

Owner: AB ORLEN Lietuva  
Project: OS-3 Critical Equipment Revamp  
Location: MAŽEIKIAI, LITHUANIA

## REQUISITION

No. OL25-19

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### Heat recovery boiler 20KU-2

Unit: <b>OS-3 Elemental Sulphur Production Unit No.1</b>		Item: <b>OS-3 Elemental Sulphur Production Unit No.1</b> heat recovery boiler 20KU-2	
Order No.:	Labor and/or materials:		
Revision:	00		
Date:	05/12/2025		
Description:	For Inquiry		
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**I. SCOPE OF SUPPLY**

- A. Design and manufacture a new heat recovery boiler based on drawing No.AK.27.00.00000.000 MЧ, considering the requirements of this requisition, heat recovery boiler data sheet and attached drawings.

Before the beginning of the fabrication the manufacturer shall coordinate the detailed drawings and strength calculations of the new boiler second stage drum with the Owner.

The following shall be presented: new heat recovery boiler declaration of conformity, certificates of origin and test certificates for the materials used for fabrication, detailed drawings, inspection and manufacture documentation (including tube and tubesheet connection technology, NDT reports), also strength calculation documents as per requirements below.

**Items to be supplied:****OS-3 SPU heat recovery boiler 20KU-2:**

Equipment No.	Required amount	Description
<b>20KU-2</b>	Second stage drum – 1 pcs.	Heat recovery boiler second stage drum. Drawing No.AK.08.01.03000.000 СБ;
	Chamber output – 1 pcs.	Heat recovery chamber output. Drawing No. AK.17.01.03000.000 СБ.
	Explosion valve – 1 pcs.	Explosion valve drawing no. 18104039Б/02.04.00.00.
	Supports – 2 pcs. (pos. No.3)	Heat recovery boiler supports. Drawing No. AK-301320.082СБ, AK-301320.083-19;
	Support – 1 pcs. (pos No. 4)	Heat recovery boiler support. Drawing No.AK-301320.083СБ, AK-301320.083-09;
	Support – 1 pcs. (pos No. 5)	Heat recovery boiler support. Drawing No.AK-301320.083СБ, AK-301320.083-09;
<b>PERFORMANCE OF EQUIPMENT</b>		
According to the heat recovery boiler 20KU-2 data sheet		

<b>MATERIAL SPECIFICATIONS</b>		
Main part	Material, standard	Additional requirements
Shell girth, bottoms	SA - 516 Gr.60/70 / P265GH	Normalized. Carbon content $\leq 0.23\%$ wt. Carbon equivalent CE $\leq 0.43\%$ .
Manways	SA - 516 Gr.60/70 / SA-105N / P265GH	Normalized. Carbon content $\leq 0.23\%$ wt. Carbon equivalent CE $\leq 0.43\%$ .
Nozzles	SA - 106 Gr.B / P265GH	Carbon content $\leq 0.23\%$ wt. Carbon equivalent CE $\leq 0.43\%$ .
Flanges, counter flanges, manhole cover	SA – 105N / P245GH	Normalized. Carbon content $\leq 0.23\%$ wt. Carbon equivalent CE $\leq 0.43\%$ .
Tubesheet	SA -516 Gr.60/70	Normalized. Carbon content $\leq 0.23\%$ wt. Carbon equivalent CE $\leq 0.43\%$ . 100% UT examination for discontinuity flaws of steel plate.
Tubes Ø32x3 mm - 500 pcs.	P265GH EN10216-2 / SA-192	Seamless.
Supports, internals	SA – 516 Gr. 60/70	Normalized. Carbon content $\leq 0.23\%$ wt. Carbon equivalent CE $\leq 0.43\%$ .
Studs	SA -193 Gr.B7 ASME B16.5 (Metric)	ASME B16.5 (metric)
Nuts	SA -194 Gr.2H ASME B16.5 (Metric)	DIN/EN 934 (metric H=D)

Manway, nozzle gaskets	Graphite with corrugated + metal flexible	Graphite with corrugated + metal flexible
<b>NOTE1: The contractor may offer alternative materials during the tender.</b>		

Specifications and/or standards referred to in the attached documentation but not expressly indicated herein shall not apply.

