

# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

## **ProCeas LaserCEM**

Manufactured by:

### **AP2E**

Les Méridiens, Bâtiment A  
240 Rue Louis de Broglie  
CS90537  
13593 Aix-en-Provence Cedex 03  
France

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  
EN15267-3:2007,  
& QAL 1 as defined in EN 14181: 2014**

#### Certification Ranges :

CO	0-75 mg/m <sup>3</sup>		
NO	0-78 mg/m <sup>3</sup>	0-150 mg/m <sup>3</sup>	0-2008 mg/m <sup>3</sup>
NH <sub>3</sub>	0-15 mg/m <sup>3</sup>	0-45 mg/m <sup>3</sup>	0-76 mg/m <sup>3</sup>
H <sub>2</sub> O	0-30 Vol.-%	0-40 Vol.-%	
O <sub>2</sub>	0-21 Vol.-%		

Project No. : 70205944  
Certificate No : Sira MC190347/00  
Initial Certification : 11 January 2019  
This Certificate issued : 11 January 2019  
Renewal Date : 10 January 2024

Holly Blincow  
Environmental Project Engineer

MCERTS is operated on behalf of the Environment Agency by

## **Sira Certification Service**

Unit 6, Hawarden Industrial Park  
Hawarden, Deeside, CH5 3US  
Tel: +44 (0)1244 670 900



*The MCERTS certificate consists of this document in its entirety.  
For conditions of use, please consider all the information within.  
This certificate may only be reproduced in its entirety and without change  
To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*

## Certificate Contents

Approved Site Application.....	2
Basis of Certification .....	2
Product Certified.....	3
Certified Performance .....	4
Description.....	10
General Notes .....	10

## 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](http://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.

## 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:

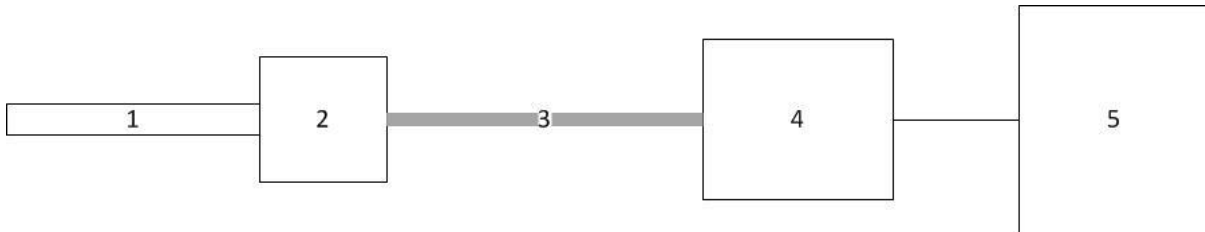
TUV Rheinland Report 936/21228566/B dated 23 February 2018

Certificate No : Sira MC190347/00  
This Certificate issued : 11 January 2019

*This certificate may only be reproduced in its entirety and without change  
To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*

**Product Certified**

The ProCeas LaserCEM measuring system consists of the following parts:



1. Sample Probe	2. Heated Filter	3. Heated Sample Line	4. Gas Conditioning	5. Analyser
<p>Model: CEM Probe "TOULON" In-situ Gas low pressure sampling probe with 2µm filter in front for Low Pressure Sampling</p>	<p>Model: Integrated within the probe  A "Sampling Box" does the interface between the probe and the line.</p>	<p>Model: Self-Heated sample line (Temp 80°C), inside diameter 4.35mm, length 30m (used in certification)</p>	<p>None (low pressure sampling = wet sample analysis) The line is directly connected in the cabinet.</p>	<p>Model: ProCeas LaserCEM</p>

Allowable variations could include:

- A different brand or model of sampling system of the same type, provided that there is evidence the alternative system works with similar types of CEM (low pressure sampling).
- Additional manifolds and heated valves used to allow more than one analyser to share a sampling system (in accordance with allowable response time).
- Longer/shorter transfer line (in accordance with allowable response time).

