

# ***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 /20**

## **LOT 6: EQUIPMENT FOR NON-DESTRUCTIVE TEST OF METALLIC MATERIALS/PRODUCTS**

**Publication reference: EuropeAid/135592/IH/SUP/RS**

**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 6: EQUIPMENT FOR NON-DESTRUCTIVE TEST OF METALLIC MATERIALS/PRODUCTS**

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
1	<b>ULTRASONIC EXAMINATION EQUIPMENT (FLAW DETECTOR)</b>  QUANTITY: 1			
	<b>Manufacturers name:</b>			
	<b>Product model:</b>			
	The equipment is able to perform tests according to the following standard: EN 12668-1:2010 Non-destructive testing - Characterization and verification of ultrasonic examination equipment - Part 1: Instruments  Portable flaw detector for outdoor use in on-site field testing.  Transmitter pulse voltage peak-to-peak selectable in at least 10 steps going up to at least 250 V.  Receiver attenuator gain selectable in several steps going up to at least 100 dB.  Operating modes: Conventional pulse-echo channel, time of flight diffraction (TOFD).  Main unit with microprocessor and memory. Flat			

<p>bright colour display with minimum 1024 x 768 pixels.</p> <p>Software in English with user - interface and options to set parameters and to view data.</p> <p>Software on the flaw detector for computer aided ultrasonic test data analysis.</p> <p>Accessories: conventional angle beam transducers (45°, 60° and 70°) and connecting cables.</p> <p>Accessories: TOFD transducers 2,5 MHz and 10 MHz. wedges for TOFD transducers 45°, 60° and 70°.</p> <p>Carrying case</p> <p>USB, Bluetooth, RS232, Ethernet or equivalent interface for transfer of data and files between the flaw detector and a PC.</p> <p>Power supply: rechargeable battery, battery charger and AC adapter. Power supply for AC adapter: 220-230 V - 50 Hz.</p> <p>The following additional requirements apply:</p>				
A - Documentation				
B - Compliance to safety rules and regulations				
C - Certificate of calibration				
E - Training	Number of persons to be trained:2			
	Duration: minimum 1 (one) working days			
F - Warranty				
G - Commercial Warranty				

2	<b>X-RAY EQUIPMENT FOR RADIOGRAPHIC TESTING</b>  QUANTITY: 1			
	<b>Manufacturers name:</b>			
	<b>Product model:</b>			
	<p>The equipment is able to perform tests according to the following standards:            EN ISO 17636-1:2013 Non-destructive testing of welds - Radiographic testing - Part 1: X- and gamma-ray techniques with film .            EN ISO 17636-2:2013 Non-destructive testing of welds - Radiographic testing - Part 2: X- and gamma-ray techniques with digital detectors.</p> <p>Intended use: Portable X-ray unit for field use.</p> <p>X-ray generator</p> <p>Wireless remote control (or optionally with cables</p> <p>Power unit with (or optionally separate from) control unit</p> <p>Minimum voltage range 50 kV - 160 kV.</p> <p>Tube current range 0.1 - 5 mA</p> <p>Beam angle at least 360° x 40°</p> <p>Focal spot size minimum Ø4 x 0,9</p> <p>Anode cooling type air or oil</p>			

	<p>Operating temperature max 70 degree</p> <p>Must be suitable to be used with oil-gas pipe line inspection</p> <p>Power supply unit running on 220-230 V - 50 Hz.</p> <p>The following additional requirements apply:</p>			
	A - Documentation			
	B - Compliance to safety rules and regulations			
	F - Warranty			
	G - Commercial Warranty			
3	<p><b>HANDHELD X-RAY FLUORESCENT (XRF) SPECTROMETER</b></p> <p>QUANTITY: 1</p>			
	<b>Manufacturers name:</b>			
	<b>Product model:</b>			
	<p>The equipment is able to perform tests according to the following standard: EN 61010</p> <p>Intended use: Safety requirements for electrical equipment for measurement, control, and laboratory use. Equipment for the analysis of standard alloys as low alloy steel, Cr/Mo steels, stainless steels, high temperature alloys like nickel and cobalt alloys, as well as brass and bronzes.</p> <p><b>Specifications:</b></p> <ul style="list-style-type: none"> <li>- Handheld model</li> <li>- Elemental range: Mg – U including light</li> </ul>			

