

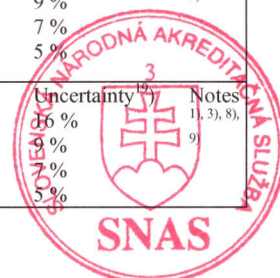
## Accreditation scope

Name of the accredited subject: **EKO-TERM SERVIS s.r.o.****Testing Laboratory**

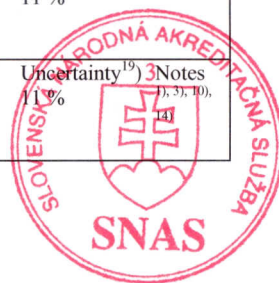
Napájadlá 11/2743, 040 12 Košice

Laboratory with fixed scope of accreditation

Item	Test subject		Implemented method		Other specifications (range, uncertainty, note)		
	Subject / Matrix / Environment	Property / Parameter / Variable / Analyt	Principle / Class / Type	Marking			
1	Waste gas <sup>2)</sup>	particulate matter (PM)	isokinetic gravimetric method	STNEN 13284-1 (SMEP-08-IPP)	Range (0.5 to 6.4) mg/m <sup>3</sup>  (6.5 to 19.9) mg/m <sup>3</sup>  (20 to 1 000) mg/m <sup>3</sup>	Uncertainty <sup>19)</sup> 0.6.c <sub>uzl</sub> + 0.2 mg/m <sup>3</sup> 0.13.c <sub>uzl</sub> +3,2 mg/m <sup>3</sup> 29 %	Notes 1), 3), 4), 5), 11)
				STN ISO 9096	Range (20 to 1 000) mg/m <sup>3</sup>	Uncertainty <sup>19)</sup> 29 %	Notes 1)
2	Waste gas <sup>2)</sup>	fraction of particulate matter PM <sub>2.5</sub> and PM <sub>10</sub>	gravimetric method	STN EN ISO 23210 (SMEP-08-IPP)	Range (0.5 to 6.4) mg/m <sup>3</sup>  (6.5 to 19.9) mg/m <sup>3</sup>  (20 to 40) mg/m <sup>3</sup>	Uncertainty <sup>19)</sup> 0.6.c <sub>pm</sub> + 0.2 mg/m <sup>3</sup> 0.13.c <sub>pm</sub> + 3.2 mg/m <sup>3</sup> 29 %	Notes 1), 4), 16)
3	Waste gas <sup>2)</sup>	darkness of smoke Bacharach degree	photometry	STN ISO 11042- 1, art. 7.8 (SMEP-16-IPP)	Range (0 to 9) degree	Uncertainty <sup>19)</sup> 1 degree	Notes 1), 3), 15)
4	Waste gas <sup>2)</sup>	sulphur dioxide (SO <sub>2</sub> )	NDIR	STN ISO 7935 (SMEP-01-IPP)	Range (5 to 30) mg/m <sup>3</sup> (30.1 to 60) mg/m <sup>3</sup> (60.1 to 200) mg/m <sup>3</sup> (201 to 600) mg/m <sup>3</sup> (601 to 15 000) mg/m <sup>3</sup>	Uncertainty <sup>19)</sup> 17 % 12 % 10 % 8 % 6 %	Notes 1), 3), 6), 7), 9)
5	Waste gas <sup>2)</sup>	Nitrogen oxides – nitric oxide and nitrogen dioxide, expressed as nitrogen dioxide (NO <sub>x</sub> )	chemi- luminescence	STN EN 14792 (SMEP-01-IPP)	Range (4 to 20) mg/m <sup>3</sup> (20.1 to 60) mg/m <sup>3</sup> (61 to 200) mg/m <sup>3</sup> (201 to 5 000) mg/m <sup>3</sup>	Uncertainty <sup>19)</sup> 16 % 10 % 8 % 6 %	Notes 1), 3), 6), 9)
			NDIR	STN ISO 10849 (SMEP-01-IPP)	Range (4 to 20) mg/m <sup>3</sup> (20.1 to 60) mg/m <sup>3</sup> (61 to 200) mg/m <sup>3</sup> (201 to 5 000) mg/m <sup>3</sup>	Uncertainty <sup>19)</sup> 16 % 10 % 8 % 6 %	Notes 1), 3), 6), 7), 9)
			electro- chemically	EPA CTM 030 (SMEP-02-IPP)	Range (6 to 20) mg/m <sup>3</sup> (20.1 to 60) mg/m <sup>3</sup> (61 to 200) mg/m <sup>3</sup> (201 to 6700) mg/m <sup>3</sup>	Uncertainty <sup>19)</sup> 16 % 10 % 8 % 6 %	Notes 1), 3), 8), 9)
6	Waste gas <sup>2)</sup>	Nitrous oxide (N <sub>2</sub> O)	NDIR	STN EN ISO 21258 (SMEP-01-IPP)	Range (4 to 20) mg/m <sup>3</sup> (20.1 to 60) mg/m <sup>3</sup> (61 to 200) mg/m <sup>3</sup> (201 to 10 000) mg/m <sup>3</sup>	Uncertainty <sup>19)</sup> 16 % 10 % 8 % 6 %	Notes 1), 9)
7	Waste gas <sup>2)</sup>	Carbon monoxide	NDIR	STN EN 15058 (SMEP-01-IPP)	Range (3 to 20) mg/m <sup>3</sup> (20.1 to 60) mg/m <sup>3</sup> (61 to 200) mg/m <sup>3</sup> (0.201 to 25) g/m <sup>3</sup>	Uncertainty <sup>19)</sup> 16 % 9 % 7 % 5 %	Notes 1), 3), 6), 9)
		(CO)	electro- chemically	EPA CTM 030 (SMEP-02-IPP)	Range (3 to 20) mg/m <sup>3</sup> (20.1 to 60) mg/m <sup>3</sup> (61 to 200) mg/m <sup>3</sup> (0.201 to 25) g/m <sup>3</sup>	Uncertainty <sup>19)</sup> 16 % 9 % 7 % 5 %	Notes 1), 3), 8), 9)



