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PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

***Model DT990 System Particulate Monitor
Model 990 stainless steel sensor
Model 990 insulated sensor***

manufactured by:

PCME Limited

*Clearview Building
Edison Road
St Ives
Cambridgeshire
PE27 3GH
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 Version 2, Revision 1 (April 2003)**

Certification Range :

Particulate Concentration 0 to 30 mgm⁻³

Project No: 674/0092
Certificate No: Sira MC 050049/03
Initial Certification: 24 March 2005
This Certificate Issued: 15 September 2009
Renewal Date: 23 March 2010

Technical Director

MCERTS is operated on behalf of the Environment Agency by

Sira Certification Service

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Field Test Site

A three month field trial on a municipal waste incinerator was performed for the certification of the DT780 system (to which the DT990 system has shown to be equivalent).

Fuel capacity of the incinerator was 11 tonnes/hour. Abatement techniques were carbon and lime injection, and bag filters.

A second field trial of 3 months was performed on Process Drier application with a 780 insulated probe. The 780 insulated probe and 990 insulated probe have identical sensing components.

Approved Site Application

On the basis of these tests this certificate is valid when the DT990 instrument is used on waste incineration and large combustion plant applications, provided that the uncertainties and ranges meet the Environment Agency's requirements.

The manufacturer should be consulted if the instrument is to be mounted upstream of an electrostatic precipitator or after a wet collector.

The instrument is suitable for use in dust arrestment applications where velocities are greater than 7.5m/s. The manufacturer should be consulted if the instrument is to be used in applications where the air velocity is less than 7.5m/s. In applications where the flow rate varies, users should determine whether the system requires re-calibration.

Particulate monitors may exhibit sensitivity to various in-stack effects. Potential interferences are site specific and may vary from stack to stack.

Any potential user should ensure, in consultation with the manufacturer that the emission monitoring system is suitable for the process on which it will be installed.

For general guidance on stack emission monitoring techniques refer to Environment Agency Technical Guidance Note M2: Monitoring of stack emissions to air. Operators with installations falling under the Large Combustion Plant Directive or Waste Incineration Directive must refer to Technical Guidance Note M20: Quality Assurance of Continuous Emission Monitoring Systems, for guidance on the suitability of CEMS for their installations. M2 and M20 are available on the Agency's website at www.mcerts.net

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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:

AEAT Report	MCT/WTC/B.01/SO1 dated March 1999
AEAT Report	MCT/ESTC/B.01/SO2 dated July 1999
NPL Report	QE21/N99/005 dated August 1999
Sira Report	N 0317 dated August 1999
Sira Report	C-1219 dated August 2004

It should be noted that the above reports refer to the DT780 model certificate number MC990004/02, the DT990 is identical except for using different electronics that were assessed to demonstrate equivalency in the Sira report C-1219.

Product Certified

This certificate applies to all instruments serial number 20074 onwards. Software version:

- Sensor Version 3.7 onwards
- Multi-controller Version 5.51 onwards

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Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range:	Stack Components	-20 to +70°C
	Control Unit	-10 to +55°C
Relative Humidity:	Stack Components	5 to 95% (including condensation)
	Control Unit	20 to 80%(excluding condensation)

Minimum stack gas velocity: This certificate is only valid for stack gas velocities $>7.5\text{m/s}^{-1}$. The manufacturer should be consulted if the instrument is to be used on applications where the air velocity is less than 7.5m/s.

This instrument is not suitable for sample streams that may contain condensing water.

Unless otherwise stated the evaluation was carried out on the certification range 0 to 30 mg/m³.

Test	Results expressed as % of certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Linearity					>0.958	>0.95 ⁽¹⁾
Drift	0.04					<±2%
Ambient temperature: Zero shift					0.06% per °C	<0.3% per °C
Response time					13.5s	<200s
Detection limit	<0.5					<2%
Repeatability				4.7		<15%
Maintenance interval: (field test)					>3 months	To be reported
Availability (field test)					100%	>95%
Analysis function/integral performance (field test)				2.17		C/<20%
Effect of particulate velocity (7.5 to 15 m/s)					-10% to +16.7%	Not specified
Effect of particulate size (change from 18 to 9 µm)					-23%	Not specified
Vibration 10-150Hz at 19.6m/s ²					no effect	Not specified
Reproducibility					60.2	>30

⁽¹⁾ Correlation coefficient requirement (as specified in ISO 10155)

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Description

The DT990 utilises PCME's "electrodynamic" or "charge induction principle" (derived from the tribo-electric effect) to monitor particulate concentrations in emission stacks and ducts.

The DT990 comprises a multi-controller (user interface and data acquisition module) capable of controlling up to thirty two 990 sensors or an 'interface module' control unit capable of interfacing to a single 990 sensor. The sensors and control unit are connected by a 4core cable that provides power and internal communications with the sensors. The 990 sensor is a standalone sensor that provides modbus and optional 4-20mA outputs. The 990 sensor has automatic zero, span and contamination checks. Inputs for temperature and oxygen normalisation can be made via an Analogue Input Module (AIM) unit.

The DT990 control unit has graphic screen capability to diagnose filter performance and maintenance conditions and also records and averages data for emissions reporting. Software is available for transferring stored data and producing reports suitable for environmental compliance. Calibration as a quantitative monitor is by a standard reference method (isokinetic sampling).

The insulated sensor (patented option) is suitable for use after process drier applications in which there are high levels of steam and is used to extend the instrument maintenance interval of the standard stainless steel sensor in this application by overcoming any shorting of the insulator in the standard stainless sensor (caused by condensation or conductive dust).

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 MC 040049/04.
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.

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