NACIONALINIS
AKREDITACIJOS BIURAS

Lithuanian National Accreditation Bureau is a signatory to the European co-operation for Accreditation (EA) Multilateral Agreement (for accreditation of testing, calibration, medical examinations, certification of products, persons and management systems and inspection) and International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (for accreditation in the fields of testing, calibration, medical examinations and inspection)

ACCREDITATION CERTIFICATE
No. LA.02.004

Lithuanian National Accreditation Bureau hereby certifies that

Lithuanian energy institute Laboratory of heat-equipment research and testing

legal entity: Lietuvos energetikos institutas
legal entity code: 111955219

complies with the requirements of

LST EN ISO/IEC 17025:2018

and is competent to perform:

calibration of measuring equipment

The scope of accreditation below is an integral part of this certificate. Locations of the conformity assessment body are specified in the scope of accreditation

Initial accreditation date:: **1997-01-10**

Certificate issued / valid since: **2024-05-21**
Version of: **2024-05-21**
Expiry date: **2025-08-05**

Deputy Director, acting as Director

TADAS JUODELIS

The certificate may be changed, its validity suspended or withdrawn by the decision of the National Accreditation Bureau. Information on the actual data of accreditation certificates may be verified at nab.lrv.lt

NACIONALINIS AKREDITACIJOS BIURAS
Kalibravimas ISO/IEC 17025

ilac-MRA

SCOPE OF ACREDITATION

Lithuanian energy institute Laboratory of heat-equipment research and testing, accredited in accordance with **LST EN ISO/IEC 17025:2018**

Location of the conformity assessment body:

Breslaujos str. 3, 44403 Kaunas

Calibration and measurement capability (CMC) expressed as:				
Measurand	**Reference number of calibration method or procedure**	**Type of instrument to be calibrated**	**Measurement range and additional parameters (where applicable)**	**Measurement uncertainty**
Air (gas) velocity	KM-1E-MP01:2019, Edition 4, 2019-10-22	Anemometers and Pitot tubes	form 0.05 m/s to 015 m/s > 0.15 m/s to 1 m/s > 1 m/s to 60 m/s	[(0.23 / R) + 3.4] % [(0.52 / R) + 1.3] % [(1.5 / R) + 0.39] %
	KM-1E-0001:2019, Edition 4, 2019-09-10	Air velocity meters calibration facilities (calibration in the laboratory)	form 0.05 m/s to 0.15 m/s > 0.15 m/s to 1 m/s > 1 m/s to 60 m/s	[(0.23 / R) + 3.4] % [(0.52 / R) + 1.3] % [(1.5 / R) + 0.39] %
	KM-1E-0002:2019, Edition 2, 2019-09-23	Air velocity meters calibration facilities (calibration on site)	form 0.5 m/s to 5 m/s > 5 m/s to 40 m/s	[(0.72 / R) + 0.66] % [(1.65 / R) + 0.47] %
Air (gas) volume and flow rate	KM-2E/1B-MP01:2012, Edition 1, 2012-06-15	Air (gas) meters and flowmeters	form 0.0003 m^3/h to 0.3 m^3/h	0.45 %
	KM-2E/1-MP01:2020, Edition 2, 2020-07-16		from 0.016 m^3/h to 16 m^3/h	0.13 %
	KM-2E/1A-MP01:2020, Edition 2, 2020-07-16 KM-2E/1A-MP02:2010, Edition 2, 2010-11-20		from 0.016 m^3/h to 10 m^3/h	0.41 %
	KM-2E/2-MP01:2014, Edition 2, 2014-05-15		from 5.7 m^3/h to 308.8 m^3/h	0.16 %
	KM-2E/3-MP01:2020, Edition 3, 2020-07-16		from 1 m^3/h to 1600 m^3/h > 1600 m^3/h to 9700 m^3/h	0.25 % 0.30 %
	KM-2E/3A-MP02:2010, Edition 2, 2010-10-05 based on LST EN 12405-1:2021	Gas volume conversion devices	---	Conversion factor uncertainty 0.15 %