Item	Test subject		Implemented method		Other specifications (range, uncertainty, note)	
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8	Waste gas <sup>2)</sup>	Carbon dioxide (CO <sub>2</sub> )	NDIR	STN ISO 12039 (SMEP-01-IPP)	Range (0.1 to 19.9) % (20 to 40) %	Uncertainty <sup>19)</sup> Notes 7 % 5 % 1), 9), 10)
			calculation of the volume fraction of CO <sub>2</sub> from the volume fraction of O <sub>2</sub> and CO	EPA CTM 030 (SMEP-02-IPP)	Range (0.5 to 13.9) % (0.5 to 15.9) %	Uncertainty <sup>19)</sup> Notes 8 % 8 % 1), 9), 10) gaseous fuels liquid fuels
			volume concentration of CO <sub>2</sub> based on elemental analysis of fuel burned	SMEP-10-IM	Range (0.2 to 20) %	Uncertainty <sup>19)</sup> Notes 5 % 1), 10)
9	Waste gas <sup>2)</sup>	Oxygen (O <sub>2</sub> )	paramagneti- cally	STN EN 14789 (SMEP-01-IPP)	Range (0.1 to 6.0) % (6.1 to 25) %	Uncertainty <sup>19)</sup> Notes 7 % 5 % 1), 3), 6), 9), 10)
			electro- chemically	EPA CTM 030 (SMEP-02-IPP)	Range (0.1 to 6.0) % (6.1 to 25) %	Uncertainty <sup>19)</sup> Notes 7 % 5 % 1), 3), 8), 9), 10)
10	Waste gas <sup>2)</sup>	gaseous organic substances, expressed as total carbon (TOC)	FID	STN EN 12619 (SMEP-06-IPP)	Range (0.5 to 5) mg/m <sup>3</sup> (5.1 to 10) mg/m <sup>3</sup> (10.1 to 60) mg/m <sup>3</sup> (60.1 to 150) mg/m <sup>3</sup> (0.151 to 500) g/m <sup>3</sup>	Uncertainty <sup>19)</sup> Notes 31 % 16 % 10 % 8 % 6 % 1), 3), 6), 9), 12)
11	Waste gas <sup>2)</sup>	gas flow rate /Δp	measuring of temperature and dynamic pressure with a velocity probe/ calculation	STN ISO 10780 (SMEP-04-IPP)	Range (3 to 5) m/s (5.1 to 10) m/s (10.1 to 50) m/s  (5 to 15) Pa (16 to 65) Pa (66 to 2300) Pa	Notes 1), 3), 20) Uncertainty <sup>19)</sup> 9 % 7 % 5 %
			measuring of temperature dynamic pressure with a velocity probe/ calculation	STN EN ISO 16911-1 (SMEP-04-IPP)	Range (3 to 5) m/s (5.1 to 10) m/s (10.1 to 50) m/s  (5 to 15) Pa (16 to 65) Pa (66 to 2300) Pa	Notes 1), 3), 13) Uncertainty <sup>19)</sup> 9 % 7 % 5 %
			measuring with anemometers	STN EN ISO 16911-1 (SMEP-04-1- IPP)	Range (0.4 to 5) m/s (5.1 to 10) m/s (10.1 to 25) m/s (25.1 to 40) m/s	Uncertainty <sup>19)</sup> Notes 9 % 8 % 7 % 6 % 1), 3)
12	Waste gas <sup>2)</sup>	volumetric flow	measuring pipe cross-section and calculation of the waste gas flow rate	STN EN ISO 16911-1 STN ISO 10780 <sup>20)</sup> (SMEP-04-IPP)	Range (0.3 to 10) m <sup>3</sup> /s (11 to 60) m <sup>3</sup> /s (61 to 400) m <sup>3</sup> /s	Uncertainty <sup>19)</sup> Notes 9.1 % 7.1 % 5.2 % 1), 3)
			calculation based on the fuel composition	STN EN ISO 16911-1 (SMEP-04-IPP)	Range (0.2 to 250) m <sup>3</sup> /s	Uncertainty <sup>19)</sup> Notes 7 % 1), 3)
13	Waste gas <sup>2)</sup>	humidity of the gas in the pipeline	gravimetry (adsorption/ condensation/ adsorption)	STN EN 14790 (SMEP-04-IPP)	Range (3 to 250) g/m <sup>3</sup> (0.4 až 25) % <sup>10)</sup>	Uncertainty <sup>19)</sup> Notes 11 % 1), 3)
		relative humidity of the gas in the pipeline	by electrical capacity and calculation	SMEP-05-1M (RdSchrđ. BMU IG I 2-45053/5)	Range (5 to 95) %	Uncertainty <sup>19)</sup> Notes 11 % 1), 3), 10), 14)



