ANNEX II + III: TECHNICAL SPECIFICATIONS + TECHNICAL OFFER

Contract title: Supply of Equipment Necessary for Improving of Conformity Assessment (CA) Services in the Republic of Serbia **1 /17**

LOT 10: EQUIPMENT FOR MASS, VOLUME AND FLOW CALIBRATIONS

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Columns 1-2 should be completed by the Contracting Authority
Columns 3-4 should be completed by the tenderer
Column 5 is reserved for the evaluation committee

Annex III - the Contractor's technical offer

The tenderers are requested to complete the template on the next pages:

- Column 2 is completed by the Contracting Authority shows the required specifications (not to be modified by the tenderer);
- Column 3 is to be filled in by the tenderer and must detail what is offered (for example the words “compliant” or “yes” are not sufficient);
- Column 4 allows the tenderer to make comments on its proposed supply and to make eventual references to the documentation.

The eventual documentation supplied should clearly indicate (highlight, mark) the models offered and the options included, if any, so that the evaluators can see the exact configuration. Offers that do not permit to identify precisely the models and the specifications may be rejected by the evaluation committee.

The offer must be clear enough to allow the evaluators to make an easy comparison between the requested specifications and the offered specifications.

Unless otherwise specified, the requirements in these Technical Specifications are presented as a minimum standard which the offered goods must meet.

Unless otherwise stated, the following requirements shall also apply:

A - Documentation
Upon delivery of the goods a technical documentation for equipment (such as instruction manual for the use, maintenance, calibration, etc.), in English shall be provided, unless otherwise stipulated by Serbian technical regulations. If available, an additional manual in the Serbian language would be welcomed.

B - Compliance to safety rules and regulations
When submitting a tender, the tenderer must state expressly that all of the proposed equipment meet the safety requirements of the applicable rules and regulations in force in the Republic of Serbia. Upon delivery, the tendered equipment shall include proof of compliance.

C - Certificate of calibration
The Contractor shall deliver the equipment with the certificates of calibration for the equipment contributing to the uncertainty of the final test result for which they are intended to be used. The certificates of calibration should be issued by an accredited calibration laboratory, unless otherwise specified.

D - Installation
The Contractor shall install the equipment in the premises of the user and demonstrate after the installation of the equipment that it is capable of performing the functions required of it.

E - Training
When applicable, the Contractor shall provide on-the-job training to ensure the correct operation and maintenance of the equipment, at the time of installation, with additional training, to be provided by the Contractor within the following 6-month period. Tenderer shall submit training programme. The length of the training shall be adequate to the technical characteristics and maintenance requirements of the equipment supplied and shall allow the final user to properly handle the instrument(s). The training material must be provided on minimum 1 (one) electronic media and in minimum 1 (one) hard copy per trainee. The training should be in Serbian language (or interpretation must be provided by the supplier). The performance of the equipment against the required technical specifications shall be verified as part of the training.

F - Warranty
The Contractor shall provide a warranty for the equipment supplied in line with the Special Conditions. This warranty shall remain valid for one year after provisional acceptance.

G - Commercial Warranty
Commercial warranty must remain valid for two years (after the end of one year standard warranty) in accordance with the conditions laid down in Article 32 of the Special and General Conditions. Tenderer must provide a detailed description of the organisation of the proposed service.

LOT 10: EQUIPMENT FOR MASS, VOLUME AND FLOW CALIBRATIONS

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
1	**METAL MEASURING VESSEL, VN 500 L, ON TRAILER WITH ALL ACCESSORIES FOR INSPECTION SURVEILLANCE AND VERIFICATION OF DEVICES USED FOR LPG** QUANTITY: 1			
	Manufacturers name:			
	Product model:			
	The metal measuring vessel, Vn 500 L, is intended to be used as a standard for verification and inspection surveillance of fuel dispensers. It will be used for liquid fuels. - Material: Stainless steel. - Maximum permissible error based on R 120 OIML (International Organization for Legal Metrology) 2.2.2.2 should be +/-1/2000 of the nominal capacity. - Drip time: 30 s. - Reference temperature: 15°C. - Standing cylindrical design with foam funnel. - Foam funnel with cover and fill connection (flanged) conical upper- and lower bottom >15°.			