	elements Mg, Al, and Si - Excitation source: X-ray tube - Detector: diode detector or silicon-drift detector or equivalent - Display (integrated with the instrument) - Download of results and reports directly onto a USB memory stick or PC. - Carrying case Power supply: rechargeable battery, battery charger and AC adapter (220-230V – 50Hz).  The following additional requirements apply:				
	A - Documentation				
	B - Compliance to safety rules and regulations				
	C - Certificate of calibration				
	D - Installation				
	E	Number of persons to be trained: 2			
	- Training	Duration: minimum 1 (one) working day			
	F - Warranty				
	G - Commercial Warranty				
4	<b>X-RAY TUBE FOR RADIOGRAPHIC TESTING</b>				
	QUANTITY: 1				
	<b>Manufacturers name:</b>				
	<b>Product model:</b>				
	The equipment is able to perform tests according to the following standards: EN ISO 17636-1:2013 Non-destructive testing of welds - Radiographic testing - Part 1: X- and gamma-ray techniques with film . EN ISO 17636-2:2013 Non-destructive testing of				

	welds - Radiographic testing - Part 2: X- and gamma-ray techniques with digital detectors.				
	Portable X-ray unit for field use, air cooled				
	X-ray tube type: 300 kV metal-ceramic with Tungsten (W) anode or equivalent				
	Voltage range: 75 - 300 kV				
	Target angle: 20°				
	Inherent filtration: (0.8 ± 0.1) mm Beryllium or equivalent				
	Emergent beam: 40° x 360°, direct emission/ panoramic emission				
	Tube current: 0.5 - 6 mA				
	Anode temperature, max.: 100 °C				
	Power supply: 220-230 V - 50 Hz				
The following additional requirements apply:					
A – Documentation					
B - Compliance to safety rules and regulations					
E- Training	Number of persons to be trained:2				
	Duration: minimum 2 (two) working days				
F – Warranty					
G - Commercial Warranty					
5	THERMOSTATED, STATIONARY FILM PROCESSOR AND OTHER EQUIPMENT				



	<b>FOR RADIOGRAPHIC TESTING</b>			
	QUANTITY: 1			
	<b>Manufacturers name:</b>			
	<b>Product model:</b>			
	<p>The equipment is able to perform tests according to the following standards:  EN ISO 17636-1:2013 Non-destructive testing of welds - Radiographic testing - Part 1: X- and gamma-ray techniques with film.  EN 25580:1992 Non-destructive testing - Industrial radiographic illuminators - Minimum requirements.</p> <p><b>1. AUTOMATIC FILM PROCESSING UNIT</b></p> <p>QUANTITY: 1</p> <p>Capacity 35 cm x 43 cm X-ray films processed at 8 minute cycle: minimum 15 per hour. Bench top or stand alone stationary automatic film processor.</p> <p>Thermostatically controlled developer bath</p> <p>Capable of handling sheet and roll industrial films from 10 cm to 36 cm wide.</p> <p>Facilities to developing, fixing, washing and preliminarily drying films in a continuous process.</p> <p>Holding time in developer bath selectable between 40 s and 140 s.</p>			

	<p><b>2. FILM DRYING CABINET</b></p> <p>QUANTITY: 1</p> <p>Insulated film drying cabinet with thermostatically controlled hot air flow. Air flow capability 40 m<sup>3</sup> per hour at atmospheric pressure and selected temperature. Air filter in intake.</p> <p>Minimum 1000 W heating power. Temperature user selectable and being measured by thermometer in the cabinet. Digital readout of cabinet temperature. Drying time user selectable.</p> <p>Capacity to hold 40 film hangers with 35 cm x 43 cm films.</p> <p><b>3. FILM VIEWER</b></p> <p>QUANTITY: 1</p> <p>High intensity X-ray film viewer, light intensity selectable up to minimum 200 kcd/m<sup>2</sup>. Lit viewing area 8 cm by 45 cm. Brightness control.</p> <p>Viewable film optical densities (absorbance values) up to 4.3 according to EN 25580:1992.</p> <p>Viewer air cooled with air filter at intake. Low noise fan. Brackets for fastening rolls for continuous films. Means to handle continuous films.</p> <p>Lamps capable to be switched on and off while operator keeps both hand free to handle films.</p>			
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	<p><b>4. X-RAY FILM DENSITOMETER</b></p> <p>QUANTITY: 1</p> <p>Transmission desk top type densitometer. Reach of densitometer arm at least 180 mm from film edge.</p> <p>Capable of calibration at zero optical density and at calibrated film density strip absorbance standard with stepped values between <math>D = 0</math> and <math>D = 4.5</math>, (<math>D</math> is <math>\log_{10}</math>-based).</p> <p>Optical density to be readable from a digital display <math>D</math> expressed as dimensionless quantity with range 0 - 4.5, accuracy <math>\pm 0.02</math>, repeatability <math>\pm 0.01</math>.</p> <p><b>5. X-RAY DARKROOM ACCESSORIES</b></p> <p>QUANTITY: 1</p> <p>Darkroom safelight. Light colour: red, <math>\lambda</math> approximately 660 nm. Luminous flux minimum 400 lumen. For ceiling or wall mounting. Tilttable. Dimmable. International protection marking IP 66.</p> <p>Digital darkroom timer with red lighted digits minimum 10 mm high. Acoustic signal upon expiration of a set time.</p> <p>Non-corroding or corrosion protected materials required for parts in contact with water.</p> <p>Power supply: 220-230 V - 50 Hz</p> <p>The following additional requirements apply:</p>			
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	A – Documentation			
	B - Compliance to safety rules and regulations			
	C – Installation			
	E- Training	Number of persons to be trained:2		
		Duration: minimum 3 (three) working days		
	F – Warranty			
	G - Commercial Warranty			
6	<b>MICROSCOPE FOR MICROGRAPHIC EXAMINATION</b>			
	QUANTITY: 1			
	<b>Manufacturers name:</b>			
	<b>Product model:</b>			
	<p>The equipment is able to perform tests according to the following standards:</p> <p>ISO 643:2012 Micrographic determination of the ferritic or austenitic grain size.</p> <p>ISO 17639:2003 Destructive tests on welds in metallic materials – Macroscopic and microscopic examination of welds.</p> <p>EN ISO 3887:2011 Steels - Determination of depth of decarburization.</p> <p>EN 10247:2011 Micrographic examination of the non-metallic inclusion content of steels using standard pictures.</p> <p>Intended use: Microscope for reflected-light brightfield, darkfield, circular DIC (differential interference contrast) and reflected polarization.</p> <p>Objectives magnification and numerical apertures: 5x/0.13, 10x/0.20, 20x/0.40, 50x/0.75</p>			