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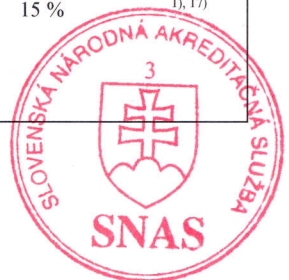
Item	Test subject		Implemented method		Other specifications (range, uncertainty, note)		
	Subject / Matrix / Environment	Property / Parameter / Variable / Analyt	Principle / Class / Type	Marking			
14	Waste gases – gasoline vapours	concentration of petrol vapours in waste gas from the regenerative unit in the terminal	FID	STN EN 12619 (SMEP-06-IPP)	Range (0.5 to 5) mg/m <sup>3</sup> (5.1 to 10) mg/m <sup>3</sup> (10.1 to 60) mg/m <sup>3</sup> (60.1 to 150) mg/m <sup>3</sup> (0.151 to 500) g/m <sup>3</sup>	Uncertainty <sup>19)</sup> 31 % 16 % 10 % 8 % 6 %	Notes 1), 3), 9)
15	Waste gases – gasoline vapours	ratio of vapours and stage II petrol vapour recovery at petrol stations	measurement with the real flow of petrol (wet method A and B)	STN EN 16321-2 (SMEP-19-IPP)	Range (0.1 to 2.5)	Uncertainty <sup>19)</sup> 3 %	Notes 1), 9), 21)
16	Stationary sources of pollution <sup>2)</sup>	individual emission factor	measurement of the concentration and volumetric flow of waste gas, calculation based on mass flow and the amount of the relational value	STN EN ISO 11771 (SMEP-13-IPP)	Range (0.0001 to 2 000) kg/h (0.001 to 10) kg/IU	Uncertainty <sup>19)</sup> 10 % 15 %	Notes 1), 16)
17	Stationary sources of pollution <sup>2)</sup>	individual mass flow	calculation based on the concentration and volumetric flow	STN EN ISO 11771 (SMEP-13-IPP)	Range (0.0001 to 2000) kg/h	Uncertainty <sup>19)</sup> 10 %	Notes 1), 16)