	- Filling line to bottom with sight glass and integrated overflow pipe. - Filling pipe with ball valve. - Drain pipe with ball valve and drop control. - Scale (stainless steel) engraved. - Levelling device. - Two temperature pockets, 1/2". - One pump for emptying the vessel. - One Trailer of appropriate diameter, loading height, frame diameter, and lighting device with connector. - One hose reel with manual crank 20 m long hose. - One hose 6 m long with MK coupling. - All necessary piping, valves and faucets made of appropriate materials – stainless steel to operate the equipment. One Platform with railing and ladder- galvanized steel, anti-slip). - One Deflagration and endurance burning proof unloading and ventilation hood for outdoor installation. - One Control Box for pump control according to ATEX 94/9/EG (pump control 0,55 – 0,75 kW ON/OFF, EMERGENCY STOP switch, cable with five pol EX-Lee (anti-explosive) connector, including documentation, overfill control). - Electrical installation including earthing cable without cable reel. - Accessories (drip tray, mounting for dry hose, fire extinguisher, toolbox, quick coupling for Nitrogen). - Documentation for trailer registration, including homologation should be provided. The following additional requirements apply:			

	A – Documentation			
	B - Compliance to safety rules and regulations			
	C - Certificate of calibration			
	F – Warranty			
	G - Commercial Warranty			
2	**CORIOLIS MASS FLOW METER - MOBILE REFERENCE METER FOR USE IN CALIBRATING LPG METERS IN THE FIELD** QUANTITY: 1			
	Manufacturers name:			
	Product model:			
	Intended use: mobile reference meter for use in the calibration of LPG meters in the field. Compact mobile measuring system in container with a mass measuring instrument (Coriolis) for verification of LPG dispensers in the field with connectors and laptop. - Nominal flow range: (0-3400) kg/h. - Maximum flow rate: ≥ 6500 kg/h. - Minimum flow rate: ≤ 300 kg/h. - Zero stability: ≤ 0.2 kg/h. - Mass flow accuracy for liquid: ± 0,05 % of rate. - Mass, density and volume indicator. - Transmitter. . - Mass flow repeatability for liquid: ± 0,025 % of rate. - Minimum volume: 2 L. - Maximum pressure: ≤ 25 bar.			

	- Nominal diameter ½ inch or ¾ inch NPT female fitting or connection, which is adaptable to NPT fittings. - Serial interface with computer. - Windows 7 compatible software for parameterization, reading and logging of data via serial interface. - Suitable laptop with installed software, ATEX certified, with a battery life in the field of at least 8 hours. - Temperature range ambient: from -25°C up to 50 °C. - Temperature range of the liquid: from -10°C up to 50 °C. - The Coriolis mass flow meter and associated instrumentation needs to be fitted into a transportable skid or box. - The mechanical design of the skid or box needs to ensure stable performance of the meter across different installations in the laboratory and in outdoor locations for field installation. - Measurement uncertainty 0,1% - Maximum pressure 15 bar. Hose for connection to LGP dispenser, 2x5m, maximum pressure 15 bar. The following additional requirements apply:			
	A – Documentation			
	B - Compliance to safety rules and regulations			
	C - Certificate of calibration			
	D – Installation			
	E – Training	Number of persons to be trained: 2 Duration: minimum 3 (three) working days		
	F – Warranty			
	G - Commercial Warranty			

3	**CNG CYLINDER** QUANTITY: 3			
	Manufacturers name:			
	Product model:			
	Intended use: Surveillance and verification of devices. - Strap mounted. - Type: CNG – 3 or 4. - Lining Material: 6061 – T6 Aluminum. - Composite material: Carbon fiber with epoxy resin. - Working Pressure: 200 bar. - Test Pressure: 300 bar. - Min. Burst Pressure: 600 bar. - Water volume: 84 L ± 2,5 %. - Weight: 35 ± 6 kg. - CNG Cylinder manufactured in accordance with: ISO 11439 and ECE R110 or ANSI NGV-2 - Supplied with European ECE R110 certificate. The following additional requirements apply:			
	A – Documentation			
	B - Compliance to safety rules and regulations			
	F – Warranty			
	G - Commercial Warranty			
4	**WEIGHING DEVICE** QUANTITY: 3			

