

CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000050627_02

AMS designation: PCME STACKFLOW 200 for gas velocity

Manufacturer: ENVEA UK Ltd.
ENVEA House
Rose & Crown Road
Swavesey
Cambridge CB24 4RB
United Kingdom

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 16911-2 (2013) and EN 14181 (2014).**

Certification is awarded in respect of the conditions stated in this certificate
(this certificate contains 9 pages).
The present certificate replaces certificate 0000050627_01 of 25 April 2017.



Suitability Tested
EN 15267
QAL1 Certified
Regular
Surveillance

www.tuv.com
ID 0000050627

Publication in the German Federal Gazette
(BAnz) of 15 March 2017

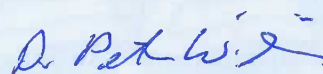
This certificate will expire on:
13 March 2026

German Federal Environment Agency
Dessau, 13 March 2021

TÜV Rheinland Energy GmbH
Cologne, 12 March 2021



Dr. Marcel Langner
Head of Section II 4.1



ppa. Dr. Peter Wilbring

www.umwelt-tuv.eu
tre@umwelt-tuv.eu
Phone: + 49 221 806-5200

TÜV Rheinland Energy GmbH
Am Grauen Stein
51105 Köln

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:	936/21228880/B dated 14 October 2016
Initial certification:	14 March 2016
Expiry date:	13 March 2026
Certificate:	Renewal (of previous certificate 0000050627_01 dated 25 April 2017 valid until 13 March 2021)
Publication:	BAnz AT 15.03.2017 B6, chapter II number 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 twelve-months field test at a waste incinerator.

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 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 velocities 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 936/21228880/B dated 14 October 2016 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 15.03.2017 B6, chapter II number 2.1, UBA announcement dated 22 February 2017:

AMS designation:

STACKFLOW 200 for velocity

Manufacturer:

PCME Ltd., St. Ives, United Kingdom

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 range	Unit
Velocity	3 – 30	3 – 50	m/s

Software versions:

Sensor: 2.01
Control units:
Interface module: 8.41
MultiController: 8.41
ProController: 0.52
PC-ME DUST TOOLS: 2.31

Restrictions:

none

Notes:

1. The maintenance interval is six months.
2. For zero and reference point tests with the fitted adjustment module, an external, calibrated, portable measuring instrument for differential pressure is required in order to validate the rated value.
3. For the STACK FLOW 200 measuring system the measured values must be displayed via a laptop/PC, which is a component of the measuring system. As an alternative, the STACK FLOW 200 measuring system is also available with the Interface Module, MultiController or ProController control units. In that case, the product designation is as follows.

Product name:	Configuration:
STACKFLOW 200 Standard	with interface module
STACKFLOW 200 Plus	with MultiController
STACKFLOW 200 Pro	with ProController

4. Supplementary testing (extension of the maintenance interval) as regards Federal Environment Agency (UBA) notices of 18 February 2016 (BAnz AT 14.03.2016, chapter II number 1.1).

Test Report:

TÜV Rheinland Energy GmbH, Cologne
Report no.: 936/21228880/B dated 14 October 2016

Publication in the German Federal Gazette: BAnz AT 26.03.2018 B8, chapter V notification 34, UBA announcement dated 21 February 2018:

34 Notification as regards Federal Environment Agency (UBA) notice of 22 February 2017 (BAnz AT 15.03.2017 B6, chapter II number 2.1)

The latest software version of the STACKFLOW 200 measuring system for velocity manufactured by PCME Ltd. is:

Sensor:	2.4
Control units:	
Interface Module:	9.03
MultiController:	9.03
ProController:	2.09

Statement issued by TÜV Rheinland Energy GmbH dated 18 August 2017

Publication in the German Federal Gazette: BAnz AT 26.03.2019 B7, chapter IV notification 52, UBA announcement dated 27 February 2019:

52 Notification as regards Federal Environment Agency (UBA) notices of 22 February 2017 (BAnz AT 15.03.2017 B6, chapter II number 2.1) and of 21 February 2018 (BAnz AT 26.03.2018 B8, chapter V 34th notification)

The latest software versions of the STACKFLOW 200 measuring system for velocity manufactured by PCME Ltd. are:

Sensor:	2.5
Control units:	
Interface Module:	9.04
MultiController:	9.04
ProController:	2.19

Statement issued by TÜV Rheinland Energy GmbH dated 2 October 2018

Publication in the German Federal Gazette: BAnz AT 24.03.2020 B7, chapter IV notification 45, UBA announcement dated 24 February 2020:

45 Notification as regards Federal Environment Agency (UBA) notices of 22 February 2017 (BAnz AT 15.03.2017 B6, chapter II number 2.1) and of 27 February 2019 (BAnz AT 26.03.2019 B7, chapter IV 52nd notification)

The company name has changed from PCME Ltd. to ENVEA UK Ltd.

The name of the STACKFLØW 200 measuring system for velocity manufactured by ENVEA UK Ltd. was changed to PCME STACKFLOW 200.

The production site of the PCME STACKFLOW 200 measuring system for velocity man ENVEA UK Ltd. has moved to:

ENVEA UK Ltd.
ENVEA House,
Rose & Crown Road
Swavesey,
Cambridge CB24 4RB
United Kingdom

The latest software versions of the PCME STACKFLOW 200 measuring system for velocity manufactured by ENVEA UK Ltd. are:

Sensor:	2.5
Control units:	
Interface module:	9.04
MultiController:	9.04
ProController:	2.26

Statement issued by TÜV Rheinland Energy GmbH dated 4 December 2019

Publication in the German Federal Gazette: BAnz AT 31.07.2020 B10, chapter II notification 7, UBA announcement of 27 May 2020:

7 Notification as regards Federal Environment Agency (UBA) notices of 22 February 2017 (BAnz AT 15.03.2017 B6, chapter II number 2.1) and of 24 February 2020 (BAnz AT 24.03.2020 B7, chapter IV 45th notification)

The PCME STACKFLOW 200 measuring system for Velocity manufactured by ENVEA UK Ltd. may now be operated with the optional netController control unit.

The netController software version is:

1.04.

Statement issued by TÜV Rheinland Energy GmbH dated 11 March 2020

Certified product

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

The PCME STACKFLOW 200 continuously measures velocity in flue gas ducts. As an in-situ measuring system, it determines measurement signals directly in the gas flow without extracting a sample.

The PCME STACKFLOW 200 measuring system consists of the following components:

- Probe, software version: 2.01
- Measuring module with pressure sensors and electronic cards
- Calibration module (for AST and QAL3 tests)
- Software PCME-ME DUST TOOLS, version: 2.31
- 24 V voltage module
- **OPTIONAL:** Control units for parameter setting and visualization of measurement data:
ProController (version: 0.52), MultiController (version: 8.41), Interface Module (version: 8.41)

The PCME STACKFLOW 200 measures exhaust gas velocity according to the principle of differential pressure. The sensor measures 3 main physical quantities:

- the difference between impact pressure and static pressure
- the absolute value of the static pressure
- the temperature captured by the PT100 sensor on the outer side of the tube.

Based on these 3 physical quantities, the PCME STACKFLOW 200 determines the velocity of the flue gas or the gas flow rate.

The basic version of the PCME STACKFLOW 200 only consists of the sensor (measurement probe, measuring module and adjustment module), as well as of a 24 V voltage module. Operation of the measuring system and the display requires an external computer.

The measurement probe consists of a stainless steel tube with several pressure ports, a temperature sensor and equipment access door for maintenance purposes.

The measuring module main elements are the pressure sensors and electronic cards. Each measurement point is fitted with a delimiter and a buffer volume used to stabilize the pressure detected by the sensors (time average).