Calibration and measurement capability (CMC) expressed as:				
Measurand	**Reference number of calibration method or procedure**	**Type of instrument to be calibrated**	**Measurement range and additional parameters (where applicable)**	**Measurement uncertainty**
Air (gas) volume and flow rate	KM-2E/1-0001:2019, Edition 2, 2019-10-15	Bell type provers (calibration in the laboratory)	from 0.016 m^3/h to 16 m^3/h	0.13 %
		Bell type provers (calibration on site)	from 0.016 m^3/h to 16 m^3/h	0.25 %
	KM-2E/2-0001:2019, Edition 3, 2019-10-15	Facilities with critical nozzles (calibration in the laboratory)	from 5.7 m^3/h to 308.8 m^3/h	0.16 %
		Facilities with critical nozzles (calibration on site))	from 0.016 m^3/h to 16 m^3/h	0.35 %
	KM-2E/3-0001:2019, Edition 3, 2019-10-15	Facilities with reference meters (calibration in the laboratory)	from 1 m^3/h to 1600 m^3/h > 1600 m^3/h to 9700 m^3/h	0.25 % 0.30 %
		Facilities with reference meters (calibration on site)	from 0.25 m^3/h to 650 m^3/h	0.25 %
Water volume, mass and volume flow rate	KM-3E-MP02:2015, Edition 2, 2015-09-21	Mechanical, magnetoinductive, ultrasonic, vortex and mass meters	Volume: from 5 dm^3 to 1500 dm^3 Flowrate: from 0.01 m^3/h to 100 m^3/h Water temperature: from 20 °C to 50 °C	(0.054 + 0.019·10^{-3}×R) %
			Mass: from 5 kg to 1500 kg Flowrate: from 0.01 kg/h to 100 kg/h Water temperature: from 20 °C to 50 °C	(0.048 + 0.015 10^{-3}×R) %
		Fow rate meters	Flowrate: from 0.10 m^3/h to 100 m^3/h Water temperature: from 20 °C to 50 °C	(0.10 + 0.2 10^{-3}×R) %
Heat content	KM-3E-MP02:2015, Edition 2, 2015-09-21	Meters with mechanical, magnetoinductive, ultrasonic and vortex flowmeters	Flowrate: from 0.01 m^3/h to 100 m^3/h Temperature difference, $\Delta\vartheta$ from 3 °C to 150 °C	$\left(\frac{4.3}{\Delta\vartheta}+0.35\right)^{0.5}-0.38$ %,
Water volume/flow rate, heat content	KM-3E-0001:2010, Edition 2, 2010-10-05	Calibration devices for water and heat meters (in the laboratory)	Flowrate: from 0.01 m^3/h to 100 m^3/h Temperature difference, $\Delta\vartheta$ from 3 °C to 150 °C	Volume: (0.054 + 0.019·10^{-3} × R) % Debit: (0.10 + 0.2 10^{-3} × R) % Heat content: $\left(\frac{4.3}{\Delta\vartheta}+0.35\right)^{0.5}-0.38$ %
		Calibration devices for water and heat meters (on site)	Flowrate: from 0.01 m^3/h to 100 m^3/h Temperature difference, $\Delta\vartheta$ from 3 °C to 150 °C	Volume – 0.10 % Flowrate: - 0,15 % Heat content: $\left(\frac{4.3}{\Delta\vartheta}+0.38\right)^{0.5}-0.35$ %
Volume of lquids other than water	KM-4E-MP01:2019, Edition 3, 2019-10-17 based on EURAMET Calibration Guide No. 21 v. 3.0 (02/2024) Volumetric method	Dynamic measuring systems/meters for liquids other than water	Volume: from 500 dm^3 to 5000 dm^3, Flowrate: from 1.0 m^3/h to 150 m^3/h	(0.06 + 0.1·10^{-5} × R) %
	KM-4E-MP01:2019, Edition 3, 2019-10-17 based on EURAMET		Volume: from 500 dm^3 to 1500 dm^3, Flowrate: from 1.0 m^3/h to 50 m^3/h	(0.04 + 0.25·10^{-5} × R) %