	Manufacturers name:			
	Product model:			
	Intended use: The Weighing Device is used for measuring of mass of CNG Cylinder, and all at the moment of testing and verification of CNG Dispenser - Type: Bench scale. - Maximum Capacity: $\geq$ 80 kg. - Weighing platform should be able to work in Zone 2 (gases) and Zone 22 (dusts) hazardous areas. - Weighing platform should be able to work in industrial environment and in wet or dry areas. - Weighing platform size should be a minimum of 500 mm x 400 mm - Compatible indicating device. - Data interfaces available for RS232. - Compatible connection cable between the indicating device and the weighing scale. - With internal and external calibration and appropriate external calibration weight. - Multi or single range. - Readability: $\leq$ 1 g. - Readability Approved: e = 10 g. - Scale material: Stainless steel. - Load plate material: Stainless steel. - Stand: stainless steel. - Temperature range: (0 to +40) °C. - Height adjustable. - Level indicator. - Identification plate. - Dust and water protection - Balance shall be equipped with a port for connection to a computer (RS232) and with button for printing.			

	- Electromagnetic force compensation cell and lever arm system Transport locks. Power supply 220-230 V – 50 Hz. The following additional requirements apply:			
	A – Documentation			
	B - Compliance to safety rules and regulations			
	C - Certificate of calibration			
	F – Warranty			
	G - Commercial Warranty			
5	**OVERFLOW PIPETTE** QUANTITY: 1			
	Manufacturers name:			
	Product model:			
	Intended use: verification of working standards. Specifications: - Nominal volume: 200 L. - Material: Stainless steel 1.4301, smoothed. - Information about coefficient of expansion of the material and drainage time should be given. - Standing cylindrical design. - Conical bottom 30 °. - Filling from the cylinder over a ball valve. - Outlet from the bottom over a ball valve. - Overflow – combination. - Thermometer pocket. - Scale: stainless steel engraved - Feet with adjustment unit. - Calibrated by gravimetric method with Certificate issued by accredited laboratory with			

	expanded measurement uncertainty equal to or less than 0,02 %. The following additional requirements apply:			
	A – Documentation			
	B - Compliance to safety rules and regulations			
	C - Certificate of calibration			
	F – Warranty			
	G - Commercial Warranty			
6	**LIQUID FLOWMETER CALIBRATION SYSTEM** QUANTITY: 1			
	Manufacturers name:			
	Product model:			
	Intended use: calibration of liquid flow meters. Specifications: - Flow Range: (0,5 to 1500) L/min. - Temperature Range: (5 - 60)° C. - Operational Pressure: 12 bar (max). - Displacement Volume: 100 L. - Weight: < 1000 kg. - Repeatability: ± 0,05 % of reading. - Calibration Accuracy: 0,05 % of reading traceable to a National Institute. - Capability to calibrate liquid flowmeters such as Turbine, Magnetic, Coriolis, PD (Positive Displacement), Vortex. - Supplied with computer, appropriate control software for data acquisition (using double chronometry) and processing functions, temperature monitoring instrumentation, double			

	meter capabilities, and options for test meter signal inputs. - Supplied with Compressor with 1000 L tank, 15 bar rating. - Supplied with installation kit. - Supplied with: 1. Seal Kit (Piston and shaft seals), Qty.2 2. Filter 10 micron, Qty. 20 - Power supply 220-230 V – 50 Hz. The following additional requirements apply:			
	A – Documentation			
	B - Compliance to safety rules and regulations			
	C - Certificate of calibration			
	D – Installation			
	E – Training: Number of persons to be trained: 2 Duration: minimum 3 (three) working days			
	F – Warranty			
	G - Commercial Warranty			
7	**VACUUM AUTOMATIC MASS COMPARATOR** QUANTITY: 1			
	Manufacturers name:			
	Product model:			
	Intended use: calibration of 1 Kg prototype. Specifications: - Maximum load should not be less than1001,5 g - Readability ≤0,1 µg. - Repeatability ≤0,5 µg. - Repeatability under vacuum ≤0,2 µg.			

