TENDER

for

Design of Flue Gas Desulphurization Unit

at

Kiviõli Keemiatööstuse OÜ Power Plant

1. General Information

Project name: Design of Flue Gas Desulphurization Unit.

Project Owner: Kiviõli Keemiatööstuse OÜ, reg. no. 12453072, Turu 3, Kiviõli, 43125 Estonia

Person responsible for the procurement: Oleg Antajev

The tenderer shall bear all costs and risks related to the preparation and submission of the tender.

Site visit for the Q/A session and check of site conditions is planned during the August 2025. The Tenderer shall inform Owner at least 2 days ahead of his wish to come for a visit, as well as list of participants.

Submission of a tender implies full acceptance by the tenderer of all terms, conditions and requirements set out in the procurement documents, including in the contract (hereinafter also referred to as the Contract). Any additional conditions provided by the tenderer may cause the tender to be declared as non-compliant.

The tender shall be confidential until the decision to award the tender has been made.

If the tenderer has not submitted contradictory or in any way ambiguous documents during the procurement procedure, including the clauses of the contract, Owner's terms shall prevail during the performance of the contract.

2. Introduction

Kiviõli Keemiatööstuse OÜ (KKT) is a company that has been operating for more than 100 years, and its main activities are oil shale mining and production of oil shale oil, heat and electricity. KKT mines oil shale in the Põhja Kiviõli quarry, and almost 1.5 million tons of oil shale are mined annually.

The facility includes a thermal power plant producing both heat and electricity (CHP). The CHP plant houses four boilers: two gas-fired (reconstructed E-25GM) and two gas-shale (reconstructed E-35GM). Boilers No. 1 and 2 (gas) have an installed capacity of 14,5 MW each, while Boilers No. 4 and 5 (gas-shale) each have a capacity of 28 MW. Sulfur emissions from the gas boilers reach up to 6500 mg/Nm3. The gas-shale boilers, while partially neutralizing sulfur, still have significant dust emissions of up to 2400 mg/Nm3 (see Table 1). After Boilers No. 4 and 5, there are multicyclones installed. All flue gases are discharged into the atmosphere through a single common chimney via separate smoke exhausters.

On November 25, 2015, the European Parliament and the Council of the European Union adopted Directive 2015/2193, introducing new emission limits for SO2, NOx, and dust effective from January 1, 2025. Specifically, for the CHP, atmospheric emissions of SO2 and dust must not exceed 800 mg/Nm3 (at O2 = 3%) and 50 mg/Nm3, respectively. KKT has been established with the environmental complex permit No. L.KKL.IV-171223, emission limit values for the thermal power plant have been established, which are valid for 2024. until December 31. KKT CHP is a combustion plant that is regulated by the Industrial Emissions Directive / Act (THD / THS). KKT

CHP is, in essence, a combustion device for burning gases generated during the production of shale oil and distillation or processing residues for own use (similar to oil refining). From 2025, new environmental standards will be established for CHP.

To comply with these new emission standards, there is a need to construct flue gas desulfurization units at the CHP.

The purpose of this document is to provide the terms of reference and initial data for the design of a flue gas desulfurization unit and related auxiliary equipment for:

- preparation of a preliminary design documents in amount and quality to conduct procurement process for design, technology selection and construction.
- Evaluate technology options for Flue Gas Desulphurization Unit – technical and economic comparison

3. Technical Data

The flow and composition of the flue gases is presented in Table 1. The total flue gas flow is 177,100 Nm3/h, representing the maximum value when all four boilers are operational. Based on the information that Boilers No. 1 and 2 operate continuously, while Boilers No. 4 and 5 operate alternately, and Boilers No. 4 and 5 only work together for two months a year. Thus, the average flue gas flow for desulfurization is 117,100 Nm3/h.

The composition of flue gases

Parameter	Unit	Value
Flow (O2=3%)	Nm3/h	103 000
Flow min.	%	40%
SO2 (O2=3%)	mg/Nm^3	8 000
O2	%	11,5
CO	mg/Nm^3	400
Dust	mg/Nm^3	500
Temperature aver	°C	220

Emissions limits

Parameter	Unit	Value
Total dust - option1	mg/Nm^3	50
Total dust - option2	mg/Nm^3	5
SO2 (O2=3%)	mg/Nm^3	800

3.1. Utilities

The site has following utilities available.

- Low-pressure steam

- Cooling Water / Process Water, Sewer
- Supply voltage is 3-phase 380 V 50 Hz. Motors with rated voltage e.g. 400 V shall meet the performance characteristics with voltage mentioned above.