- B. Heat recovery boiler 20U-2 will be installed AB ORLEN Lietuva refinery, Mažeikių g. 75, Juodeikių k., 89467, Mažeikių r. sav., Lithuania.

## II. TECHNICAL DOCUMENTATION

- A. The new heat recovery boiler second must be manufactures based on the data sheet, the information provided in requisition 25-19 and the drawings below. The new heat recovery boiler must be manufactured after approving the drawings with the OL.

Item No.	Rev.	Number of pages	Drawing No.
1	0	1	Explosion valve general drawing No. 18104039b/02.04.00.00
2	0	1	Explosion valve assembly drawing No. 18104039b/02.04.00.00CB
3	0	1	Explosion valve calculation No. 18104039b/02.04.01.00CB
4	0	1	Boiler general layout drawing No. AK.27.00.00000.000 MЧ ir No. AK.17.02.00000.000 MЧ
5	0	3	Second stage drum drawings No.AK.08.01.03000.000 ir No.AK.08.01.03000.000 CB;
6	0	5	Drawings of heat recovery boiler supports No.AK-301320.082,AK-301320.082 CB ir AK-301320.083, AK-301320.083 CB;
7		1	Heat recovery boiler chamber output drawing No. AK.17.01.03000.000 CB;
8	0	20	Heat recovery boiler strength calculations Nr. AK.17.00.00000.000.PP3;
9	0	1	Heat recovery boiler data sheet

- B. OL Specifications:

<u>Number</u>	<u>Name / Description</u>
OL-TR-GR-000	<i>General Requirements</i>
OL-TR-GR-001	<i>General. Noise Level</i>
OL-TR-CR-011	<i>Civil. Corrosion Protection and Lining. Painting</i>
OL-TR-MR-000	<i>Mechanical. General</i>
OL-TR-MR-001	<i>Mechanical. General Welding, Fabrication and Inspection</i>
OL-TR-MR-002	<i>Mechanical. Positive Material Identification</i>
OL-TR-MVR-001	<i>Mechanical. Pressure Vessels</i>
OL-TR-MHR-002	<i>Mechanical. Industrial Boilers</i>
<i>Rules for the installation and safe operation of steam and water boilers.</i>	

- C. Passport format

Supplier shall fill in the data of the equipment based on the example in Rules for the installation and safe operation of steam and water boilers and submit it to OL together with equipment technical passports.

## III. CODES, REGULATIONS AND STANDARDS

- A. Newly designed and fabricated heat recovery boiler must be as per attached drawings (Item II.A);

- B.** Heat recovery boiler design (calculations, drawings) and fabrication according to: EN 13445 or ASME Section I latest edition, API RP 538 and OL specifications;
- C.** Conformance to PED 2014/68/EC requirements, PED module G/H and PED category IV.
- D.** Ce marking required.

#### **IV. SPECIAL REQUIREMENTS**

- A.** Newly designed and fabricated heat recovery boiler shall meet: process parameters specified in boiler data sheet, weight of the existing boiler as the new boiler second stage drum will be installed on the existing foundations, access platforms and stairs, positions of inlet and outlet nozzles and connecting dimensions of the existing boiler.
- B.** Materials supplied from countries other than USA, Japan, Canada, European Union and Ukraine shall not be acceptable.
- C.** Supplier may suggest alternative materials based on performed calculations that must be approved by OL.
- D.** For the tubesheets of second stage is subject to 100% ultrasonic examination for discontinuity flaws.
- E.** Connection of tubes and tubesheet connection and welding according to drawings AK.08.01.03000.000 C5.
- F.** The outlet nozzle (pos. No. 12) according to drawing No. AK.17.01.03000.000 C5 is supplied unwelded to the shell and with an overlap, 150 mm longer to compensate for installation inaccuracies. Holes for these nozzles are not cut in the shell.
- G.** Explosion valve nozzles (pos. No. 10 and 16) according to drawing No. 18104039b/02.04.00.00 is supplied unwelded to the shell and with an overlap, 150 mm longer to compensate for installation inaccuracies.
- H.** Supports (pos. No. 3,4,5) according to attached supports drawings is supplied unwelded to the shell and with an overlap, 150 mm longer to compensate for installation inaccuracies.
- I.** Welding joints of pressurized elements are subject to full penetration welding, complete fusion. Welding joints quality assessment level shall be no less than B level according to the EN 5817 standard.
- J.** Welding joints of pressurized elements are subject to NDT: BW – 100% ultrasonic testing (UT) or 100% radiographic testing (RT); FW – 100% penetration test (PT) or 100% magnetic test (MT).
- K.** Supplier shall provide the boiler identification plate (label) as per the manufacturing standards and PED.
- L.** Detailed drawings and drawing of installation, strength calculations, welding procedure specification (WPS, WPQR), quality control plan and welding procedure