This certificate applies to all instruments fitted with software version 3.0.8.24 (serial number SN2015-0120) onwards.

Certificate No : Sira MC190347/00  
 This Certificate issued : 11 January 2019

*This certificate may only be reproduced in its entirety and without change  
 To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*

## Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: +5°C to +40°C  
Instrument IP rating: IP54

Note: For outdoor installations the analyser needs to be mounted into an IP65 environment. 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.

Lower certification range tests and results are expressed as error % of certification range, unless otherwise stated.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time						
CO (0-75 mg/m <sup>3</sup> )					85s	<200s
CO (0-1249 mg/m <sup>3</sup> )					174s	<200s
NO (0-78 mg/m <sup>3</sup> )					22s	<200s
NO (0-150 mg/m <sup>3</sup> )					22s	<200s
NO (0-2008 mg/m <sup>3</sup> )					44s	<200s
NH <sub>3</sub> (0-15 mg/m <sup>3</sup> )					153s	<400s
NH <sub>3</sub> (0-76 mg/m <sup>3</sup> )					198s	<400s
H <sub>2</sub> O (0-30 Vol.-%)					55s	<200s
H <sub>2</sub> O (0-40 Vol.-%)					36s	<200s
O <sub>2</sub>					28s	<200s
Repeatability standard deviation at zero point						
CO	0.0					<2.0%
NO	0.0					<2.0%
NH <sub>3</sub>	0.0					<2.0%
H <sub>2</sub> O	0.0					<2.0%
O <sub>2</sub>	0.0					<0.2%

Certificate No : Sira MC190347/00  
This Certificate issued : 11 January 2019

*This certificate may only be reproduced in its entirety and without change  
To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Repeatability standard deviation at reference point						
CO	0.4					<2.0%
NO	0.2					<2.0%
NH <sub>3</sub>		0.7				<2.0%
H <sub>2</sub> O		0.7				<2.0%
O <sub>2</sub>	0.01					<0.2%
Lack-of-fit						
CO (0-75 mg/m <sup>3</sup> )		1.00				<2.0%
CO (0-1249 mg/m <sup>3</sup> )	-0.48					<2.0%
NO (0-78 mg/m <sup>3</sup> )		-0.97				<2.0%
NO (0-150 mg/m <sup>3</sup> )		-0.95				<2.0%
NO (0-2008 mg/m <sup>3</sup> )		-1.00				<2.0%
NH <sub>3</sub> (0-15 mg/m <sup>3</sup> )			1.07			<0.2%
NH <sub>3</sub> (0-76 mg/m <sup>3</sup> )		0.66				<2.0%
H <sub>2</sub> O (0-30 Vol.-%)		0.93				<2.0%
O <sub>2</sub>	0.10					
Influence of ambient temperature zero point (+5°C to +40°C)						
CO	0.3					<5.0%
NO	-0.2					<5.0%
NH <sub>3</sub>	0.3					<5.0%
H <sub>2</sub> O	0.1					<5.0%
O <sub>2</sub>	-0.01					<0.50%

Certificate No : Sira MC190347/00  
 This Certificate issued : 11 January 2019

*This certificate may only be reproduced in its entirety and without change  
 To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Influence of ambient temperature reference point (+5°C to +40°C)						
CO			1.1			<5.0%
NO			-1.7			<5.0%
NH <sub>3</sub>			2.0			<5.0%
H <sub>2</sub> O				-2.3		<5.0%
O <sub>2</sub>	-0.21					<0.50%
Influence of sample gas flow for extractive CEMS						
CO		-0.8				<2.0%
NO		-1.0				<2.0%
NH <sub>3</sub>	0.0					<2.0%
H <sub>2</sub> O	-0.3					<2.0%
O <sub>2</sub>	0.1					<0.2%
Influence of voltage variations at zero (196V to 253V)						
CO	0.2					<2.0%
NO	0.1					<2.0%
NH <sub>3</sub>	0.0					<2.0%
H <sub>2</sub> O	0.0					<2.0%
O <sub>2</sub>	-0.01					<0.2%
Influence of voltage variations at reference point (196V to 253V)						
CO	-0.2					<2.0%
NO		0.8				<2.0%
NH <sub>3</sub>	-0.3					<2.0%
H <sub>2</sub> O		1.0				<2.0%
O <sub>2</sub>	0.01					<0.2%

