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Umwelt Bundesamt

Certificate number: 2817063-ts

TÜV SÜD Industrie Service

CERTIFICATE

On Product Conformity (QAL 1)

Certificate number: 2817063-ts

Certified AMS	Metis MY47 for monitoring temperature in combustion gases
Manufacturer	Sensortherm GmbH Hauptstraße 123 65843 Sulzbach/ Taunus Germany

Test institute TÜV SÜD Industrie Service GmbH

This is to certify that the AMS was tested and certified subject to DIN EN 15267-1 (2009), DIN EN 15267-2 (2009), DIN EN 15267-3 (2008) and DIN EN 14181 (2004) standards.

Certification applies to the conditions listed in this certificate (the certificate consist of 6 pages).

DIN EN 15267 TÜV SÜD Eignungsprüfung Valid until 03/2023 Produktion überwacht

Certificate No.: 2817063-ts

Publication in the German Federal Gazette
dated 05th March 2013

Certifcate validity
until 04th March 2023

Umweltbundesamt
Dessau, 25th January 2018

i. A. Dr. Marcel Langner
Head of section II 4.1

TÜV SÜD Industrie Service GmbH
Testing laboratory emissions measurement/ calibration
Munich, 24th January 2018

Dr. Michael Waeber

TÜV®

Umwelt Bundesamt

Certificate number: 2817063-ts

TÜV SÜD Industrie Service

Test report	1629370 from 28th September 2012
Initial certification	05th March 2013
Certificate validity until	04th March 2023 (5 years)
Certificate	Renewed issue (previous certificate 1629370-ts from 05th March 2013 valid until 04th March 2018)
Publication	BAnz AT 05th March 2013 B10, chapter II, No. 1.1

Approved application

The AMS tested is suitable for use at 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), plants in accordance with TA Luft and 27th BImSchV. The suitability of the AMS for this application was assessed on the basis of a laboratory test and a field test over more than three months in the afterburning zone of a plant in compliance with Directive 2010/75/EU, chapter IV (17th BImSchV). The measuring system is authorized for the ambient temperature range from -20 °C to +50 °C.

The AMS publication, the suitability test and the performance of the uncertainty calculations were conducted based on the provisions valid at the time of testing. Due to possible amendments to legal foundations every user should ensure before use of the AMS that it is suitable for monitoring the applicable limit values.

The operator should consult the manufacturer to ensure that the AMS is suitable for the plant where it is being installed.

Certification basis

This certificate is based on:

- TÜV SÜD Industrie Service GmbH test report 1629370 from 28th September 2012
- Suitability publication by the Umweltbundesamt as responsible body
- Monitoring of the product and the manufacturing process
- Publication in the German Federal Gazette (BAnz AT 05th March 2013 B10, chapter II, No. 1.1, UBA publication from 12th February 2013):

AMS: Radiation pyrometer Metis MY47

Manufacturer: Sensortherm GmbH Infrarot Mess- und Regeltechnik, Sulzbach/Taunus

Suitability: For plants requiring authorisation and plants in compliance with the 27th BImSchV

Measurement range in suitability test:

Component	Certification range	Unit
Temperature	400 - 1300	°C

Software-version: 1.73

Restriction:

In the suitability testing in accordance to DIN EN 15267 the determination coefficient of the calibration function R^2 couldn't meet the requirements.

Note:

Annually the AMS has to be verified by using a Planckian radiator. The stored correction function has to be deactivated by using SensorWin.exe software during this time.

Test report: TÜV Süd Industrie Service GmbH, Munich
Report-No.: 1629370 from 28th September 2012

- Publication in the German Federal Gazette (BAnz AT 01st August 2016 B11, chapter V, notification 24, UBA publication from 14th July 2016):

24 Notification to the publication by the Umweltbundesamt from 12th February 2013 (BAnz AT 05th March 2013 B10, chapter II number 1.1)

The AMS Metis MY 47 from Sensortherm GmbH for monitoring the minimum temperature can also be used with 24 V power supply units as follows:

– Power supply unit Siemens LOGO!Power® 24 V/2,5 A (article number 6EP1332-1SH43) for parallel power supply up to 4 AMS.

– Power supply unit Murr Elektronik Emparro IN: 100-240VAC OUT: 24-28VDC/5A (article number 85440) for parallel power supply up to 12 AMS.

