PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

PCME STACKFLOW 400

Manufactured by:

Envea
ENVEA House
Rose and Crown Road
Swavesey
Cambridge
Cambridgeshire, CB24 4RB
UK

has been assessed by Sira Certification Service
And for the conditions stated on this certificate complies with:

MCERTS Performance Standards for Continuous Emission Monitoring Systems (CEMS) and T-CEMS, Version 4 dated July 2018
EN15267-1:2009, EN15267-2:2009, EN15267-3:2007 & EN16911-2
& QAL 1 as defined in EN 14181: 2014

Certification Ranges :

Velocity 0 to 30m/s

Project No.:	70013060/70210654/80042691
Certificate No:	Sira MC150273/05
Initial Certification:	26 May 2015
This Certificate issued:	24 September 2020
Renewal Date:	25 May 2025

Andrew Young
Environmental Team Manager

MCERTS is operated on behalf of the Environment Agency by

Sira Certification Service
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
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Form 1335
Issue 8

Certificate Contents

Approved Site Application

Any potential user should ensure, in consultation with the manufacturer, that the monitoring system is suitable for the intended application. For general guidance on monitoring techniques refer to the Environment Agency Monitoring Technical Guidance Notes available at www.mcerts.net

On the basis of the assessment and the ranges required for compliance with EU Directives this instrument is considered suitable for use on waste incineration and large coal-fired combustion plant applications. This CEM has been proven suitable for its measuring task (parameter and composition of the flue gas) by use of the QAL 1 procedure specified in EN14181, for IED Chapter III and IED Chapter IV applications for the ranges specified. The lowest certified range for each determinand shall not be more than 1.5X the daily average emission limit value (ELV) for IED Chapter IV applications, and not more than 2.5X the ELV for IED Chapter III and other types of application.

The field test was conducted on a municipal waste incinerator for 3 months.

Basis of Certification

This certification is based on the following Test Report(s) and on Sira's assessment and ongoing surveillance of the product and the manufacturing process:

TÜV Rhineland Report No.: 936/21225290A dated 18 September 2014

Product Certified

The PCME STACKFLOW400 measuring system consists of ultrasonic probe with sensor housing and fixed sensor measuring path.

There are two probe types. The STACKFLOW400 is a straight version which requires an angled stack port (typically at 45°). The STACKFLOW400A is an angled version which requires a perpendicular stack port. There are three configurations of each probe type available:

Product type	Configuration
Straight sensor	
STACKFLOW 400	Independent*
STACKFLOW 400 Standard	with Interface Module
STACKFLOW 400 Plus	with MultiController
STACKFLOW 400 net	with netController
Angled Sensor	
STACKFLOW 400A	Independent*
STACKFLOW 400A Standard	with Interface Module
STACKFLOW 400A Plus	with MultiController
STACKFLOW 400 net	with netController

* When using the STACKFLOW 400 (or STACKFLOW 400A) independently, the probe must be used with a 24V transformer and an external PC or laptop.

This certificate applies to all instruments fitted with firmware version 1.23 serial number 46098 onwards.

Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: -20°C to +50°C
Instrument IP rating: IP65

Note: If the instrument is supplied with an enclosure, then the ambient temperature shall be monitored inside the enclosure to ensure that it stays within the above ambient temperature range.

Results are expressed as error % of certification range 0 to 30 m/s, unless otherwise stated.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time Velocity					10s	<60s
Repeatability standard deviation at zero point Velocity	0.0					<2.0%
Repeatability standard deviation at reference point Velocity	0.10					<2.0%
Lack-of-fit Velocity		0.67				<3.0%
Influence of ambient temperature zero point (-20°C to +50°C) Velocity			1.2			<5.0%
Influence of ambient temperature reference point (-20°C to +50°C) Velocity	-0.20					<5.0%
Influence of voltage variation at +15% (253V) and at -10% (196V) from nominal supply voltage Velocity	0.10					<2.0%
Influence of vibration (10 to 60Hz (±0.3mm), 60 to 160Hz at 0.5g)	-0.10					To be reported
Measurement uncertainty Velocity					Guidance - at least 25% below max permissible uncertainty 2.5%	<7.5% (10%)
Calibration function (field) Velocity					Note 1 >0.90	>0.90

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time (field) Velocity					2s	<60s
Maintenance interval					Note 2 4 weeks	>8 days
Zero and Span drift requirement	The AMS allows for recording zero and span drifting and thus fulfils the requirements of QAL3 according to EN14181					Clause 6.13 & 10.13 Manufacturer shall provide a description of the technique to determine and compensate for zero and span drift.
Change in zero point over maintenance interval Velocity			1.2			<2.0%
Change in reference point over maintenance interval Velocity		-0.60				<4.0%
Availability					99.6%	>95%
Reproducibility Velocity		0.90				<3.3%

Note 1: Variation of readings <15% of certification range. Therefore the R^2 calculation is not necessary.
Note 2: The PCME STACKFLOW400 has a maintenance interval of 4 weeks. The work detailed below has to be carried out at regular intervals, depending on local conditions:

- Regular visual inspection of the instrument.
- Zero and span point check.
- Refer to manufacturer's instructions for additional checks.

Description

The PCME STACKFLOW400 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.

The PCME STACKFLOW400 includes automatic internal zero and reference checks which are suitable for QAL3 reporting

There are two versions of the PCME STACKFLOW400, a straight version which requires an angled stack port (typically at 45°) and an angled version which requires a perpendicular stack port. Both versions are fitted with an adjustable stack flange so that the measurement path can be positioned in the gas flow.

General Notes

1. This certificate is based upon the equipment tested. The Manufacturer is responsible for ensuring that on-going production complies with the standard(s) and performance criteria defined in this Certificate. 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 system shall be subject to regular surveillance according to 'Regulations Applicable to the Holders of Sira Certificates'. The design of the product certified is defined in the Sira Design Schedule for certificate No. Sira MC150273/00.

2. If certified product is found not to comply, Sira Certification Service should be notified immediately at the address shown on this certificate.

3. The Certification Marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of Sira Certificates'.

4. This document remains the property of Sira and shall be returned when requested by the company.