

CERTIFICATE OF ACCREDITATION

No. K-071

dated 16.05.2024

The Slovak National Accreditation Service issues a Certificate of Accreditation to an accredited body pursuant to Section 26 par.6 of Act No. 53/2023 Coll. on Accreditation of Conformity Assessment Bodies (hereinafter referred to as the "Accreditation Act").

EKO-TERM SERVIS s.r.o.

Napájadlá 11/2743, 040 12 Košice
IČO: 31 695 671

Organizational unit performing the activity of the Accredited Body:
Calibration laboratory

Workplace of the Accredited Body:
Napájadlá 11/2743, 040 12 Košice

Identification number of the Accredited Body: 226/K-071

Area of accreditation: Calibration laboratory

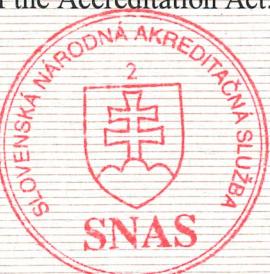
The calibration laboratory demonstrated its competence to perform the accredited activity fulfilling the accreditation requirements of ISO/IEC 17025: 2017 when performing calibration of thermometers and humidity meters, calibration of stationary and mobile automatic emission monitoring systems and to express opinions and interpretation of results of calibrations; to perform the calibration of measurement of the analysers are eligible, which are part of the automated measuring systems for emissions of pollutants from stationary sources of pollution in ambient air and waste gas gauges related reference variables within the accreditation scope delineated in the Annex of this Certificate of Accreditation. The Annex shall form an integral part of the Certificate of Accreditation.

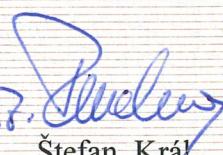
Number and date of issue of the accreditation decision: No. 226/11469/2024/1 dated 10.05.2024

Validity of the accreditation decision:

The accreditation decision No. 226/11469/2024/1 dated 10.05.2024 is valid from 16.05.2024 to 12.10.2028.

The validity of this Accreditation Certificate expires upon the expiry of the accreditation decision, the decision on withdrawal of the accreditation pursuant to Section 31 or the expiry of the accreditation pursuant to Section 32 of the Accreditation Act.




Štefan Král
director

Annex to the Certificate of Accreditation No. K-071 dated 16.05.2024.

*The Annex is an integral part of the
Certificate of Accreditation*

Scope of Accreditation

Accredited body: EKO-TERM SERVIS s.r.o.
Napájadlá 11, 040 12 Košice

Organizational unit performing the activity of the accredited body:
Calibration laboratory

Place of performance of the accredited body:
Napájadlá 11, 040 12 Košice

Identification number of the accredited body: 226/K-071

Laboratory with fixed scope

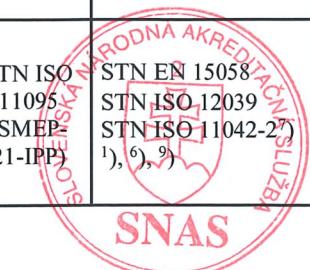
Item	Type of gauge, measuring instrument	calibrated/ measuring value	Measuring range	Expanded uncertainty $U^{(1)}$ ($k=2$)	Implemented methods		Other specifications
					Type/Principle	Marking	
1	AMS-E analyzer				direct comparison with certified calibration gas/ calibration gas divider ⁴⁾	STN ISO 11095 (SMEP- 21-IPP)	
1.1	of carbon monoxide (CO)	mass concentration	(2,5 to 125 000) mg/m ³	2,5 %			STN EN 15058 STN ISO 12039 STN ISO 11042-2 ⁷⁾ ^{1), 2), 6), 8)}
1.2	of oxygen (O ₂)	volume concentration	(0,01 to 25) % ⁵⁾	2,5 %			STN EN 14789 STN ISO 12039 STN ISO 11042-2 ⁷⁾ ^{1), 2), 6), 8)}
1.3	of sulfur dioxide (SO ₂)	mass concentration	(6 to 15 000) mg/m ³	2,5 %			STN ISO 7935 STN ISO 11042-2 ⁷⁾ ^{1), 2), 6), 8)}
1.4	of nitric oxide (NO) expressed as NO ₂ of nitrogen dioxide (NO ₂)	mass concentration	(1,5 to 7 000) mg/m ³ (2 to 1100) mg/m ³	2,5 % 3 %			STN EN 14792 STN ISO 10849 STN ISO 11042-2 ⁷⁾ ^{1), 2), 6), 8)}
1.5	of organic substances in the form of gases and vapors, expressed as total organic carbon (TOC)	mass concentration	(1,5 to 500 000) mg/m ³	2,5 %			STN EN 12619 ^{1), 2), 6), 8)}
1.6	of fluorine and its gaseous compounds (HF)	mass concentration	(1 to 500) mg/m ³	5 %			^{1), 2), 3), 6), 8)}
1.7	of gaseous inorganic chlorine compounds (HCl)	mass concentration	(1 to 500) mg/m ³	5 %			^{1), 2), 3), 6), 8)}
1.8	of organic substances containing reduced sulfur (TRS), expressed as hydrogen sulfide (H ₂ S)	mass concentration	(1 to 1 000) mg/m ³	3 %			^{1), 2), 3), 6), 8)}
1.9	ammonia and its gaseous compounds (NH ₃)	mass concentration	(1 to 1 000) mg/m ³	3 %			^{1), 2), 3), 6), 8)}



