

SCOPE OF WORK

Technical Supervision of Works During Maintenance

Subject-matter:

Supervising assembly of flange connections on the equipment subject to maintenance, coordination of valves dismantling and installation works, tracking work progress and submitting daily reports to Mechanical Engineer of the relevant Unit. Technical assistance to the Mechanical Engineer of the unit shall be provided during the scheduled maintenance of AB ORLEN Lietuva Refinery installations.

General Data:

During maintenance works planned for spring of 2027 (May, June), the works of dismantling and installation of the large number of pressure vessels and piping as well as removal, repairs and installation of shut-off valves are scheduled. The design of sealing surfaces and technical condition is not known for all the flanges; thus, problems shall be solved urgently to ensure proper quality of flange connections assembly. Matching of flange axis of flange connections, parallelism and flatness of sealing surfaces shall be measured and evaluated, sealing surface damages shall be estimated, decisions regarding repair necessity shall be made, and methods of repair shall be proposed. Non-standard gaskets shall be selected, flange connection tightening torques shall be calculated.

Quality control of flange connection assembly shall be carried out through visual inspection and by selectively checking the tightening torques of flanged connections on no less than 20% of the assembled flange connections, or as directed by the Mechanical Engineer responsible for the unit. Control of flange connection assembly is performed in accordance with ASME PCC-1 or another methodology approved by the Owner. In case of nonconformities detected, the relevant Nonconformity Reports shall be submitted. Correction of the existing logbooks of equipment shall be performed or new logbooks shall be made based on actual visual inspection of the equipment.

Under separate instructions, measurement of flatness of heat exchangers shall be made as well as report and recommendations shall be provided regarding necessity to turn surface and to match with the standard requirements/allowed tolerances.

Supervision works shall be performed within the period indicated by the Owner 12 hours per day (possibly 7 days per week). If instructed so by the Owner, works may be organized in two shifts & 24 hours per day; therefore, Contractor must have sufficient number of specialists to organize works as requested without violating the applicable legislation of the Republic of Lithuania.

Number of technical supervision specialists required by OL: minimum 6, maximum 12.

Scope and specifics of work:

1. Checking of flanged connections.
2. Checking of flange sealing surfaces, mirrors, ARMKO rings and ring seats.
3. Control of quality of flange connection assemblage and inspection of tightening torques on random basis or according to instructions given by Mechanical Engineer of the relevant Unit.
4. Calculation of flange connection tightening torques. Tightening torques shall be calculated in accordance with the applicable requirements of standards for flanges, gaskets and fastening elements and ASME PCC-1 or in accordance with EN 1591 methodology.

5. Selection of the required gaskets in view of their types and dimensions and operating conditions of the relevant unit. Selection of non-standard gaskets shall be coordinated with the Owner's responsible Mechanical Engineer or Technical Supervision Specialist.
6. Necessity to have the required instruments and measure as well as evaluate flange axis mismatch, flange sealing surface and pipe axis perpendicularity, parallelism of flange connections, sealing surface damages and deviations from flatness.
7. Delivery of technical consultations and recommendations to OL staff and maintenance contractors regarding flange connection assembling and repair. Final technical decisions regarding suitability of repair technology, repair scopes and equipment operation shall be made by the Owner.
8. Coordination, supervision of valve repair works. Monitoring valve disassembling/re-assembling works, shipment for repair, acceptance after repair, provision of information on the works performed.
9. Flatness measurements to Ds1600 mm and submission of the report by comparing with the standard requirements, providing recommendations on necessity for turning after the respective surface failure/leakage history has been reviewed. The report must include: used standard, measurement methodology, received values and allowed tolerances.
10. Delivery of nonconformity reports. Nonconformity reports shall include:
 - a. Equipment number;
 - b. Facility location;
 - c. Defects identified;
 - d. Photos (if applicable);
 - e. Recommended corrective actions;
 - f. Responsible persons;
 - g. Date.
11. Delivery of work completion reports.
12. Coordination of proper execution of mechanical works in view of the instructions of Work Coordinator, monitoring (tracking) the work progress in the units, delivering reports (as required) to Mechanical Engineer of the relevant Units or Maintenance Manager of Operations Subdivision on any non-conformities identified during execution of the works.
13. Performance of other maintenance supervision and coordination activities directly related to the ones established in this SoW.

