SURVEY QUESTIONAIRE
For Supply of Chemical cleaning AFC and Chemical Decontamination Services

Nghi Son Refinery & Petrochemical Limited Liability Company (NSRP) is planning for procurement of **Chemical cleaning AFC and Chemical Decontamination Services**.

If your company is interested in those procurement packages, please fill in and the complete questionnaire below then send email to hiep.lt@nsrp.com.vn "Response for Questionnaire "**Supply of Chemical cleaning AFC and Chemical Decontamination Services**" by 13 Oct 2026 at the latest. For the avoidance of doubt, this notice does not constitute any contractual offer, binding promise or guarantee of business by NSRP.
Please answer the questions below:

Part 1. Survey questionnaire

Questions for Scope #1: Chemical cleaning for AFCs (inside system)

QUESTION 1: Does your company have experience in supply "industrial chemical cleaning for Air fan cooler, heat exchangers, Cooler" in the last 05 years?
1. Yes
2. No

If yes, please provide evidence (POs/ Contracts)

QUESTION 2: Has your company previously performed chemical cleaning of at least three air coolers, heat exchangers, or cooler systems?
1. Yes
2. No

If yes, please provide evidence (POs/ Contracts)

QUESTION 3: Does your company have detailed method statement for conducting chemical cleaning for AFC or heat exchanger or cooler system?
1. Yes
2. No

If yes, please provide evidence (typical method statement)

QUESTION 4: Does your company agree to comply with and commit to fulfilling all requirements specified hereby:

PERFORMANCE GUARANTEE FOR Chemical Cleaning for Air Fan Coolers (AFC)

The Contractor shall guarantee that:

+ No Mechanical Damage

No mechanical damage shall occur to AFC tubes, headers, fins, or associated equipment during chemical cleaning.

+ No Corrosion Damage

No corrosion or chemical-induced damage shall occur within one (1) year after TA2 due to the cleaning chemicals or cleaning process.

+ Cleaning Performance

Fouling deposits shall be effectively removed, and cleanliness shall be verified by visual inspection and accepted by NSRP following MD-04-AT-TAR-PD-018: Cleanliness Inspection Procedure.

+ Failure of Guarantee

If the Contractor fails to achieve the guaranteed performance, compensation shall be applied in accordance with the Contract including repair cost, replacement cost, manual cleaning cost, or applicable penalties (Max 8% contract value).

WARRANTY AND TECHNICAL SUPPORT

The Contractor shall provide:

- Minimum twelve (12) months warranty after TA2 completion for mechanical impact, corrosion impact by chemical, contractor activities and technical support.
- Technical support during TA2.
- Technical support during startup.
- Technical support during warranty period for any concern, clarification and troubleshooting of AFC performance, AFC operational concern upon NSRP request.

1. Yes
2. No

If yes, please provide a signed confirmation letter.

Questions for Scope #2: Chemical decontamination for two equipment loops

QUESTION 1: Does your company hold a valid business license and all required permits/authorizations to perform chemical decontamination services in Vietnam?
1. Yes
2. No

If yes, please provide a copy of the Business Registration Certificate and relevant licenses/permits.

QUESTION 2: Does your company have experience in performing chemical decontamination for refinery or petrochemical facilities within the last 5 years?
1. Yes
2. No

If yes, please provide evidence (POs / Contracts / Completion Certificates).

QUESTION 3: Has your company successfully executed chemical decontamination for process vessels, columns, reactors, or piping systems?
1. Yes
2. No

If yes, please provide project references.

QUESTION 4: Does your company have a detailed methodology/procedure for chemical decontamination, including chemical injections, circulation, monitoring, neutralization, and waste disposal?
1. Yes
2. No

If yes, please provide a typical method statement.

QUESTION 5: Can your company provide chemical TDS/SDS and confirm compatibility with the equipment metallurgy and process systems?

1. Yes
2. No

If yes, please provide sample TDS/SDS documents.

QUESTION 6: Can your company commit to meeting NSRP acceptance criteria (LEL, H_2S, VOC, pH, Iron Content, Visual Cleanliness, and System Readiness) as detail limit and criteria in Scope #2 Chemical decontamination?

Detail limit and criteria:

The Vendor shall propose and guarantee measurable acceptance criteria for the chemical cleaning and decontamination works. As a minimum, the following criteria shall be achieved unless otherwise agreed

by NSRP.

No.	Parameter	Acceptance Criteria
1	Hydrocarbon concentration / LEL	0% LEL, or as otherwise agreed by NSRP safety requirements
2	H_2S concentration	0 ppm, or below the limit accepted by NSRP for safe opening and maintenance
3	VOC	Less than 50 ppm
4	Iron content	To be proposed by Vendor and agreed by NSRP
5	pH range	To be proposed by Vendor and agreed by NSRP
6	Visual cleanliness	No visible sludge, deposits, loose scale, or free contamination
7	System readiness	System shall be ready for mechanical inspection, maintenance and subsequent turnaround activities

1. Yes
2. No

If yes, please provide a signed commitment letter.

