

CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000043526_02

Certified AMS: PCME STACKFLOW 400 for velocity

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)
EN 16911 (2013) and EN 14181 (2004).**

Certification is awarded in respect of the conditions stated in this certificate
(this certificate contains 8 pages).

The present certificate replaces certificate 0000043526_01 of 30 September 2015.



Suitability Tested
EN 15267
QAL1 Certified
Regular Surveillance

www.tuv.com
ID 0000043526

Publication in the German Federal Gazette
(BAnz.) of 26 August 2015

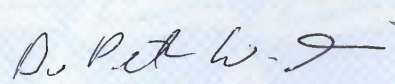
This certificate will expire on:
01 April 2025

German Federal Environment Agency
Dessau, 02 April 2020

TÜV Rheinland Energy GmbH
Cologne, 01 April 2020



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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:
0000043526_02 / 02 April 2020

Test report: 936/21225290/B of 02 February 2015
Initial certification: 02 April 2015
Expiry date: 01 April 2025
Certificate: renewal (previous certificate 0000043526_01 dated 30 September 2015 valid until 01 April 2020)
Publication: BAnz AT 26.08.2015 B4, chapter II 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 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 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 936/21225290/B of 02 February 2015 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 26.08.2015 B4, chapter II number 1.1,
Announcement by UBA from 22 July 2015:

AMS designation:

STACKFLØW 400 for velocity

Manufacturer:

PCME Ltd., St. Ives, UK

Field of application:

For measurements at plants requiring official approval (Directive 2010/75/EU on industrial emissions, chapters III and IV)

Measuring ranges during the performance test:

Component	Certification range	Supplementary ranges	Unit
velocity	0 - 30	0 - 50	m/s

Software versions:

Sensor: 1.25

Control unit: 8.23

PC-ME DUST TOOLS: 2.31

Restrictions:

None

Notes:

1. The maintenance interval is three months.
2. The STACKFLØW 400 measuring system is available in various configurations:

Produkt description	Configuration
Sensor - straight STACKFLØW 400 STACKFLØW 400 Standard STACKFLØW 400 Plus	standalone configuration with Interface Module with MultiController
Sensor - bent STACKFLØW 400A STACKFLØW 400A Standard STACKFLØW 400A Plus	standalone configuration with Interface Module with MultiController

3. Supplementary testing (extension of maintenance interval) as regards Federal Environment Agency (UBA) notice of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter II number 1.2).

Test report:

TÜV Rheinland Energie und Umwelt GmbH, Cologne
Report No.: 936/21225290/B of 02 February 2015

Publication in the German Federal Gazette: BAnz AT 14.03.2016 B7,
chapter V notification 28, UBA announcement dated 18 February 2016:

**28 Notification as regards Federal Environment Agency (UBA) notices
of 22 July 2015 (BAnz AT 26.08.2015 B4, chapter II number 1.1)**

The current software versions of the measuring equipment STACKFLØW 400
for waste gas speed of PCME Ltd. is for:

operator units: 8.41
sensor software: 1.29.2

Statement of TÜV Rheinland Energie und Umwelt GmbH of 22 October 2015

Publication in the German Federal Gazette: BAnz AT 26.03.2018 B8,
chapter V notification 35, UBA announcement dated 21 February 2018:

**35 Notification as regards Federal Environment Agency (UBA) notices
of 22 July 2015 (BAnz AT 26.08.2015 B4, chapter II number 1.1) and
of 18 February 2016 (BAnz AT 14.03.2016 B7, chapter V 28th notification)**

The new software versions of the STACKFLØW 400 measuring system for velocity
manufactured by PCME Ltd. are:

Control unit: 9.03
Sensor software: 1.29.2

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 53, UBA announcement dated 27 February 2019:

**53 Notification as regards Federal Environment Agency notices
of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter II number 1.3) and
of 21 February 2018 (BAnz AT 26.03.2018 B8, chapter V 35th notification)**

The STACKFLØW 400 measuring system for total dust manufactured
by PCME Ltd. may also be operated with the operational units Interface Module,
MultiController or ProController.

The current software versions of the STACKFLØW 400 measuring system are:

Sensor software: 2.03

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 46, UBA announcement dated 24. February 2020:

**46 Notification as regards Federal Environment Agency (UBA) notices
of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter II number 1.3) and
of 27 February 2019 (BAnz AT 26.03.2019 B7, chapter IV 53rd notification)**

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

The name of the STACKFLØW 400 measuring system for velocity manufactured
by ENVEA UK Ltd. was changed to PCME STACKFLOW 400.