Certificate No : Sira MC190347/00  
 This Certificate issued : 11 January 2019

*This certificate may only be reproduced in its entirety and without change  
 To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Cross-sensitivity at zero with interferents: O <sub>2</sub> , H <sub>2</sub> O, CO, CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, NO, NO <sub>2</sub> , NH <sub>3</sub> , SO <sub>2</sub> , HCl						
CO	0.0					<4.0%
NO		0.54				<4.0%
NH <sub>3</sub>	0.0					<4.0%
H <sub>2</sub> O	0.0					<4.0%
O <sub>2</sub>	0.0					<0.40%
Cross-sensitivity at reference with interferents: O <sub>2</sub> , H <sub>2</sub> O, CO, CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, NO, NO <sub>2</sub> , NH <sub>3</sub> , SO <sub>2</sub> , HCl						
CO			-1.96			<4.0%
NO			-1.67			<4.0%
NH <sub>3</sub>			1.46			<4.0%
H <sub>2</sub> O				2.10		<4.0%
O <sub>2</sub>	-0.34					<0.40%
Measurement uncertainty					Guidance - at least 25% below max permissible uncertainty	
CO (For an ELV of 50 mg/m <sup>3</sup> )					5.5%	<7.5% (10%)
NO (For an ELV of 50 mg/m <sup>3</sup> )					6.5%	<15% (20%)
NH <sub>3</sub> (For an ELV of 10 mg/m <sup>3</sup> )					7.3%	<30% (40%)
H <sub>2</sub> O (For a range of 0-30 Vol.-%)					5.1%	<7.5% (10%)
O <sub>2</sub> (For a range of 0-21 Vol.-%)					2.8%	<7.5% (10%)
Calibration function (field)						
CO					0.96	>0.90
NO					0.98	>0.90
NH <sub>3</sub> (0-15 mg/m <sup>3</sup> )					0.97	>0.90
NH <sub>3</sub> (0-45 mg/m <sup>3</sup> )					0.95	>0.90
H <sub>2</sub> O					0.92	>0.90
O <sub>2</sub>					0.96	>0.90

Certificate No : Sira MC190347/00  
 This Certificate issued : 11 January 2019

*This certificate may only be reproduced in its entirety and without change  
 To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time (field)						
CO					60s	<200s
NO					40s	<200s
NH <sub>3</sub> (0-15 mg/m <sup>3</sup> )					128s	<400s
NH <sub>3</sub> (0-45 mg/m <sup>3</sup> )					110s	<400s
H <sub>2</sub> O					53s	<200s
O <sub>2</sub>					35s	<200s
Lack of fit (field)						
CO	0.13					<2.0%
NO	0.13					<2.0%
NH <sub>3</sub> (0-15 mg/m <sup>3</sup> )		-0.80				<2.0%
NH <sub>3</sub> (0-45 mg/m <sup>3</sup> )		-0.67				<2.0%
H <sub>2</sub> O		0.75				<2.0%
O <sub>2</sub>	0.10					<0.2%
Maintenance interval					4 weeks Note 1	>8 days
Zero and Span drift requirement	Software permits access to gain and offset adjustment using standard gas bottle, and calibration inlet. It is possible to record zero and span drift (not include). This complies with the requirements of QAL3 according to EN14181 (Note 2).					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						
CO (0-75 mg/m <sup>3</sup> )	0.4					<3.0%
NO (0-78 mg/m <sup>3</sup> )	0.2					<3.0%
NH <sub>3</sub> (0-15 mg/m <sup>3</sup> )		1.6				<3.0%
NH <sub>3</sub> (0-45 mg/m <sup>3</sup> )	0.5					<3.0%
H <sub>2</sub> O (0-30 Vol.-%)		0.9				<3.0%
H <sub>2</sub> O (0-40 Vol.-%)		0.7				<3.0%
O <sub>2</sub>	0.11					<0.2%