Appendix 1

Scope #1: Chemical cleaning for 12 AFC loops

The Contractor shall perform **Chemical Cleaning for Air Fan Cooler (AFC)** following twelve (12) AFC systems and associated upstream/downstream piping systems to remove internal fouling deposits (restore thermal performance, reduce pressure drop, improve flow distribution, and ensure equipment integrity and reliability)

NO	Section	Unit No	Tag name	Equipment name	Quantity	Tube each Bundle	Total Tubes	Remark
1	1.1	10	010-AC-006	Crude Column Overhead Condenser	16 ACB	186	2976	Attachment #1
2	1.1	13	013-AC-101	Reactor Effluent Air Cooler	4 ACB	228	912	Attachment #2
3	1.2	40	040-AC-101	Product Condenser	4 ACB	384	1536	Attachment #3
4	1.2	42	042-AC-201	First Stage Suction Drum Cooler	2 ACB	240	480	Attachment #4
5	1.2	42	042-AC-202	Second Stage Suction Drum Cooler	2 ACB	336	672	Attachment #5
6	1.2	42	042-AC-203	RECONTACT COOLER	2 ACB	186	372	Attachment #6
7	1.2	44	044-AC-101	HEAVY AROMATICS COLUMN BOTTOMS COOLER	4 ACB	336	1344	Attachment #7
8	1.2	48	048-AC-101	Extractive Distillation Column Condenser	2 ACB	195	390	Attachment #8
9	1.2	48	048-AC-201	Recovery Column Condenser	8 ACB	350	2800	Attachment #9
10	2	80	080-AC-002	Stripper Bottoms Cooler	4 ACB	189	756	Attachment #10
11	2	20	020-AC-401	Atmospheric Fractionator Overhead Air Cooler	8 ACB	246	1968	Attachment #11
12	3	23	023-AC-003	RECYCLE GASOLINE AIR COOLER	2 ACB	348	696	Attachment #12

The Contractor's scope shall include but not be limited to (some key points)

- Provide engineering evaluation and preparation for chemical cleaning.
- Provide and set up temporary chemical cleaning system
- Conduct chemical cleaning, monitoring, inspection and waste management
- PERFORMANCE GUARANTEE: No Mechanical Damage, No Corrosion Damage, Cleaning Performance following TA2 Cleanliness Inspection Procedure.
- Failure of Guarantee: If any AFC sustains mechanical damage caused by the Chemical Cleaning Contractor and/or fails to meet the required fouling removal performance, a penalty shall be applied.
- Schedule: In TA2, during execution phase, The Vendor shall ensure completion within the approved hand over time from each AFCs system without causing delay to the overall shutdown schedule

Scope #2: Chemical decontamination for two equipment loops

The chemical cleaning and decontamination services shall be applicable to the RFCC Absorber Section and Amine Regeneration Section as listed below:

No.	Loop / Equipment Name and Description	Service / Expected Contaminants	Equipment Dimension / No. of Trays	Estimated Volume
1	RFCC Absorber Section: 023-C-001 023-C-002 023-C-003	Gasoline, LPG, High H_2S content, FeS, sludge / coke deposits	023-C-001: ID 3,800 mm x TT 26,420 mm / 31 trays 023-C-002: ID 5,200 mm x TT 32,120 mm / 36 trays 023-C-003: ID 2,300 mm x TT 17,520 mm / 20 trays 023-V-003: ID 5,700 mm x 19,000 mm 023-V-004: ID 3,200 mm x10,300 mm	023-C-001: 255 m^3 023-C-002: 580 m^3 023-C-003: 62 m^3 023-V-004: 70 m^3
2	Amine Regeneration Section: 023-C-201, 023-V-201 and associated equipment	Rich Amine, Hydrocarbon, High H_2S content, FeS, sludge / deposits	023-C-201: ID 900 / 1,400 / 2,700 mm x TT 3,100 / 13,740 / 6,360 mm / 24 trays 023-V-202: ID 800 mm x 2,250 mm 023-E-202: ID 1,500 mm x 1,850 mm 023-E-203: ID 800 mm x 3,500 mm	023-C-201: 50 m^3 023-V-202: 1.1 m^3 023-E-202: 2.8 m^3 023-E-203: 1.5 m^3

The Vendor shall provide all required manpower, chemicals, equipment, tools, consumables, supervision, engineering support, technical expertise, execution resources, monitoring, testing, and reporting necessary to safely and effectively perform the chemical cleaning and decontamination works.

- Pre-cleaning engineering study.
- Chemical cleaning and decontamination methodology development.
- Chemical supply and handling.
- Provision of injection equipment and temporary facilities required for the Vendor's works.
- Execution support and site supervision.
- Monitoring, sampling, testing, and verification.
- Waste management planning and support.
- Daily and final reporting.

- Demobilization and site restoration.
- Schedule: In TA2, During Shutdown phase, The Vendor shall ensure completion within the approved RFCC shutdown window without causing delay to the overall shutdown schedule