and 100x/0.85 or equivalent set of objectives.				
Revolver nosepiece 6 positions or better				
Binocular tube with two eyepieces having magnification 10x, field-of-view 23 mm or better				
Object stage for metallographic applications X-Y travelling and rotatable.				
Illumination halogen 100 W or equivalent illumination using LED				
Digital microscope camera at least 5 Megapixel				
PC interface: USB, S-Video DVI, SD card slot or equivalent PC interface.				
Software: basic image analysis functions and automatic determination of grain size, multiphase and graphite analysis, examination of the non-metallic inclusion content of steels				
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: 4			
	Duration: minimum 1 (one) working day			
F – Warranty				
G - Commercial Warranty				

7	<b>INDUSTRIAL ENDOSCOPIC DEVICE</b>  QUANTITY: 1			
	<b>Manufacturers name:</b>			
	<b>Product model:</b>			
	<p>The equipment is able to perform tests according to the following standard: EN ISO 17637:2011: Non-destructive testing of welds - Visual testing of fusion-welded joints</p> <p>Intended use: Industrial videoscope - transportable unit for field inspection</p> <p>Length of endoscope: 10 m</p> <p>Scope diameter must be <math>\leq 11</math> mm</p> <p>Precise Scope Tip Articulation of endoscope tip 100° in four perpendicular directions by joystick or equivalent</p> <p>Colour still image and video recording - minimum 640 by 480 pixels</p> <p>Picture and video files transferable to PC via memory card or other interface.</p> <p>Monitor at Least 150 mm diagonal, - minimum 640 by 480 pixels</p> <p>Endoscope tip with LED light and for focusing distances from 35 mm to 500 mm</p> <p>An inflexible tip part at the distal end must not</p>			

	exceed 30 mm in length				
	Power supply: rechargeable batteries, battery charger and AC adapter. Power supply for AC adapter: 220-230 V - 50 Hz				
	The following additional requirements apply:				
	A – Documentation				
	B- Compliance to safety rules and regulations				
	C - Certificate of calibration				
	E-Training	Number of persons to be trained:2			
		Duration: minimum 1 (one) working day			
8	F – Warranty				
	G - Commercial Warranty				
	<b>PROCESSOR FOR X-RAY FILMS</b>				
	QUANTITY: 1				
	<b>Manufacturers name:</b>				
	<b>Product model:</b>				
	<p>The equipment is able to perform tests according to the following standard: EN ISO 17636-1:2013 Non-destructive testing of welds - Radiographic testing - Part 1: X- and gamma-ray techniques with film.</p> <p>Automatic X-ray film processing apparatus.</p> <p>Capacity 35 cm x 43 cm X-ray films processed at 8 minute cycle: minimum 28 per hour. Bench top or stand alone stationary automatic film processor.</p>				

