEMSelect FID from the built-in diaphragm pump via a heated line and an additional filter, and is guided to the flame ionisation detector via a non-clogging 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.

The AMS tested here comprises the following components:

- FIDAMAT 6 analyser
- Analyser cabinet
- Heated sampling probe (180 °C) incl. controller, M&C SP2000
Alternative: Bühler GAS 222.20 sampling probe
- Heated line (180 °C), max 50 m, including controller, inner liner made of Teflon

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.

Document history

Certification of the CEMSelect FID 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. 0000074629_00: 03 September 2021
Expiry date of the certificate: 04 August 2026
Test report 936/21251816/A of 03 May 2021
TÜV Rheinland Energy GmbH, Cologne
Publication: BAnz AT 05.08.2021 B5, chap. I No. 2.1
UBA announcement dated 29 June 2021 :

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

Measuring system

Manufacturer	Bühler Technologies GmbH
AMS designation	CEMSelect FID
Serial number of units under test	L-4597 / L-4598
Measuring principle	FID

Test report

Test laboratory	936/21251816/A
Date of report	TÜV Rheinland 2021-05-03

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	0.49 mg/m ³
Sum of negative CS at zero point	-0.08 mg/m ³
Sum of positive CS at span point	0.37 mg/m ³
Sum of negative CS at span point	0.00 mg/m ³
Maximum sum of cross-sensitivities	0.49 mg/m ³
Uncertainty of cross-sensitivity	u_i 0.283 mg/m ³

Calculation of the combined standard uncertainty

Tested parameter

			u^2
Standard deviation from paired measurements under field conditions *	u_D 0.070 mg/m ³		0.005 (mg/m ³) ²
Lack of fit	u_{of} -0.058 mg/m ³		0.003 (mg/m ³) ²
Zero drift from field test	$u_{t,z}$ 0.052 mg/m ³		0.003 (mg/m ³) ²
Span drift from field test	$u_{d,s}$ 0.139 mg/m ³		0.019 (mg/m ³) ²
Influence of ambient temperature at span	u_t 0.173 mg/m ³		0.030 (mg/m ³) ²
Influence of supply voltage	u_v 0.050 mg/m ³		0.003 (mg/m ³) ²
Cross-sensitivity (interference)	u_i 0.283 mg/m ³		0.080 (mg/m ³) ²
Influence of sample gas flow	u_b -0.041 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} 0.272 mg/m ³		0.074 (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)

$$u_c = \sqrt{\sum (u_{max,j})^2} \quad 0.48 \text{ mg/m}^3$$

Total expanded uncertainty

$$U = u_c * k = u_c * 1.96 \quad 0.95 \text{ mg/m}^3$$

Relative total expanded uncertainty

Requirement of 2010/75/EU

Requirement of EN 15267-3

U in % of the ELV 10 mg/m³ 9.5

U in % of the ELV 10 mg/m³ 30.0

U in % of the ELV 10 mg/m³ 22.5