Requirements for qualification of work supervisors:

1. higher, college-level or special secondary technical education.
2. knowledge on how to distinguish flanges of Dn, Pn, design, GOST, ASME, DIN, EN.
3. knowledge on how to calculate flange connection tightening torques when flanges/pins are manufactured according to GOST, ASME, DIN or EN. Contractor shall submit methodology or software used for calculating torque tightening.
4. knowledge on how to choose the required gaskets based on technical characteristics of the unit (medium, pressure, temperature).
5. knowledge on how to calculate and choose the required measurements of gaskets based on types of flanges and standards.
6. knowledge on how to evaluate flange axis mismatch (knowledge must be substantiated by work experience or training documents, upon request of the Owner), flange sealing surface and pipe axis perpendicularity, parallelism of flange connections, sealing surface damages and deviations from flatness.
7. Lithuanian, English and Russian language skills. Reports shall be provided only in Lithuanian.
8. Microsoft Office skills.

9. Ability to work with TPshell program, enter new logbooks, edit the existing ones, use information therein would be an advantage.
10. Ability to read drawings and technical documentation.
11. General understanding of WPS, PQR documents and the most commonly used VT, PT, MT, UT, RT methods.
12. Experience of similar work in petrochemical, chemical plants.
13. Experience in organization and management of maintenance and installation works in crude oil refining and energy enterprises.
14. Permit for work in confined space is required.
15. Category B driving license and a vehicle for smooth and prompt supervision and coordination of the work.

Requirements for Contractor equipment

1. The Contractor shall have the equipment required to measure flange axis mismatch, flange sealing surface and pipe axis perpendicularity, flange connection parallelism, sealing surface damages and deviations from flatness and evaluate these, when Ds is up to 1600 mm.
2. The Contractor shall have safety harness for elevated works, and personal protective equipment required for work supervision in OL units in accordance with BDS-40 procedure.
3. The Contractor shall have computers, phones, printers and other office equipment required for works.
4. Premises for the Contractor's office shall be leased by OL, or mobile office containers may be brought by the Contractor and connected to the communications in the construction camp. Total rate shall include all costs.
5. Contractor shall have calibrated torque wrenches or other fitting equipment when the flange connection tightening control is performed.

Work schedule

1. Preliminary duration of works is from 3 April 2027 to 30 June 2027. Required number of human resources: minimum 6, maximum 12:
 - OS-1: minimum 2, maximum 4 employees;
 - OS-2: minimum 2, maximum 4 employees;
 - OS-3: minimum 2, maximum 4 employees.
2. Employees shall get familiar with the unit, scopes and specifics of work at least two weeks prior to the commencement of works.
3. During the preparatory period of 1 month prior to shutdown, employees of the Contractor shall work 8 hours a day, 5 days a week.
4. During maintenance – 12 hours a day, 6 days a week.
5. The number of employees may change (decrease) in response to the Owner's needs. Working time may change, thus work shall be performed according to the instructions from the Owner. Preliminary, the works shall be executed 12 hours per day (probably 7 days per week). Under separate instructions from the Owner, the works may be organized in two shifts, 24 hours a day; therefore, the Contractor shall have enough specialists to organize the work in compliance with the Lithuanian laws.
6. OL reserves the right to decide on the schedule of the work and the unit where the work shall take place.

Work rate breakdown

Present hourly rates for the aforementioned works shall be broken down as follows:

- 8-hour working day per person from 8:00 AM to 5:00 PM.

- 12-hour working day per person from 8:00 AM to 8:00 PM.
 - 12-hour working day per person during night shift from 8 PM to 8 AM.
- Mobilization–demobilization costs shall be included in the hourly rates.

Qualification requirements

1. Justification of experience by providing a list of works with names of companies where the works have been performed. In the provided list of works, please specify:
 - a. the Owner;
 - b. facility;
 - c. duration of works;
 - d. type of performed works;
 - e. contact person for recommendation.
2. Provide forms of reports based on the above indicated scope of works.
3. Provide copies of certificates supporting qualification of employees (University, college-level, or special secondary technical education).
4. Commitment to perform all the above works (works shall not be broken down based on the skills of employee).

Technical Requirements

Theoretical and practical test (exam) with participation of the Owner (in the form of interview). The following skills shall be assessed:

- Identification of flanges;
- Selection of gaskets;
- Calculation of torque tightening;
- Assessment of surface damages;
- Reading of technical documentation;
- Control of valve repair works.

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