Calibration and measurement capability (CMC) expressed as:				
Measurand	**Reference number of calibration method or procedure**	**Type of instrument to be calibrated**	**Measurement range and additional parameters (where applicable)**	**Measurement uncertainty**
Volume of lquids other than water	Calibration Guide No.19 v. 3.0 (09/2018) Gravimetric method			
	KM-4E-MP01:2019, Edition 3, 2019-10-17 Method of comparison with a mobile reference meter		Volume: from 500 dm^3 to 5000 dm^3, Flowrate: from 1.0 m^3/h to 135 m^3/h	0.12 %
Gauge pressure	KM-5E-MP01:2019, Edition 4, 2019-12-22 based on EURAMET Calibration Guide No.17 v. 4.1 (09/2022) KM-5E-MP02:2019, Edition 1, 2019-08-23 based on EURAMET/cg-3 v. 1.0 (03/2011)	Piston gauge, mechanical and electromechanical gauge pressure and differential pressure gauges and transducers	from -100 kPa to -3.0 kPa (gas)	$(4.68 + 3.31 \cdot 10^{-5} \times p_{vak.})$ Pa
			from 0.15 Pa to 1.99 Pa (gas)	0.012 Pa
			from 2 Pa to 20 Pa (gas)	0.029 Pa
			from 20 Pa to 45 Pa (gas)	0.10 Pa
			from 50 Pa to 125 Pa (gas)	0.11 Pa
			from 160 Pa to 200 Pa (gas)	0.12 Pa
			from 250 Pa to 315 Pa (gas)	0.13 Pa
			360 Pa (gas)	0.14 Pa
			from 0.4 kPa to 25 kPa (gas)	$(0.1 + 0.12 \cdot 10^{-3} \times p)$ Pa
			from 8 kPa to 500 kPa (gas)	$(0.50 + 1.30 \cdot 10^{-5} \times p)$ Pa
			from 0.5 MPa to 10 MPa (gas)	$(12.8 + 2.17 \cdot 10^{-5} \times p)$ Pa
			from 0.5 MPa to 50 MPa (liquid)	$(106.2 + 1.8 \cdot 10^{-5} \times p + 3 \cdot 10^{-13} \times p^2)$ Pa
			from 50 MPa to 500 MPa (liquid)	$(183.54 + 3.2 \cdot 10^{-5} \times p + 1 \cdot 10^{-13} \times p^2)$ Pa
Absolute pressure	KM-5E-MP01:2019, Edition 4, 2019-12-22 based on EURAMET Calibration Guide No.17 v. 4.1 (09/2022) KM-5E-MP02:2019, Edition 1, 2019-08-23 based on EURAMET/cg-3 v. 1.0 (03/2011))	Piston gauge, mechanical and electromechanical absolute pressure gauges and transducers	from 8 kPa to 500 kPa (gas)	$(0.50 + 1.65 \cdot 10^{-5} \times p)$ Pa
			from 0.5 MPa to 7 MPa (gas)	$(12.8 + 2.43 \cdot 10^{-5} \times p)$ Pa
			from 0.5 MPa to 50 MPa (liquid)	$(106.3 + 1.8 \cdot 10^{-5} \times p + 3 \cdot 10^{-13} \times p^2)$ Pa
			from 50 MPa to 500 MPa (liquid)	$(183.56 + 3.2 \cdot 10^{-5} \times p + 1 \cdot 10^{-13} \times p^2)$ Pa
Temperature	KM-6E-MP01:2010, Edition 2, 2010-11-29 based on OIML R133:2002	Glass, digital thermometers	from -30 °C to 200 °C	0.05 °C
Temperature	KM-6E-MP01:2010, Edition 2, 2010-11-29 based on OIML R 84:2003	Resistance thermometers	from -30 °C to 0 °C > 0 °C to 200 °C	(0.032 + 0.0006 × R) °C (0.032 + 0.00004 × R) °C
	KM-12E-MP01:2020, Edition 3, 2020-07- based on EURAMET Calibration Guide No. 20 v. 5.0 (09/2017)	Climatic chambers	from -30 °C to 100 °C	0.40 °C

Calibration and measurement capability (CMC) expressed as:				
Measurand	**Reference number of calibration method or procedure**	**Type of instrument to be calibrated**	**Measurement range and additional parameters (where applicable)**	**Measurement uncertainty**
Air humidity	KM-9E-MP01:2015, Edition 4, 2015-08-28 based on EURAMET Calibration Guide No. 20 v. 5.0 (09/2017)	Humidity meters	from 11 % to 98 %. Air temperature from 15 °C to 50 °C	(0.60 + 0.0072 × R) %
	KM-12E-MP01:2020, Edition 3, 2020-07-17 based on EURAMET Calibration Guide No. 20 v. 5.0 (09/2017)	Climatic chambers	from 11 % to 98 % Air temperature from 15 °C to 50 °C	1.50 %
Volume	KM-7E-MP01:2016, Edition 3, 2016-06-08 based on EURAMET Calibration Guide No.19 v. 3.0 (09/2018) Gravimetric method	Standard capacity measures	20 l 50 l 100 l 200 l 1000 l	1.8 ml 3.2 ml 6.2 ml 12 ml 120 ml
	KM-7E-MP01:2016, Edition 3, 2016-06-08, based on EURAMET Calibration Guide, No. 21 v. 3.0 (02/2024) Volumetric method		500 l 1000 l 2000 l 3000 l 5000 l	0.20 l 0.30 l 0.60 l 1.0 l 2.5 l

Note. In case of any discrepancies, ambiguities or disputes regarding the subject matter content between the English and Lithuanian versions of the document, the Lithuanian version shall prevail.

The accreditation certificate is signed with a qualified electronic signature as an attachment to the order of the Director of the National Accreditation Bureau, by which it was approved