Umwelt Bundesamt

TÜVRheinland®
Precisely Right.

CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000038496_02

Certified AMS:	PCME QAL 181 for Dust
Manufacturer:	ENVEA UK Ltd. ENVEA House, Rose & Crown Road Swavesey Cambridge CB24 4RB United Kingdom
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 (2014).

Certification is awarded in respect of the conditions stated in this certificate (this certificate contains 7 pages).
The present certificate replaces certificate 0000038496_01 of 05 March 2018.

TÜVRheinland® CERTIFIED

Suitability Tested
EN 15267
QAL1 Certified
Regular
Surveillance

www.tuv.com
ID 0000038496

Publication in the German Federal Gazette (BAnz.) of 03 May 2021

German Federal Environment Agency
Dessau, 02 June 2021

Dr. Marcel Langner
Head of Section II 4.1

This certificate will expire on:
02 May 2026

TÜV Rheinland Energy GmbH
Cologne, 01 June 2021

ppa. Dr. Peter Wilbring

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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:	936/21247872/A of 11 September 2020
Initial certification:	05 March 2013
Expiry date:	02 May 2026
Publication:	BAnz AT 03.05.2021 B9, chapter I number 1.1

Approved application
The tested AMS is suitable for use at combustion plants according to Directive 2010/75/EU, chapter III (13th BImSchV), at waste incineration plants according to Directive 2010/75/EU, chapter IV (17th BImSchV), 27th BImSchV, 30th BImSchV, 44th BImSchV and TA Luft. 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 ten-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 limit value 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 936/21247872/A of 11 September 2020 of 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 03.05.2021 B9, chapter I number 1.1, Announcement by UBA dated 31 March 2021:

AMS designation:
PCME QAL 181 for Dust

Manufacturer:
ENVEA UK Ltd., Swavesey, UK

Field of application:
For measurements at plants requiring official approval and plants according to 27. BImSchV

Measuring ranges during the performance test:

Component	Certification range	Supplementary range			Unit
Dust	0 – 7.5	0 – 15	0 – 100	0 – 200	mg/m³

Software version:
Sensor Software 3.4
Optional Control Units:
Interface Modul / MultiController: 9.04
ProController: 2.26
NetController: 1.04

Restrictions:
None

Notes:
1. The maintenance interval is three months.
2. The dust concentration is determined in wet flue gas under operational conditions.
3. Supplementary testing (lower certification range) as regards Federal Environment Agency (UBA) notices of 12 September 2013 (BAnz AT 05.03.2013 B10, chapter I number 1.1) and of 27 May 2020 (BAnz AT 31.07.2020 B10, chapter II notification 4.).

Test report:
TÜV Rheinland Energy GmbH, Cologne
Report No.: 936/21247872/A of 11 September 2020

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

The PCME QAL 181 measuring system is a dust monitor which uses the scattered light principle (forward scattering) to determine dust concentrations.

The sensor probe is mounted directly at the waste gas duct. Particles entering the measurement flow at the end of the probe will scatter light emitted by the laser beam. The forward-scattered light cone is transmitted to the detector's electronics at the far end of the probe outside the waste gas duct via a quartz rod.

The instrument is continually supplied with purge air in order to prevent dust molecules from entering the instrument. The PCME QAL 181 analyser is equipped with an automatic zero point check, a span point check and contamination checks. The control unit records results of these checks.

For span checks, a scattering body is automatically entered into the laser beam in order to test the sensor response to scattered light directly.

A "Pro-Scatter" audit unit, which is available optionally, is required for linearity tests of the instrument (AST and QAL2).

The current software versions are:

Interface Modul / MultiController: 9.04
ProController: 2.26
NetController: 1.04
Sensor Software: 3.4

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 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**.