Two magnet valves periodically trigger backwashing of the complete AMS including measurement probe and measuring module. This provides a clean and dry air buffer between the pressure sensors and the Pitot tube in order to protect the sensors from corrosive gases in the stack. Condensate formation and contamination of the tubes are prevented in the fluid circulation as well.

The adjustment module includes an adjustable generator of differential pressure (0–20 hPa) as well as three 3-way hand valves. Additionally, there are two pressure measurement connectors for the connection of reference differential pressure systems.

The differential pressure generator uses compressed air, metering orifices and a bypass to compensate pressure overload.

STACKFLOW 200 can optionally also be connected to a multi-channel PCME ProController/ MultiController or a single channel PCME Interface Module. The operation units simplify the operation of the sensor. When operation units are connected to the system, the product name changes.

The latest version of the operating manual dates October 2015.

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 PCME STACKFLOW 200 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. 0000050627: 25 April 2016
Expiry date of the certificate: 13 March 2021
Test report no. 936/21228880/A dated 12 October 2015
TÜV Rheinland Energie und Umwelt GmbH, Cologne
Publication: BAnz AT 14.03.2016 B7, chapter II number 1.1
UBA announcement dated 18 February 2016

Supplementary testing according to EN 15267

Certificate no. 0000050627_01: 25 April 2017
Expiry date of the certificate: 13 March 2021
Test report no. 936/21228880/B dated 14 October 2016
TÜV Rheinland Energy GmbH, Cologne
Publication: BAnz AT 15.03.2017 B6, chapter II number 2.1
UBA announcement dated 22 February 2017

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 34
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 52
UBA announcement dated 27 February 2019
(New software version)

Statement issued by TÜV Rheinland Energy GmbH dated 4 December 2019
Publication: BAnz AT 24.03.2020 B7, chapter IV notification 45
UBA announcement dated 24 February 2020
(new software version, new company name, new instrument name)

Statement issued by TÜV Rheinland Energy GmbH dated 11 March 2020
Publication: BAnz AT 31.07.2020 B10, chapter II notification 7
UBA announcement of 27 May 2020
(new control unit)

Renewal of the certificate

Certificate no. 0000050627_02: 13 March 2021
Expiry date of the certificate: 13 March 2026

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

Measuring system

Manufacturer	PCME Ltd.
AMS designation	STACKFLOW 200
Serial number of units under test	TÜV 1 TÜV 2 / TÜV 3 TÜV 4
Measuring principle	Differential pressure

Test report

Test laboratory	936/21228880/B
Date of report	TÜV Rheinland
	2016-10-14

Measured component

Certification range	Velocity
	3 - 30 m/s

Calculation of the combined standard uncertainty

Tested parameter

			u^2
Standard deviation from paired measurements under field conditions *	u_D	0.252 m/s	0.064 (m/s) ²
Lack of fit	u_{lof}	-0.173 m/s	0.030 (m/s) ²
Zero drift from field test	$u_{d,z}$	0.121 m/s	0.015 (m/s) ²
Span drift from field test	$u_{d,s}$	0.156 m/s	0.024 (m/s) ²
Influence of ambient temperature at span	u_t	0.070 m/s	0.005 (m/s) ²
Influence of supply voltage	u_v	0.023 m/s	0.001 (m/s) ²
Uncertainty of reference material at 70% of certification range	u_{rm}	0.242 m/s	0.059 (m/s) 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)	$u_c = \sqrt{\sum (u_{max,j})^2}$	0.44 m/s
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.87 m/s

Relative total expanded uncertainty

Requirement of 2010/75/EU	U in % of the range 30 m/s	2.9
Requirement of EN 15267-3	U in % of the range 30 m/s	10.0 **
	U in % of the range 30 m/s	7.5

** The EU-directive 2010/75/EU on industrial emissions provides no requirements for this component.
A value of 10.0 % was used for this.