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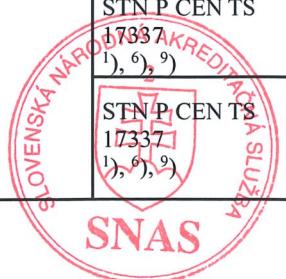
Item	Type of gauge, measuring instrument	calibrated/ measuring value	Measuring range	Expanded uncertainty $U^{(1)}$ ($k=2$)	Implemented methods		Other specifications
					Type/Principle	Marking	
2.1	Measuring instruments for measuring particulate matter (PM) installed in AMS-E	mass concentration	(0,5 to 6,4) mg/m ³ (6,5 to 19,9) mg/m ³ (20 to 1 000) mg/m ³	0,6 · c_{TZL} + 0,2 mg/m ³ 0,13 · c_{TZL} + 3,2 mg/m ³ 29 %	direct comparison with standard reference manual gravimetric method	STN EN 13284-1 (SMEP-08-IPP) (SMEP-21-IPP)	STN EN 13284-2 STN ISO 10155 STN EN ISO 16911-2 STN ISO 11042-2 ⁷⁾ ^{1), 2), 6), 8)}
			(20 to 1 000) mg/m ³	29 %			STN ISO 9096 ^{1), 6), 8)}
2.2	Measuring instruments for measuring Hg installed in AMS-E	mass concentration	(0,00003 to 1,000) mg/m ³	36 %	direct comparison with standard reference manual method	STN EN 13211 (SMEP-07-IPP) (SMEP-08-IPP) (SMEP-21-IPP)	^{1), 2), 3), 6), 8)}
3.1	Gauges measuring velocity of exhaust gas flow/volumetric flow of waste gas installed in the AMS-E	gas flow rate	(3 to 5) m/s (5,1 to 10) m/s (10,1 to 50) m/s	9 % 7 % 5 %	direct comparison with standard reference manual method of measuring differential pressure with a velocity probe	STN ISO 10780 ¹⁰⁾ (SMEP-04-IPP) (SMEP-21-IPP)	STN ISO 14164 STN ISO 11042-2 ⁷⁾ ^{1), 2), 6), 8)}
3.2		volume gas flow	(0,3 to 10) m ³ /s (11 to 60) m ³ /s (61 to 400) m ³ /s	9,1 % 7,1 % 5 %	direct comparison with the result of the measurement of pipe cross-section and exhaust gas flow rate		
3.3		gas flow rate	(3 to 5) m/s (5,1 to 10) m/s (10,1 to 50) m/s	9 % 7 % 5 %	direct comparison with standard reference manual method of measuring differential pressure with a velocity probe	STN EN ISO 16911-1 (SMEP-04-IPP) (SMEP-21-IPP)	STN ISO 14164 STN ISO 11042-2 ⁷⁾ STN EN ISO 16911-2 ^{1), 2), 6), 8)}
3.4		volume gas flow	(0,3 to 10) m ³ /s (11 to 60) m ³ /s (61 to 400) m ³ /s	9,1 % 7,1 % 5 %	direct comparison with the result of the measurement of pipe cross-section and exhaust gas flow rate		
3.5	Moisture gauges of exhaust gases installed in the AMS-E	volume concentration	(0,5 to 10) % ⁵⁾ (10,1 to 25) % ⁵⁾ (25,1 to 50) % ⁵⁾	9 % 7 % 5 %	direct comparison with the measurement result by condensation – adsorption or adsorption method	STN EN 14790 (SMEP-04-IPP) (SMEP-21-IPP)	STN EN 15267-3 RdSchr d. BMU IG I 2-45053/5 ^{1), 2), 3), 6), 8)}
4	AMS/EMS analyzer						
4.1	of carbon monoxide (CO)	mass concentration	(2,5 to 125 000) mg/m ³	2,5 %	direct comparison with certified calibration gas/ calibration gas divider ⁴⁾	STN ISO 11095 (SMEP-21-IPP)	STN EN 15058 STN ISO 12039 STN ISO 11042-2 ⁷⁾ ^{1), 6), 9)}