qualification records, PWHT technology and diagrams shall be submitted to OL for approval prior to fabrication.

- M.** Heat recovery boiler nozzles shall be supplied with counter flanges. Gaskets of manways, nozzle flanges - Graphite with corrugated + metal flexible. Nozzle flange gaskets shall be packed separately.
- N.** Maximum allowable stress during hydrotest shall not exceed 90% of material yield strength. Boiler shell components that do not meet these requirements must be re-rated.
- O.** It is required to remove scales, grease, welding spatter and other materials from the heat recovery boiler second stage drum before hydrotest.
- P.** Prior to fabrication the supplier shall provide a quality control plan to OL for approval. The plan shall include a hydrotest to be attended by OL inspector. Supplier shall inform the Owner two weeks before hydrotest and allow the Owner's representative to attend the test.
- Q.** During transportation, the product must be properly protected against corrosion in accordance with OL specifications OL-TR-MVR-001.
- R.** The requirements of NACE MR0103 and NACE MR0175 (latest editions or other referred to it) apply to materials in contact with sour water (wet H<sub>2</sub>S service).

#### **V. PAINING**

- A.** The external surface of the item shall be painted in grey (light grey). Item surface shall be cleaned and painted in accordance with the requirements of paint specifications and OL specifications OL-TR-CR-011.
- B.** During transportation, the item shall be properly protected against corrosion in accordance with OL specifications OL-TR-MVR-001.

#### **VI. DRAWINGS AND DOCUMENTATION**

- A.** Supplier is required to submit all documents and drawings (including their electronic copies):
  - 1) Heat recovery boiler passport (passport templates are provided in *Rules for the installation and safe operation of steam and water boilers*;
  - 2) Detailed drawings;
  - 3) Strength calculations;
  - 4) Materials specifications and certificates according to EN10204 3.1;
  - 5) Welding documents (WPS, WPQR, welders certificates, NDT test protocols, PWHT technology and diagrams);
  - 6) Quality Control Plan (QCP);

- 7) Hydrotest report;
- 8) Heat recovery boiler operation manual (that includes installation, start-up, testing and maintenance requirements).
- 9) Painting quality certificate.
- 10) Heat recovery boiler installation, start-up and adjustment instructions;
- 11) Heat recovery boiler operating manual;
- 12) Heat recovery boiler technical diagnostic manual;
- 13) Heat recovery boiler test program and methodology.

**VII. INSPECTION REQUIREMENTS**

Supplier shall arrange for a third party assessment, inspection and approval, where such are required, and cover all the related expenses.

**VIII. RESPONSIBILITY AND WARRANTY OF SUPPLIER**

- A.** Supplier shall be liable for mechanical integrity and compliance with the technological parameters given in the data sheet of the equipment, including, but not limited to, thickness and structure of pressure components, design of internals, welding and inspection procedure.

The drawings provide for minimum thickness. The supplier shall increase it at no additional cost for the Owner, if this is required by the mechanical design.

- B.** In case of any differences in the documents listed herein, they shall apply in the following order of priority:
- 1. Regulations, OL requirements, standards.
- C.** Compliance with standards and specifications does not exempt the supplier from the responsibility to deliver equipment and accessories that are duly designed and suitable for continuous operation without failures.
- D.** Supplier shall guarantee mechanical design and delivery of the item in accordance with the requirements of Purchase Requisition.