History of documents
Certification of PCME QAL 181 is based on the documents listed below and the regular, continuous monitoring of the Quality Management System of the manufacturer:

Basic testing:

Test report: 936/21204255/A dated 07 July 2006
TÜV Rheinland Immissionsschutz und Energiesysteme GmbH, Cologne
Publication: BAnz. 14 October 2006 no. 194, p. 6715, chapter I number 1.2
UBA announcement dated 12 September 2006

Notifications:

Statement issued by TÜV Rheinland Immissionsschutz und Energiesysteme GmbH dated 10 October 2008
Publication: BAnz. 11 March 2009, no. 38, p. 899, chapter IV notification 11
UBA announcement dated 19 February 2009
(Name changed for QAL 181)

Statement issued by TÜV Rheinland Immissionsschutz und Energiesysteme GmbH dated 31 March 2009
Publication: BAnz. 25 August 2009 no. 125, p. 2929, chapter III notification 14
UBA announcement dated 3 August 2009
(New software version)

Statement issued by TÜV Rheinland Immissionsschutz und Energiesysteme GmbH dated 16 October 2009
Publication: BAnz. 12 February 2010 no. 24, p. 552, chapter IV notification 17
UBA announcement dated 25 January 2010
(Design)

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 12 October 2011
Publication: BAnz. 02 March 2012 no. 36, p. 920, chapter V notification 9
UBA announcement dated 23 February 2012
(New software version and optics)

Initial certification according to EN 15267

Certificate no. 0000038496: 22 March 2013
Expiry date of the certificate: 04 March 2018

Test report: 936/21220334/A dated 28 September 2012
TÜV Rheinland Energie und Umwelt GmbH, Cologne
Publication: BAnz AT 05.03.2013 B10, chapter I number 1.1
UBA announcement dated 12 February 2013

Notifications in accordance with EN 15267

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 22 October 2015
Publication: BAnz AT 14.03.2016 B7, chapter V notification 25
UBA announcement dated 18 February 2016
(New software version)

Renewal of the certificate

Certificate no.0000038496_01: 05 March 2018
Expiry date of the certificate: 04 March 2023

Notifications in accordance with EN 15267

Statement issued by TÜV Rheinland Energy GmbH dated 18 August 2017
Publication: BAnz AT 26.03.2018 B8, chapter V notification 31
UBA announcement dated 21. February 2018
(new software version)

Statement issued by TÜV Rheinland Energy GmbH dated 2 October 2018
Publication: BAnz AT 26.03.2019 B7, chapter IV notification 48
UBA announcement dated 27. February 2019
(new software version, new control unit)

Statement issued by TÜV Rheinland Energy GmbH dated 4 December 2019
Publication: BAnz AT 24.03.2020 B7, chapter IV notification 40
UBA announcement dated 24. February 2020
(new software version, new company designation)

Statement issued by TÜV Rheinland Energy GmbH dated 11 March 2020
Publication: BAnz AT 31.07.2020 B10, chapter II notification 4
UBA announcement dated 27. May 2020
(new software version)

Supplementary testing according to EN 15267

Certificate No. 0000038496_02: 02 June 2021
Expiry date of the certificate: 02 May 2026
Test report 936/21247872/A of 11 September 2020
TÜV Rheinland Energy GmbH, Cologne
Publication: BAnz AT 03.05.2021 B9, chapter I number 1.1
Announcement by UBA dated 31 March 2021

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

Measuring system					
Manufacturer				ENVEA UK Ltd.	
AMS designation				PCME QAL 181	
Serial number of units under test				70764 / 70765	
Measuring principle				forward scatter	
Test report				936/21247872/A	
Test laboratory				TÜV Rheinland	
Date of report				2020-09-11	
Measured component				Dust	
Certification range				0 - 7.5	mg/m³

Calculation of the combined standard uncertainty

Tested parameter				u^2	
Standard deviation from paired measurements under field conditions *	u_D	0.073	mg/m³	0.005	(mg/m³)²
Lack of fit	u_{lof}	-0.040	mg/m³	0.002	(mg/m³)²
Zero drift from field test	$u_{d,z}$	0.052	mg/m³	0.003	(mg/m³)²
Span drift from field test	$u_{d,s}$	0.074	mg/m³	0.005	(mg/m³)²
Influence of ambient temperature at span	u_t	0.055	mg/m³	0.003	(mg/m³)²
Influence of supply voltage	u_v	0.006	mg/m³	0.000	(mg/m³)²
Uncertainty of reference material at 70% of certification range	u_{rm}	0.061	mg/m³	0.004	(mg/m³)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)	$u_c = \sqrt{\sum (u_{max,j})^2}$	0.15	mg/m³
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.29	mg/m³

Relative total expanded uncertainty	**U in % of the ELV 5 mg/m³**	**5.8**
Requirement of 2010/75/EU	**U in % of the ELV 5 mg/m³**	**30.0**
Requirement of EN 15267-3	U in % of the ELV 5 mg/m³	22.5