

SCOPE OF WORK

OS-1 LK-1 compressor SK-440 anti-surge and protection system upgrade

1. General.

[General description, purpose and place of works]

OS-1 LK-1 compressor SK-440 anti-surge and protection system upgrade: designing, dismantling of existing system, installation, programming and connection.

2. Attachments.

[List all related additional material (reference number and exact title of document). If any pictures, drawings or diagrams are provided to describe/illustrate the requirements, make sure that they are consistent with the requirements indicated in SOW].

Attachment 1: OL-TR-IR-021 Cybersecurity rev01.pdf
Attachment 2: OL-TR-IR-000 Technical Requirements General
Attachment 3: OL-TR-IR-008 Field Installation
Attachment 4: OL-TR-IR-012 ESD,BMS
Attachment 5: OL-TR-IR-011 DCS
Attachment 6: Loop Check Form
Attachment 7: ACS Programming-Configuration Report
Attachment 8: Baker Hughes design.

3. Description and specifics of work.

3.1. Work description.

*[Define and explain each work that needs to be done. Indicate the main steps and actions to be executed by Contractor. Specify preliminary sequence of works. **When planning the scope of work, it is necessary to evaluate the results of inspections performed for the facility / equipment, to take into account the data of continuous inspections and previously recorded incidents (if any).**]*

Design and replace compressor SK-440 existing GE anti-surge and protection system with Emerson anti-surge and protection system keeping the same field equipment:

1. Contractor shall prepare detailed process control and automation (PCA) engineering design OLP02779 '140-10. LK-1 compressor SK-440 control system upgrade' (requirements are provided in Attachment No 2-5). Contractor shall provide for update of all drawings and their presentation in DWG format. Use existing Bentley Nevada 2300/20 system to monitor compressor shaft torque and provided redundancy to anti-surge system (pos.: VE-701, VE-702 and XY-130, XY-131). Use existing control cabinet fire alarm with new air inlet pipe. All design solutions to be agreed with the Owner;
2. Design shall conform to the laws of the Republic of Lithuania and the European Union, applicable standards and safety requirements, Technical Regulations for Construction (STR), Rules for Installation of Electrical Equipment, other documents effective in the Republic of Lithuania to be followed in preparing detailed engineering design (DD), also the requirements set forth herein and in the equipment manufacturers' manuals.
3. Contractor shall dismantle existing control cabinet and perform all works specified in the design, also the works arising during the installation activities and needed to ensure safe and proper operating conditions.

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4. After successful factory acceptance tests (FATs), deploy new system (dismantle the existing GE system, install new control system, perform SAT/SIT, connect equipment, perform loop checks, etc.).
5. Programming. The Contractor shall perform programming works related to the design in DCS, ESD systems according to design documentation provided (Attachment 8). For DeltaV Operate visualization use existing dynamos, faceplate and graphics colors or solutions agreed with ORLEN Lietuva in DeltaV Live environment.

3.2. Special requirements (if any).

[Indicate specific requirements which might impact performance of works, price, results. (E.g. recommend to visit the site at specified time, etc.)]

Entire compressor SK-440 control must be in DeltaV environment: MOS keys, anti-surge curve, compressor operating parameters, etc.

3.3. Requirements for work execution and documentation.

[Specify the documentation to be provided by Contractor for work execution. If this is some data, indicate and describe the exact data needed and the standards to comply with. In case Contractor has to fill in some documentation, specify the desired format and contents, or refer to the requirements for the document preparation.]

3.3.1. Contractor shall develop detailed PCA engineering design OLP02779 (requirements are provided in Attachment No 2-5). Contractor shall provide for update of all drawings and their presentation in DWG format.

3.3.2. The Contractor shall perform all the works specified in the design and works arising during the installation activities and needed to ensure safe and proper operating conditions.

3.3.3. After the upgrade of the control system, the Contractor shall participate in the first commissioning of the system, loop check (Attachment 6). Note: Contractor's logo shall be at the top left of the form) and remove deficiencies, if any.

3.3.4. After the installation works, the Contractor shall present the data on any changes made to the design solutions and AS *BUILT* design.

3.3.5. The Contractor shall submit a preliminary work and payment schedule. Payment for materials and works will be executed based on such schedule.

3.3. 6 Design shall conform to the laws of the Republic of Lithuania and the European Union, applicable standards and safety requirements, Technical Regulations for Construction (STR), Rules for Installation of Electrical Equipment, other documents effective in the Republic of Lithuania to be followed in preparing detailed engineering design (DD), also the requirements set forth herein and in the equipment manufacturers' manuals.

3.4. Qualification requirements for Contractor.

[Specify exact qualification requirements to be met by the Contractor. Describe requirements for works execution, design, reliability, staff, etc.]

1. The Contractor shall have certified DeltaV staff to perform programming/integration works;
2. The Contractor is required to have a certificate issued by the State Energy Inspectorate of the Republic of Lithuania authorizing the operation of electrical facilities:
 - Operation of up to 1000 V electrical installations.

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3. The Contractor shall provide a list of works performed on DeltaV, ESD and anti-surge systems over the last two years.

4. Materials, equipment, and services to be provided by the Owner.

[If certain materials and equipment provided by Owner will be used by Contractor for specific tasks, indicate what exactly will be provided and when]

None

5. Materials, equipment, and services provided by Contractor.

[List the items to be provided by Contractor as a part of works, and to be included in the price.]

- 5.1. The Contractor shall provide all necessary materials and licenses, including those from third parties (e.g., Microsoft), required for the project.
- 5.2. Equipment shall be delivered together with the technical documentation required by the legislation of the Republic of Lithuania.
- 5.3. At least a 3-year warranty shall be provided for the hardware.
- 5.4. All supplied hardware shall be new. If several versions are available, the latest upgraded version shall be used.

6. Requirements for work completion.

[Set the main milestones and deadlines or control points in the course of task execution where the Owner is to review the completed tasks, approve, accept such as proper, or reject them.]

- 6.1. Review of proposed solutions and agreement with the Owner.
- 6.2. Development of the design.
 - 6.2.1. The design shall provide for proper protection devices for electric users, their data.
 - 6.2.2. DD documentation/drawings shall be provided by the Designer in the Lithuanian (national) language. The Contractor's package of drawings shall include all drawings required for execution. In case the Contractor is a foreign company, DD documents (title page, explanatory note, comments, explanations on design drawings) shall be made in Lithuanian, other design documents may be in English.
 - 6.2.3. The Designer shall visit the facility to verify the technical parameters of the existing equipment, the installation place, etc. specified in OL documents, and only after making sure that such information is correct use it in the design solutions.
- 6.3. Demounting/installation of equipment.
- 6.4. Commissioning.

7. Requirements for work acceptance.

[Describe criteria according to which completed work will deemed compliant with requirements and accepted.]

The works are considered to be fully completed when, in accordance with the procedure applicable by AB ORLEN Lietuva, a DCS programming-configuration work handover-acceptance statement (Annex 7) is issued and all deficiencies specified therein are eliminated. Documentation submitted by the Contractor must also include a USB flash drive containing AS BUILT design drawings in .dwg format as well as data needed for the completion of works.

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8. Requirements for work schedule.

[Indicate preliminary work execution period. If period is indicated from the contract signature, such shall be given in calendar days, weeks or months.]

Installation and commissioning will performed once approved by AB ORLEN Lietuva during the 2027 Turnaround. Preliminary date from 26 April to 10 June 2027.