The AMS can be operated with a Siemens LOGO!® PLC to trigger the compressed air pulse for cleaning the optics. At the same time, the pulses are triggered for a maximum of four devices.

The AMS can be equipped with a safety switch (inductive proximity sensor IFM IE5349) for suppressing the compressed air pulses.

Statement from TÜV Süd Industrie Service GmbH from 26th February 2016

Certified product

The certificate applies to AMS that comply with the following description:

The entire tested AMS Metis MY47 consist of the components of the radiation pyrometer with a fixed focused long lens, an optical sight, evaluation and operating software as well as the seal-air tube with shockblower.

The single wavelength pyrometer Metis MY47 works in a spectral range where hot Carbondioxide over 400 °C has a large emissivity. However cold CO_2 is largely transmissive. For a selective filtering to a specific wavelength (4,7 µm) an interference filter is used. Because of the seal-air tube with schockblower the pyrometer is protected from dust and corrosive gases.

The entire system consits of the following components:

Single wavelength pyrometer

Manufacturer:	Sensortherm GmbH, 65843 Sulzbach/Ts.
Type:	Metis MY47

Seal-air tube with schockblower

Manufacturer:	Sobotta GmbH, 53819 Neunkirchen-Seelscheid
Type:	50.102.15
Installation depth:	400 mm

Software-version:	1.73

Manuals:

Radiation pyrometer:	METIS MY47 (03.04.2017)
Schockblower:	50.102.15-B-4

General notes

This certificate is based on the analyser tested. The manufacturer is responsible for the continuous compliance of the production to the DIN EN 15267 requirements. The manufacturer is obliged to maintain a tested quality management system to control the manufacture of the certified product. Regular monitoring must be conducted on both the product and the quality management systems.

Should the product from the current production series no longer comply with the certified product, the Environmental Service Department of TÜV SÜD Industrie Service GmbH should be informed (address see footnote).

The certification mark, which appears on the certified product or is used in advertising materials, is presented on page 1 of this certificate.

This document and the certification mark shall remain the property of TÜV SÜD Industrie Service GmbH.

Should the publication be revoked, this certificate will become invalid. This document must be returned when the period of validity has elapsed and at the request of TÜV SÜD Industrie Service GmbH and the certification mark may no longer be used.

The current version of the certificate and its validity can also be viewed on the internet page: **qal1.de**.

The certification of the measuring system Metis MY47 is based on the following documents and the regular continuous monitoring of the manufacturer's quality management system:

Initial certification in accordance to DIN EN 15267:

Certificate no. 1629370-ts	05th March 2013
Certificate validity until	04th March 2018

Report no: 1629370 from 28th September 2012
TÜV SÜD Industrie Service GmbH
Publication: BAnz AT 05th March 2013 B10, chapter II number 1.1
UBA publication from 12th February 2013

Notifications:

Statement from TÜV Süd Industrie Service GmbH from 26th February 2016
Publication: BAnz AT 01st August 2016 B11, chapter V, notification 24,
UBA publication from 14th July 2016 (hardware modification)

Renewed issue of the certificate:

Certificate no. 2817063-ts	25th January 2018
Certificate validity until	04th March 2023

Calculation of total uncertainty for QAL1 testing to DIN EN 14181 and DIN EN 15267-3

Total uncertainty for measurement range 400 – 1300 °C

Performance characteristics	*Uncertainty*	*Value standard uncertainty in °C*	*Square of standard uncertainty in (°C)²*
Lack-of-fit	$u$lof	1,097	1,2
Zero drift	ud,z	-	-
Span drift	ud,s	-	-
Influence of ambient temperature at span	ut	6,134	37,6
Influence of sample gas pressure	up	-	-
Influence of sample gas flow	uf	-	-
Influence of supply voltage	uv	4,424	19,6
Cross-sensitivity (interferences)	ui	-	-
Standard deviation from paired measurements or repeatability standard deviation at span *)	ur	18,630	347,1
Uncertainty of Planckian radiator (5 °C)	$u$tg	5,000	25,0
Sum			430,5
Combined standard uncertainty	$u_c = \sqrt{\sum (u_i)^2}$	20,7	°C
Total expanded uncertainty	$U_{0,95} = 1,96 \times u_c$	40,7	°C
Relativ expanded uncertainty	U	4,8	%LV
Permissible uncertainty (LV 850 °C)		7,5	%LV
Complied with requirements relating to the measurement uncertainty		yes	

*) here: Standard deviation from paired measurements