	Thermostatically controlled developer bath.				
	Capable of handling sheet and roll industrial films from 10 cm to 36 cm wide.				
	Facilities to developing, fixing, washing and preliminarily drying films in a continuous process.				
	Must be able to develop film size: from 10 cm x 12 cm to 10 cm x 48 cm.				
	Holding time in developer selectable between 40 s and 140 s.				
	Non-corroding or corrosion protected materials required for parts in contact with water.				
	Power supply: 220-230 V - 50 Hz				
	The following additional requirements apply:				
A – Documentation					
B - Compliance to safety rules and regulations					
D – Installation					
E - Training	Number of persons to be trained:2				
	Duration: minimum 2 (two) working days				
F – Warranty					
G - Commercial Warranty					
9	UV LAMP				
	QUANTITY: 3				
	Manufacturers name:				
	Product model:				



	<p>The equipment is able to perform tests according to the following standards:</p> <p>EN ISO 9934-3:2002: Non-destructive testing - Magnetic particle testing - Part 3: Equipment.</p> <p>EN ISO 3059:2012: Non-destructive testing - Penetrant testing and magnetic particle testing - Viewing conditions.</p> <p>EN ISO 9934-1:2001: Non-destructive testing - Magnetic particle testing - Part 1: General principles.</p> <p>EN ISO 17638:2009: Non-destructive testing of welds - Magnetic particle testing</p> <p>Intended use: magnetic particle testing.</p> <p>Ultra violet UVA radiation source with a maximum intensity at <math>(365 \pm 5)</math> nm and a full width at half maximum (FWHM) of 30 nm.</p> <p>Must irradiate a test surface evenly.</p> <p>UV-source with LEDs. Indicative total power 25 W.</p> <p>Capable of irradiance in the centre of the light cone, at 40 cm distance: 10 to 100 W/m<sup>2</sup>. Light cone &gt; Ø 20 cm</p> <p>Orientation guide/daylight lamp: The lamp must be switchable to white light suitable for on-site orientation light during magnetic particle testing of welds.</p> <p>Cable length minimum 5 m.</p> <p>Housing international protection marking IP 53.</p>			
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	Power supply: 220-230 V - 50 Hz.			
	The following additional requirements apply:			
	A – Documentation			
	B - Compliance to safety rules and regulations			
	F – Warranty			
	G - Commercial Warranty			
<b>10</b>	<b>GAMMA RAY PROJECTOR - DEVICE FOR RADIOGRAPHIC TESTING USING SELENIUM, SE-75</b>			
	QUANTITY: 1			
	<b>Manufacturers name:</b>			
	<b>Product model:</b>			
	<p>The equipment is able to perform tests according to the following standards: EN ISO 17636-1:2013, ISO 5579: 2013.</p> <p>Intended use: Radiographic examination of welded joints.</p> <p>The equipment shall also meet the following requirements:</p> <ul style="list-style-type: none"> <li>- Highly portable Se-75 Gamma ray projector</li> <li>- Activity: up to at least 4.40 TRq</li> <li>- Plug-on collimators for Se-75 (side emission 60°, 90° and 360°), guide tube connector, steel extension tube 500mm and guide tube flexible, extendable up to 10 m</li> <li>- Tape of 100 m with an enclosed dispenser</li> </ul> <p>With complete set of accessories and a 15m long remote control cable with its own stand.</p>			

	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 1 (one) working day		
	F – Warranty			
	G - Commercial Warranty			
11	<b>RADIOGRAPH DEVELOPMENT DEVICE</b>			
	QUANTITY: 1			
	<b>Manufacturers name:</b>			
	<b>Product model:</b>			
	<p>The equipment is able to perform tests according to the following standards: EN ISO 17636-1:2013, ISO 5579: 2013,</p> <p>Intended use: Radiographic development according to the above mentioned standards:</p> <p>The equipment shall also meet the minimum following requirements:</p> <ul style="list-style-type: none"> <li>- Manual stationary film processor, with digital thermostat, 1000 W heater</li> <li>- Built in welded PVC</li> <li>- Composed of 5 tanks of approximately 25l each placed in a robust water jacket with hinged lids for developer and fixer tanks</li> <li>- Size approximately: 900 x 700 x 900 mm</li> </ul>			

	<ul style="list-style-type: none"> <li>- Supplied with darkroom safelight of 9 W (2 pieces)</li> <li>- Provided with the two following Radiographic reference catalogues: <ul style="list-style-type: none"> <li>o ASTM E 186-10 (Standard Reference Radiographs for Heavy-Walled (2 to 4½-in. (50.8 to 114-mm)) Steel Castings Volume I, and</li> <li>o ASTM E 446-14 (Standard Reference Radiographs for Steel Castings Up to 2 in. (50.8 mm) in Thickness), Volume II.</li> </ul> </li> </ul> <p>Power supply: 220-230 V - 50 Hz.</p> <p>The following additional requirements apply:</p>				
	A – Documentation				
	B - Compliance to safety rules and regulations				
	D – Installation				
	E – Training	Number of persons to be trained:2			
		Duration: minimum 1 (one) working day			
	F – Warranty				
	G - Commercial Warranty				