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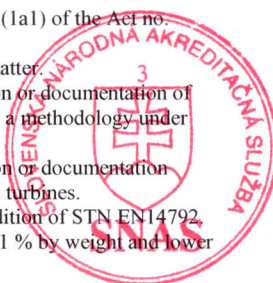
Item	Test subject		Implemented method		Other specifications (range, uncertainty, note)		
	Subject / Matrix / Environment	Property / Parameter / Variable / Analyt	Principle / Class / Type	Marking			
18	Selected stationary sources of air pollution <sup>2)</sup> under Annex no. 7 of the Decree of MoE SR no. 410/2012 Coll.	limiting emission factor for PM	measurement of the concentration and volumetric flow of waste gas according to standard methodologies calculation of the emission factor based on mass flow and the amount of the relational value	SMEP-13-IM (STN EN ISO 11771)	Range (0.001 to 100) kg/t of coke (0.001 to 100) g/t pellets (0.001 to 100) kg/t aluminium (0.001 to 100) kg/t of burnt clinker (0.001 to 100) kg/t of burnt lime	Uncertainty <sup>19)</sup> 15 %	Notes 1), 2), 17)
		limiting emission factor for sulphur oxides: sulphur dioxide, sulphur trioxide and aerosol H <sub>2</sub> SO <sub>4</sub> expressed as sulphur dioxide (SO <sub>x</sub> )			Range (0.001 to 100) kg/t of produced 100% H <sub>2</sub> SO <sub>4</sub> (0.001 to 100) kg/t of produced TiO <sub>2</sub>	Uncertainty <sup>19)</sup> 15 %	Notes 1), 17)
		limiting emission factor for nitrogen oxides: nitric oxide and nitrogen dioxide, expressed as nitrogen dioxide (NO <sub>x</sub> )			Range (0.001 to 100) kg/t of produced HNO <sub>3</sub>	Uncertainty <sup>19)</sup> 15 %	Notes 1), 17)
		limiting emission factor for carbon monoxide (CO)			Range (0.001 to 100) kg/t of liquid steel	Uncertainty <sup>19)</sup> 15%	Notes 1), 17)
		limiting emission factor for organic substances in the form of gases and vapours, expressed as total organic carbon (TOC)			Range (0.001 to 100) kg/t of water vapour	Uncertainty <sup>19)</sup> 15 %	Notes 1), 17)
		limiting emission factor for mercury and its compounds, expressed as Hg			Range (0.001 to 100) g/t of produced chlorine	Uncertainty <sup>19)</sup> 15 %	Notes 1), 17)
		limiting emission factor for fluorine and its gaseous compounds expressed as HF			Range (0.001 to 100) kg/t of aluminium	Uncertainty <sup>19)</sup> 15 %	Notes 1), 17)
		limiting emission factor for gaseous ammonia and its compounds, expressed as NH <sub>3</sub>			Range (0.001 to 100) kg/t of produced NH <sub>3</sub>	Uncertainty <sup>19)</sup> 5 %	Notes 1), 17)
		limiting emission factor for gaseous inorganic chlorine compounds, expressed as HCl, except phosgene, cyanogen chloride and chlorine oxides			Range (0.001 to 100) kg/t of produced 36% HCl	Uncertainty <sup>19)</sup> 15 %	Notes 1), 17)
		limiting emission factor for the 4 <sup>th</sup> group of the 1 <sup>st</sup> subgroup of organic gaseous vapours – emissions in general			Range (0.001 to 100) kg/m <sup>3</sup> of produced boards	Uncertainty <sup>19)</sup> 15 %	Notes 1), 17)



Item	Test subject		Implemented method		Other specifications (range, uncertainty, note)
	Subject / Matrix / Environment	Property/ Parameter / Indicator/ Analyt	Principle / Class / Type	Marking	
19	AMS-E	performance characteristics tested at installation (QAL2) and annual tests (AST): response time, detection limit, linearity, drift in the zero point, drift in the span point, interference, converter efficiency, losses and leakage along the sampling line in the sample preparation system (leak test), the effect of temperature on the drift of zero value and drift of measurement span, sensitivity to atmospheric pressure, sensitivity to sample flow or sample pressure, the sensitivity to the ambient temperature, sensitivity to voltage repeatability variability, standard deviation, systematic error, overall characteristics of the	tests with certified reference materials/gases, parallel measurements with the standard reference methodology/reference methodology with other measuring principle than AMS-E	STN EN 14181, TNI CEN/TR 15983 (SMEP-09-IPP)	Other introduced specific standards Notes under which AMS / EMS are tested: 1), 18) STN EN 15259, STN EN 14956, STN P CEN/TS 14793, STN ISO 10396, STN EN 15267-3, STN ISO 7935, STN EN 14792, STN ISO 10849, STN EN 15058, STN EN 12619, STN EN 14884, RdSchr. d. BMU IG 12-45053/5 STN ISO 15713, STN EN 1911, STN 83 4712, STN 83 4728, STN ISO 10155, STN EN13284-1,2, STN EN 14789 STN ISO 12039, STN EN 14790, STN EN ISO 16911-1,2
20	AMS/EMS				Other introduced specific standards under which AMS / EMS are tested: Note 1) STN EN 15259, STN EN 14956, STN P CEN/TS 14793, STN ISO 10396, STN EN 15267-3, STN ISO 7935, STN EN 14792, STN ISO 10849, STN EN15058, STN EN 12619, STN EN 14884, RdSchr. d. BMU IG 12-45053/5 STN ISO 15713, STN EN 1911, STN 83 4712, STN 83 4728, STN ISO 10155, STN EN 13284-1,2, STN EN 14789 STN ISO 12039, STN EN 14790, STN EN ISO 16911-1,2, EPA CTM 030, STN EN ISO 21258