	- Applications range 1 mg – 1 kg. - Weights range 1 mg – 1 kg. - Vacuum pressure range 1x10-6 – 1000 mbar. - Weight Handler ≥ 6 places. - Accessories: o All necessary equipment for weights in the range 1mg -1 kg. o Complete vacuum pump system, Vacuum transfer system, Vacuum container. o Climate station (for E1 weights) with sensors for measuring temperature, pressure and humidity, with EA or NMI calibration certificate. - PC, PC software for system control and for use of weights. - Stone table or Aluminum frame. - Lifting device for vacuum enclosure (if applicable). Power supply 220-230 V – 50 Hz. The following additional requirements apply:			
	A – Documentation			
	B - Compliance to safety rules and regulations			
	C - Certificate of calibration			
	D – Installation			
	F – Warranty			
	G - Commercial Warranty			
8	**WEIGHT SET, CLASS E2** QUANTITY: 1			
	Manufacturers name:			
	Product model:			
	Intended use: calibration of weights			

	- Weight set from 1 mg to 500 g - Accuracy class E2 The following additional requirements apply:			
	A – Documentation			
	B - Compliance to safety rules and regulations			
	C - Certificate of calibration			
	F – Warranty			
	G - Commercial Warranty			
9	**WEIGHT SET, CLASS F1** QUANTITY: 1			
	Manufacturers name:			
	Product model:			
	Intended use: calibration of weights - Weight set from 1 mg to 10 kg. - Accuracy class F1 The following additional requirements apply:			
	A – Documentation			
	B - Compliance to safety rules and regulations			
	C - Certificate of calibration			
	F – Warranty			
	G - Commercial Warranty			
10	**WEIGHT SETS, CLASS F2** QUANTITY: 2			
	Manufacturers name:			

	Product model:			
	Intended use: calibration of weights - Two weight sets from 1 g to 10 kg. - Accuracy class F2. The following additional requirements apply:			
	A – Documentation			
	B - Compliance to safety rules and regulations			
	C - Certificate of calibration			
	F – Warranty			
	G - Commercial Warranty			
11	**WEIGHT SETS, CLASS F2** QUANTITY: 2			
	Manufacturers name:			
	Product model:			
	Intended use: calibration of weights - Two weight sets each with 10 identical weights from 100 mg to 10 g. - Accuracy class F2 The following additional requirements apply:			
	A – Documentation			
	B - Compliance to safety rules and regulations			
	C - Certificate of calibration			
	F – Warranty			
	G- Commercial Warranty			
12	**WEIGHTS, CLASS M1**			

	QUANTITY: 20			
	Manufacturers name:			
	Product model:			
	Intended use: calibration of weights - Weights of nominal mass 500 kg. - Accuracy class M1. The following additional requirements apply:			
	A – Documentation			
	B - Compliance to safety rules and regulations			
	C - Certificate of calibration			
	F – Warranty			
	G - Commercial Warranty			
13	**DIGITAL PRECISION MEASURING AMPLIFIER** QUANTITY: 1			
	Manufacturers name:			
	Product model:			
	The equipment is able to perform measurements according to the following standards: ISO 7500-1:2004 + Cor 1:2008 Metallic materials Verification of static uniaxial testing machines - Part 1: Tension/compression testing machines - Verification and calibration of the force-measuring system ISO 376:2011 Metallic materials - Calibration of force-proving instruments used for the verification of uniaxial testing machines			

	EN 12390-4:2000 Testing hardened concrete. Compressive strength. Specification for testing machines Intended use: amplification of metrological signals for calibration of force, pressure, torque Accuracy Class: 0.0005 Number of Amplifiers 2 - two channels amplifying simultaneously Computer interface USB, Ethernet, RS232, RS232/485 or equivalent Transducers excitation voltage: 2.5, 5 And 10 V Carrier frequency 225 Hz Sampling rate per amplifier from 1.2 to 75 Hz Display resolution >1.000.000 digit Linearity variation < 0.0005% Power supply: 220-230 V - 50 Hz. The following additional requirements apply:			
	A – Documentation			
	B - Compliance to safety rules and regulations			
	C - Certificate of calibration			
	F – Warranty			
	G - Commercial Warranty			
14	**REFERENCE PRESSURE TRANSDUCER**			

	QUANTITY: 1			
	Manufacturers name:			
	Product model:			
	Related guideline document: DAkkS- DKD-R 6-1 Kalibrierung von Druckmessgeräten, 1. Neuauflage 2010 Intended use: calibration of pressure gauges Pressure type: absolute pressure Measuring range: 0 up to at least 500 bar Accuracy: class 0.1 Nominal rate sensitivity: 2 mV/V Cable for connecting transducer to the amplifier of item 13 on this list. The following additional requirements apply:			
	A – Documentation			
	B - Compliance to safety rules and regulations			
	C - Certificate of calibration			
	F – Warranty			
	G - Commercial Warranty			