

Owner: Public Company ORLEN Lietuva
Project: Revamp of Critical Equipment at OS-2
Location: MAŽEIKIAI, LITHUANIA

REQUISITION

No.OL25-10

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Tube bundle of heat exchangers TK-602/2

Unit: OS-2 KT-1/1 S-001/1 Atmospheric Residue Vacuum Distillation Unit (VDU)		Goods: OS-2 KT-1/1 S-001/1 VDU Tube bundle of heat exchanger TK-602/2	
Order No.:	Labor and/or materials:		
Edition:	00		
Date:	10/06/2025		
Description:	For Inquiry		
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**OS-2 KT-1/1 S-001/1 VDU
Tube bundle of heat exchanger
TK-602/2**

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I. SCOPE OF SUPPLY

- A.** Design and fabricate new tube bundle of heat exchanger TK-602/2 according to the provided documentation drawing no. AN-25-32 and data sheet. Before the beginning of the fabrication the manufacturer shall coordinate the detailed drawings, strength calculations, quality control plan, welding procedures (WPS, WPQR) of the new tube bundle with the Owner.

The following shall be presenting certificates of origin and test certificates for the materials used for fabrication, drawings, inspection, testing and manufacturing documentation, quality control plan, strength calculations documentations and also documents as per requirements below. Detailed drawings shall be submitted.

- B.** Items to be supplied:

OS-2 KT-1/1 S-001/1 VDU Tube bundle of heat exchanger TK-602/2:

Equipment No.	Required quantity	Description	
TK-602/2	Tube bundle –1 pcs.	OS-2 KT-1/1 S-001/1 VDU Tube bundle of heat exchanger TK-602/2	
Technical Data of heat exchanger			
Fluid Allocation		Shell side	Tube side
Fluid Name		According to the data sheet	
Operating temperature	°C		
Operating pressure	bar		
Design pressure	bar		
Design Temperature	°C		
Number of passes	pcs.		
Minimum design metal temperature	°C		
Corrosin allowance	mm		
MATERIAL SPECIFICATION			
Main parts	Materials, Standards	Additional requirements	
Stationary and Floating Tube sheets	AISI 420		
Tubes Ø25×2,5×6000mm.	AISI 410S		
Baffles, impingement plate	AISI 410S		
Spacers tubes	AISI 410S		
Tie rods	SA-193 Gr.B6		
Nuts (M16)	SA-194 6 / class 8.8 EN ISO 4032 (metric (H)m=D)		
NOTE1: The requirements of NACE MR0103 and NACE MR0175 (latest editions or other referred to it) apply to materials in contact with sour water (wet H2S service)			
NOTE2: During competition the similar materials are available shall provide to OL for approval			

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

- C.** The tube bundle of heat exchanger will be installed at AB ORLEN Lietuva refinery, Mažeikių g. 75, Juodeikių k., 89453, Mažeikių r. sav., Lithuania.

II. TECHNICAL DOCUMENTATION

- A.** Design drawings. Tube bundle of heat exchanger shall be fabricating based on drawings:

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Item No.	Rev.	Number of pages	Technical documentation (drawings, data sheets, attachments)
1	00	4	Tube bundle drawing No. AN-25-32 of heat exchanger TK-602/2
2	00	1	Data sheet

B. OL Specifications:

<u>Number</u>	<u>Name / Description</u>
<i>OL-TR-GR-000</i>	General. General
<i>OL-TR-MR-000</i>	Mechanical. General
<i>OL-TR-MR-001</i>	Mechanical. General Welding, Fabrication and Inspection
<i>OL-TR-MVR-001</i>	Mechanical. Pressure Vessels
<i>OL-TR-MER-001</i>	Mechanical. Shell and Tube Heat Exchangers

C. Documentation format

The Supplier shall fill in the data of the equipment based on *OL-TR-MVR-001* ANNEX D example and deliver to OL together with the technical passport of the fabricated item (equipment).

III. CODES, REGULATIONS AND NORMS

- A.** Size dimensions of heat exchanger tube bundle according to the attached tube bundle drawing *No. AN-25-32*.
- B.** Tube bundle designing (calculations, drawings) and fabrication according to: EN 13445 or ASME VIII Div.1 and TEMA class R latest edition and addendum, OL specifications and requisition OL25-10.

IV. SPECIFIC REQUIREMENTS

- A.** Materials supplied from countries other than USA, Japan, Canada, European Union and Ukraine shall not be acceptable.
- B.** Connection of tubes and tube sheet – expansion. Expansion through the whole thickness of tube sheet; tube sheet holes shall contain 3 grooves.
- C.** The requirements of NACE MR0103 and NACE MR0175 (latest editions or other referred to it) apply to materials in contact with sour water (wet H₂S service).
- D.** Tube sheets are subjected to 100% ultrasonic examination for discontinuity flaws.
- E.** Supplier may suggest alternative materials based on performed calculations which shall require OL approval.
- F.** Design drawings and strength calculations shall be submitted to OL for approval prior to fabrication.
- G.** Supplier shall submit a Quality Control Plan to OL for approval prior to fabrication. The Plan shall include a hydraulic test to be attending by OL inspector. Supplier shall inform the Owner 2 weeks in advance of hydraulic test, and provide the conditions for the participation of the Owner's representative.

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- H. Maximum allowable tension during hydraulic test shall not exceed 90% of material yield strength. Components not conforming to these requirements shall be recalculating.
- I. During transportation, the item shall be properly protecting against corrosion in accordance with OL specifications *OL-TR-MVR-001*.

V. DRAWINGS AND DOCUMENTATION

- A. Supplier is required to submit all documents and drawings, which listed in this Item. Supplier shall submit 3 packages of documentation: original with signatures, documentation copies and electronic versions of documentation (USB flash drive):
 - 1) Drawings;
 - 2) Strength calculations;
 - 3) Materials specifications and certificates according to EN10204 3.1;
 - 4) Welding documents (WPS, WPQR, welders certificates);
 - 5) Quality Control Plan (QCP);
 - 6) Hydraulic test report.

VI. INSPECTION REQUIREMENTS

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

VII. RESPONSIBILITY AND WARRANTY OF SUPPLIER

- A. Supplier shall be liable for mechanical design of the equipment including, but not limited to, thickness and structure of pressurized components, design of internals, welding procedures and inspection procedures.

Thickness values indicated on the drawings are minimal. Supplier shall increase them if required under mechanical design without any additional cost.
- B. In case of any discrepancies among the documents listed herein, they shall be applied in the following order of priority:
 - 1. OL requirements, Regulations, Standards.
- C. Compliance with standards and specifications does not exempt the Supplier from the responsibility to deliver equipment and accessories, which shall be duly designed and suitable for continuous operation without failures.
- D. Supplier shall guarantee the mechanical design and the delivery of the item as per the Purchase Order requirements.