## Notes and explanation of abbreviations:

- 1) Opinions and interpretations.
- 2) Discontinuous emission measurements according to STN EN 15259.
- 3) Sphere of application – environmental protection, subject area of eligible measurement under Section 20 (1a1) of the Act no. 137/2010 Coll. on air, as amended by Act no. 318/2012 Coll., execution of activity at the customer's.
- 4)  $C_{TSL}$ ,  $C_{PM}$  – the result of measuring mass concentration of particulate matter, or fractions of particulate matter.
- 5) STN EN 13284-1 is applied as a standard reference method even in cases where the consent, authorization or documentation of the object of eligible measurement present methodology according to STN ISO 9096, or for gas turbines, a methodology under STN ISO 11042-1 is presented.
- 6) The methodology is applied as a standard reference method even in cases where the consent, authorization or documentation of the object of eligible measurement present methodology according to STN ISO 11042-1 in case of gas turbines.
- 7) Requirements for field measurement and check/validity of the result are applied according to the latest edition of STN EN14792.
- 8) Combustion of natural gas, diesel, liquefied hydrocarbon fuels and liquid fuels with a sulphur content of 1 % by weight and lower





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- in combustion plants, including gas turbines and reciprocating engines with a total nominal thermal input below 50 MW.
- Sampling is an integral part of measurement process.
- Volumetric fraction expressed in per cents.
- Sphere of application – environmental protection, subject area of eligible measurement under Section 20 (1a5) of the Act no. 137/2010 Coll. on air, as amended by Act no. 318/2012 Coll., execution of activity at the customer's.
- STN EN 12619 is applied as a standard reference method even in cases where the consent, authorization or documentation of the object of eligible measurement present methodology according to STN EN 13526.
- STN EN 16911-1 is applied as a standard reference method even in cases where the consent, authorization or documentation of the object of eligible measurement present methodology according to STN ISO 9096.
- Alternative custom modified non-standard methodology processed from a professional source according to Section 6(4a and 7c) of the Ministry of Environment Decree no. 60/2011 Coll.
- STN ISO 11042-1 applies to gas turbines.
- Sphere of application – environmental protection, subject area of eligible measurement under Section 20 (1a3) of the Act no. 137/2010 Coll. on air, as amended by Act no. 318/2012 Coll., execution of activity at the customer's.
- Sphere of application – environmental protection, subject area of eligible measurement under Section 20 (1a2) of the Act no. 137/2010 Coll. on air, as amended by Act no. 318/2012 Coll., execution of activity at the customer's.
- Sphere of application – environmental protection, subject area of eligible testing of automated measurement systems of pollutant emissions in ambient air and related reference and state values of waste gases under Section 20 (1c1) of the Act no. 137/2010 Coll. on air, as amended by Act no. 318/2012 Coll., execution of activity at the customer's.
- 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.
- For gases with approximately the same density as air.
- Sphere of application – environmental protection, subject area of eligible measurement under Section 20 (1a5) of the Act no. 137/2010 Coll. on air, as amended by Act no. 318/2012 Coll., execution of activity at the customer's.

AMS-E – automated measuring system of pollutant emissions from stationary sources of pollution in ambient air

AMS/EMS – automated measuring system/emission measurement system

NDIR – non-dispersive infra-red spectrometry/detection

FID – flame ionization detector

IU - The unit of measure according to a type of relational variable ( $m^3$ , kg, t).

QAL2 – quality assurance of installation after installing AMS

AST – annual (periodic) inspection of AMS

Persons legitimate of expressing opinions and interpretations

Name and surname, degree	Capacity to express opinions and interpretations - - accreditation scope item number
Juraj Běl, Ing.	1 to 20
Miroslav Boroš, Ing.	1 to 18
Attila Farkas, Ing.	1 to 18
Martin Chovanec, Ing.	1 to 20
Ignác Kožej, Ing.	1 to 20
Tomáš Kuskulič, Ing. PhD.	1 to 20
Gabriel Molnár, Bc.	1 to 18
Jaroslav Smolej, Ing.	1 to 20
Miloš Varga, Ing.	1 to 20