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Item	Type of gauge, measuring instrument	calibrated/ measuring value	Measuring range	Expanded uncertainty $U^{(1)}$ ($k=2$)	Implemented methods		Other specifications
					Type/Principle	Marking	
4.2	of carbon dioxide (CO ₂)	volume concentration	(0,1 to 30) % ⁵⁾	2,5 %			STN ISO 12039 STN ISO 14385-1,2) ^{1), 6), 9), 13)}
4.3	of oxygen (O ₂)	volume concentration	(0,01 to 25) % ⁵⁾	2,5 %			STN EN 14789 STN ISO 12039 EPA CTM 030 STN ISO 11042-2 ⁷⁾) ^{1), 6), 9)}
4.4	of sulfur dioxide (SO ₂)	mass concentration	(6 to 15 000) mg/m ³	2,5 %			STN ISO 7935 STN ISO 11042-2 ⁷⁾) ^{1), 6), 9)}
4.5	of nitric oxide (NO) expressed as NO ₂	mass concentration	(1,5 to 7 000) mg/m ³	2,5 %			STN EN 14792 STN ISO 10849 EPA CTM 030 STN ISO 11042-2 ⁷⁾) ^{1), 6), 9)}
4.6	of nitrogen dioxide (NO ₂)	mass concentration	(2 to 1100) mg/m ³	3 %			STN EN ISO 21258 STN ISO 14385-1,2) ^{1), 6), 9), 13)}
4.7	of nitrogen dioxide (N ₂ O)	mass concentration	(4 to 10 000) mg/m ³	3 %			STN EN 12619) ^{1), 6), 9), 12)}
4.8	of organic substances in the form of gases and vapors, expressed as total organic carbon (TOC)	mass concentration	(1,5 to 500 000) mg/m ³	2,5 %	direct comparison with certified calibration gas/ calibration gas divider ⁴⁾	STN ISO 11095 (SMEP- 21-IPP)	1), 6), 9)
4.9	of fluorine and its gaseous compounds (HF)	mass concentration	(1 to 500) mg/m ³	5 %			1), 6), 9)
4.10	of gaseous inorganic chlorine compounds (HCl)	mass concentration	(1 to 500) mg/m ³	5 %			1), 6), 9)
4.11	of organic substances containing reduced sulfur (TRS), expressed as hydrogen sulfide (H ₂ S)	mass concentration	(1 to 1 000) mg/m ³	3 %			1), 6), 9)
4.12	ammonia and its gaseous compounds (NH ₃)	mass concentration	(1 to 1 000) mg/m ³	3 %			1), 6), 9)
4.13	of hydrogen cyanide (HCN)	mass concentration	(1 to 1 000) mg/m ³	3 %			1), 6), 9)
4.14	methane (CH ₄)	mass concentration	(1,5 to 85 000) mg/m ³	2,5 %			STN P CEN TS 17337) ^{1), 6), 9), 13)}
4.15	propane (C ₃ H ₈)	mass concentration	(1,5 to 150 000) mg/m ³	2,5 %			STN P CEN TS 17337) ^{1), 6), 9)}
4.16	formaldehyde	mass concentration	(1 to 100) mg/m ³	3 %			STN P CEN TS 17337) ^{1), 6), 9)}