Certificate No : Sira MC190347/00  
 This Certificate issued : 11 January 2019

*This certificate may only be reproduced in its entirety and without change  
 To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*



Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Change in reference point over maintenance interval						
CO (0-75 mg/m <sup>3</sup> )		0.9				<3.0%
NO (0-78 mg/m <sup>3</sup> )			1.2			<3.0%
NH <sub>3</sub> (0-15 mg/m <sup>3</sup> )			1.9			<3.0%
NH <sub>3</sub> (0-45 mg/m <sup>3</sup> )				-2.9		<3.0%
H <sub>2</sub> O (0-30 Vol.-%)				2.2		<3.0%
H <sub>2</sub> O (0-40 Vol.-%)				-2.6		<3.0%
O <sub>2</sub>	-0.07					<0.2%
Availability					98.3%	>95% (>98% for O <sub>2</sub> )
Reproducibility						
CO (0-75 mg/m <sup>3</sup> )			1.3			<3.3%
NO (0-78 mg/m <sup>3</sup> )			1.5			<3.3%
NH <sub>3</sub> (0-15 mg/m <sup>3</sup> )				2.2		<3.3%
NH <sub>3</sub> (0-45 mg/m <sup>3</sup> )			1.7			<3.3%
H <sub>2</sub> O (0-40 Vol.-%)			1.2			<3.3%
O <sub>2</sub>	0.10					<0.20%

Note 1: The LaserCEM has a maintenance interval of 4 weeks. The work has to be carried out at regular intervals, depending on local conditions. Mainly, it is a visual inspection of the system and its parameter which are fully monitored. If any is not inside the min/max allowed, general fault alarm will rise.  
A zero check and span check using standard gas bottle should be performed. Wet gases must be used for testing NH<sub>3</sub>. If the measure error is more than 2%, a gain can be adjusted (as QAL3 requires). Refer to User Manual for this operation.

Note 2: Refer to the "Monitoring the Calibration" chapter in the User Manual for details on this operation.

Certificate No : Sira MC190347/00  
This Certificate issued : 11 January 2019

*This certificate may only be reproduced in its entirety and without change  
To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*

## Description

The ProCeas LaserCEM is an analyser dedicated to CEM analysis, with 4 parts:

- A CEM Probe
- A sampling Box – which permits probe and line interface
- A self-heated line and gas line (for standard gas injection and protection gas injection in front of the probe)
- A full equipped analyser cabinet.

The in-situ probe uses the Low Pressure Sampling technics to sample the gas in the stack and reduce the pressure. The lowered pressure has several effects: lower the gas sample dew point, increase the gas speed inside the line (around 20 times), reduce the gas band self-broadening for spectral resolution. Through the self-heated line at 80°C, the gas is driven to the analyser without any conditioning system. The integrity of the sample is maintained.

The gas is then analysed thanks to an infrared laser spectroscopic technic named OF-CEAS (Optical Feedback Cavity Enhanced Absorption Spectroscopy), which is a high resolution spectroscopic technics (equivalent to laboratory grand instruments), with a pathlength of several kilometre. Low pressure, long pathlength and high spectroscopic resolution provides very linear and repeatable measure, reduced interference, high 10-90 response time, with low sampling flow (20L/h).

## 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 V00 for certificate No. Sira MC190347/00
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.

Certificate No : Sira MC190347/00  
This Certificate issued : 11 January 2019

*This certificate may only be reproduced in its entirety and without change  
To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*