3.2. Layout

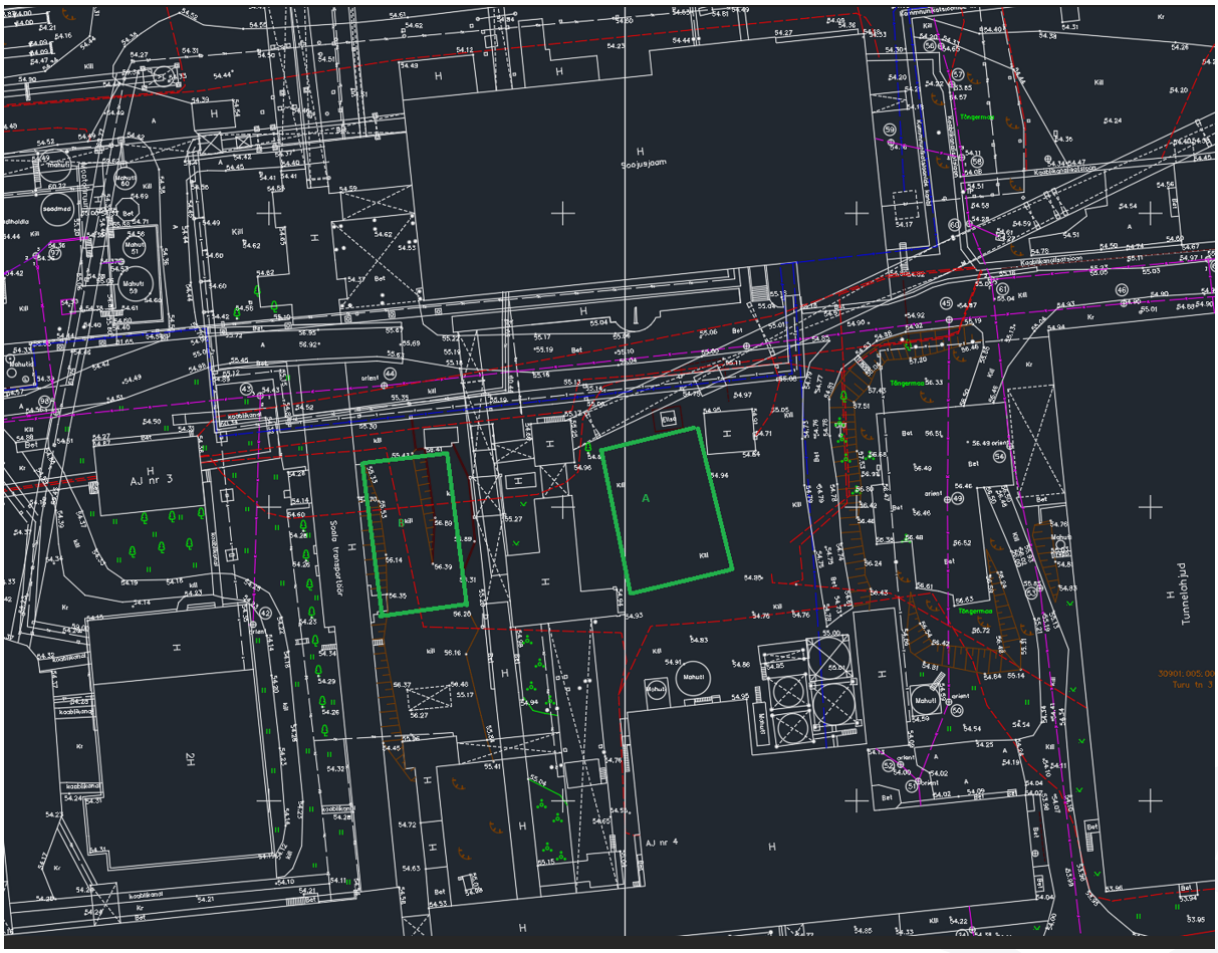
Power Plant is located on an industrial site at address Turu 3, 43125 Kiviõli, Estonia; with coordinates 59.353944, 26.940361.

The FGD Unit shall be connected to the flue gas outlet duct, located at outlet of the Power Plant. Final solution of the inter-connection between FGD, PP and stack shall be offered by Contractor.

Different technologies require their own building space (plots for buildings). Contractor shall examine the plan of the Power Plant of KKT, where there is free space next to the boiler room. This space will be sufficient for the offered technologies.

On the picture below, there are several alternative areas for FGD Unit allocation, depending on the space requirements of provided technology solution.