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Item	Type of gauge, measuring instrument	calibrated/ measuring value	Measuring range	Expanded uncertainty U^{11} ($k=2$)	Implemented methods		Other specifications
					Type/Principle	Marking	
4.17	acetaldehyde	mass concentration	(1 to 100) mg/m ³	3 %	direct comparison with calibration gas ¹⁵⁾ / calibration gas divider ⁴⁾	STN ISO 11095 (SMEP-21-IPP)	STN P CEN TS 17337 ^{1), 6), 9)}
5	Gauges measuring humidity						
5.1	Electronic gauges measuring humidity and humidity logger	humidity	(30 to 90) % relative humidity	2 % r. v.	direct comparison with standard PRT	KP 7.2.1/02/08/N *1) (SMEP-22-IPP)	Execution of the activity at the laboratory ⁶⁾
5.2	Humidity sensor	humidity	(30 to 90) % relative humidity	2 % r. v.	direct comparison with standard PRT.	KP 7.2.1/03/09/N*2) (SMEP-22-IPP)	Execution of the activity at the laboratory ⁶⁾
6	Gauges measuring temperature						
6.1	glass thermometers	temperature	(-40 to -20) °C (-20 to 35) °C (35 to 250) °C ¹⁴⁾	0,8 °C 0,6 °C 0,5 °C	direct comparison with standard PRT	STN 99 3141 (SMEP-23-IPP)	Execution of the activity at the laboratory ⁶⁾
6.2	Directly pointing thermometers with external temperature sensor	temperature	(-40 to -20) °C (-20 to 35) °C (35 to 250) °C (250 to 400) °C (400 to 650) °C	0,8 °C 0,6 °C 0,5 °C 0,5 °C 0,62 °C	direct comparison with standard PRT	STN 60 751 (SMEP-23-IPP)	Execution of the activity at the laboratory ⁶⁾
6.3	Thermometers with internal temperature sensor and data loggers	temperature	(-40 to -20) °C (-20 to 120) °C (120 to 150) °C (150 to 180) °C	0,8 °C 0,7 °C 1,0 °C 1,5 °C	direct comparison with standard PRT	STN 60 751 (SMEP-23-IPP)	Execution of the activity at the laboratory ⁶⁾
6.4	Infrared thermometers	temperature	(35 to 260) °C (260 to 390) °C (390 to 485) °C (485 to 500) °C	1,4 °C 1,5 °C 1,6 °C 1,7 °C	direct comparison with standard calibration equipment	KP 3.2.3/01.14 *3) (SMEP-24-IPP)	Execution of the activity at the laboratory ⁶⁾
6.5	Thermal cameras	temperature	(35 to 260) °C (260 to 390) °C (390 to 485) °C (485 to 500) °C	1,4 °C 1,5 °C 1,6 °C 1,7 °C	direct comparison with standard calibration equipment	KP 3.2.3/02/1 3*4) (SMEP-24-IPP)	Execution of the activity at the laboratory ⁶⁾

NOTES:

- 1) Opinions and interpretations.
- 2) Sphere of applications – environmental protection, subject area of authorized calibration of measuring analyzers, which are part of the automated measurement systems (AMS-E) of pollutant emissions from stationary sources of pollution in ambient air and related instruments and reference quantities of waste gases under Annex 9, letter b) point 1 of the Act. No. 146/2023 Coll. on air, and amending and supplementing certain acts
- 3) Specific calibration requirements are applied according to approval to install the AMS-E, approved documentation or an approved alternative methodology of the relevant continuous measurement
- 4) External calibration of the gas separation station.
- 5) Volumetric fraction in percent.
- 6) The value of the measuring ranges listed above are fixed.
- 7) STN ISO 11042-2 applies for gas turbines.
- 8) Execution of the activity at the customer's. (AMS-E)
- 9) Execution of the activity at the laboratory or at the customer's (EMS/AMS).
- 10) For gases with approximately the same density as air.



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- 11) Expanded measurement uncertainty – uncertainty characteristic of the given measurement range, which is achievable under standard conditions prescribed in the relevant methodology, expressed as expanded uncertainty with a coverage factor $k=2$ at 95 % probability, expressed in % of the value, unless otherwise specified.
- 12) Possibility to express calibration result as C₃H₈, CH₄ based on customer requests
- 13) Valid also for AMS-G
- 14) Valid to temperature 180° - 250° C with partial immersion
- 15) The suitability of the reference material demonstrated in accordance with PL 13.

cTZL- the result of measuring mass concentration of particulate matter.

People capable of expressing opinions and interpretations

Name and surname, degree	Capacity to express opinions and interpretations - -accreditation scope item number
Juraj Béл, Ing.	1 to 4
Martin Chovanec, Ing.	1 to 4
Ignáц Kožej, Ing.	1 to 4
Tomáš Kuskulič, Ing., PhD.	1 to 4
Jaroslav Smolej, Ing.	1 to 4