The new production site for the PCME STACKFLOW 400 measuring system for ve-
locity manufactured by ENVEA UK Ltd. is:

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

The latest software version of the PCME STACKFLOW 400 measuring system for
velocity manufactured by ENVEA UK Ltd. is:

Sensor:	2.04
Control units:	
Interface module:	9.04
MultiController:	9.04
ProController:	2.26

Statement issued by TÜV Rheinland Energy GmbH dated 4 December 2019

Certified product

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

The AMS STACKFLØW 400 is a measuring system for the continuous measurement of waste gas velocity in waste gas ducts. As an in-situ flow meter it determines the measured values directly in the waste gas duct.

The measuring system basically consists of the following components:

- adjustable chimney flange for ultrasound probe
- ultrasound probe with sensor housing and fixed sensor measurement path
- 24 V voltage transformer
- software PCME-ME DUST TOOLS
- **OPTIONAL:** control unit (MultiController or Interface Module) for easier parameterisation, and visualisation of measurement data and implementation of AST and QAL3

The STACKFLØW 400 uses a flow measurement technology based on ultrasound for measuring waste gas velocity. The sensor probe is equipped with two sensor elements. Each flow transducer emits an ultrasonic pulse which is detected by the other sensor element. In the waste gas duct, the sensor is usually installed at an angle (α) of 45° in the direction of flow so that the sensor elements are situated above and below the other in the waste gas flow.

The motion time (t) of an ultrasonic pulse moving between the two sensor elements depends on the distance between them (L), the speed of sound within the gas and the gas velocity (v). The motion time of an ultrasonic pulse moving in the direction of the gas flow is shorter than the motion time of a pulse moving against the direction of flow. The difference between the motion times is directly proportional to the waste gas velocity.

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: gal1.de.

History of documents

Certification of PCME STACKFLOW 400 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. 0000043526_00: 30 April 2015
Expiry date of the certificate: 01 April 2020
Test report 936/21225290/A dated 18 September 2014
TÜV Rheinland Energie und Umwelt GmbH, Cologne
Publication: BAnz AT 02.04.2015 B5, chapter II no. 1.3
UBA announcement dated 25 February 2015

Supplementary testing according to EN 15267

Certificate No. 0000043526_01: 30 September 2015
Expiry date of the certificate: 01 April 2020
Test report 936/21225290/B dated 2 February 2015
TÜV Rheinland Energie und Umwelt GmbH, Cologne
Publication: BAnz AT 26.08.2015 B4, chapter II no. 1.1
UBA announcement dated 22 July 2015

Notifications according to EN 15267

Statement of TÜV Rheinland Energie und Umwelt GmbH dated 22 October 2015
Publication: BAnz AT 14.03.2016 B7, chapter V notification 28
UBA announcement dated 18 February 2016
(software changes)

Statement of TÜV Rheinland Energy GmbH dated 18 August 2017
Publication: BAnz AT 26.03.2018 B8, chapter V notification 35
UBA announcement dated 21 February 2018
(software changes)

Statement of TÜV Rheinland Energy GmbH dated 02 October 2018
Publication: BAnz AT 26.03.2019 B7, chapter IV notification 53
UBA announcement dated 27 February 2019
(software and hardware changes)

Statement of TÜV Rheinland Energy GmbH dated 4 December 2019
Publication: BAnz AT 24.03.2020 B7, chapter IV notification 46
UBA announcement dated 24 February 2020
(software changes, change of name and manufacturer name)

Renewal of the certificate

Certificate No. 0000043526_02: 02 April 2020
Expiry date of the certificate: 01 April 2025

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

Measuring system

Manufacturer	PCME Ltd.
AMS designation	STACKFLØW 400
Serial number of units under test	46098 / 46099 / 46910 / 47404
Measuring principle	Ultrasound

Test report

Test laboratory	936/21225290/B
Date of report	TÜV Rheinland
	2015-02-02

Measured component

Certification range	Velocity
	0 - 30 m/s

Calculation of the combined standard uncertainty

Tested parameter

			u^2
Standard deviation from paired measurements under field conditions *	u_D	0.133 m/s	0.018 (m/s) ²
Lack of fit	u_{lof}	0.116 m/s	0.013 (m/s) ²
Zero drift from field test	u_{dz}	0.208 m/s	0.043 (m/s) ²
Span drift from field test	u_{dts}	-0.104 m/s	0.011 (m/s) ²
Influence of ambient temperature at span	u_t	0.026 m/s	0.001 (m/s) ²
Influence of supply voltage	u_v	0.012 m/s	0.000 (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 span" or
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u_c)	$u_c = \sqrt{\sum (u_{max,i})^2}$	0.38 m/s
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.75 m/s

Relative total expanded uncertainty

Requirement of 2010/75/EU	U in % of the range 30 m/s	2.5
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

** For this component no requirements in the EC-directives 2010/75/EU on industrial emissions are given.
A value of 10 % was chosen.