The plots are approximately 6×12, 8×12, 8×16 m.



The Contractor shall also investigate nearby Power Plant building rooms for any space available for renovation and re-use as project room e.g., for MCC or transformer room etc.

3.3. Site Conditions

- Location: Kiviõli, Estonia, about 5 km from sea and at +50 m over sea-level.
- Installation outdoor, inside industrial area.
- Sufficient plot space available (no plot space constraints)
- Ambient temperature (max/min) + 35 / - 33 °C, average +5 °C.

Potential Contractor shall specify to Owner before contracting, if any requirements in this document cannot be met.

4. Scope of Work:

The scope of work includes technology evaluation, geodetic and geological surveys required prior to design works, as well as measurements of existing buildings related to the design.

The construction project must include the technological part (FGD unit, its control, utility systems required to operate auxiliary equipment, low- and high-voltage installations, automation) and the necessary scope of the civil engineering part (site plan, external spaces, roads and yards, architecture, foundations, structures, enclosures, fire safety, utilities, etc.).

3D models must be submitted in a format that allows free viewing, measuring of the designed objects, and supports editing and modifications in software commonly used by engineering and design organizations in Estonia.

The contractor must prepare the project documentation for both the technological and electrical-automation parts, including:

- Process and instrumentation diagrams (P&IDs);
- Technical drawings and required working drawings;
- Technical descriptions;
- Equipment and material specifications.

All equipment, ducts, fans, valves, piping, low- and high-voltage installations, automation devices, fire safety systems, etc., must be marked with KKS codes in the project drawings. The Owner will provide more specific instructions during the design phase.

Simplified tag notations may be used for visualization of control processes and data archiving; examples will be provided by the Owner’s IT department.

The architectural part of the project must provide visually suitable integration with the existing buildings and structures.

All project stages must be coordinated with the Owner and the relevant authorities and institutions. The preparation of the project must follow the EVS 932:2017 standard.

The scope of the ordered works and the cost of the design works must also account for the following consulting activities:

- Verifying and refining the terms of reference and the Owner's needs and requirements in cooperation with the Owner;
- Assessing the need for and commissioning of additional studies necessary for design;
- If needed, applying for or updating technical conditions;
- Defining and specifying the boundaries of special construction works in the project;
- Providing clarifications and making necessary modifications during the construction procurement phase;
- All project stages must be submitted to the Owner for approval by the deadlines agreed in the contract, fully checked and finalized. When evaluating the submitted project stages, the Owner will rely on standard EVS 932:2017 and the requirements specified in the regulation No. 97 of the Minister of Economic Affairs and Infrastructure dated 17.07.2015 "Requirements for the construction project". The project documentation must be submitted for approval in digital format – drawings in DWG format, texts in MS Word and PDF formats.

The necessary project drawings must include, among others:

- List of drawings (a separate list for each object);
- Assembly drawings, including dimensions and material specifications;
- P&ID diagrams;
- Electrical and automation system schematics, cable schedules, component lists, block diagrams, PLC and visualization programs;
- Diagrams for measurement and control systems (including required measurement data with permissible deviations);

5. Proposal Requirements

Interested tenderers must include the following in their proposals:

- Company Profile: Overview of the company, including experience in FGD systems.
- Technical Proposal: Detailed description of the proposed FGD system and how it meets the technical specifications.
- Project Plan: Timeline for design,
- Warranty and Support: Warranty terms and project implementation support services.
- References: List of similar projects completed, including Owner contact information for references.

6. Evaluation Criteria

Proposals will be evaluated based on the following criteria:

- Experience and expertise in FGD systems.
- Cost-effectiveness.
- Project plan and timeline.

7. Submission Instructions

Proposal Submission Deadline: 01.10.2025

Submission Method: Proposals must be submitted electronically to info@keemiatoostus.ee.

Inquiries: Any questions regarding this RFP should be directed to Mr. Timur Kulakov at:

email: Timur.Kulakov@keemiatoostus.ee

mob phone: + 372 555 333 23

8. Terms and Conditions

Kiviõli Keemiatööstuse OÜ reserves the right to accept or reject any or all proposals.

This RFP does not commit to award a contract or to pay any costs incurred in the preparation of a proposal.

All proposals shall remain valid for 90 days from the submission deadline.

9. Contact Information

For any inquiries or further information, please contact:

Contact Person: Timur Kulakov

Company name: Kiviõli Keemiatööstuse OÜ

email: Timur.Kulakov@keemiatoostus.ee

mob phone: + 372 555 333 23