

REQUEST FOR PROPOSAL (RFP)

Flores-Henderson

PROJECT OVERVIEW

Name: Synth Chelseafort Modernization

Type: Modernization

Location: Chelseafort, VT (Refinery Zone)

Industry: Chemical Processing

Value: \$6,625,861

Complexity: 1/5

Date: April 09, 2025

Disciplines: Process Engineering, Mechanical Engineering, Piping & Pipeline

Regulations: EPA Requirements

SCOPE OF WORK

Scope of Work: Refinery Zone Chemical Processing Modernization

Project Goal: Modernize a section of the refinery's chemical processing area to improve efficiency and comply with relevant EPA regulations. This involves upgrading existing equipment and processes.

1. Process Engineering

* **Task 1: Optimize Existing Reaction Vessel:** Evaluate the current performance of the 5m diameter x 10m high stainless steel reaction vessel (316L) used in the alkylation process. Develop and implement minor process modifications to increase yield by 2%, documenting the changes in a Process Flow Diagram (PFD) and updated Process and Instrumentation Diagram (P&ID), including updated safety parameters. This will include a hazard analysis and mitigation strategy.

* **Task 2: Upgrade Control System:** Replace the existing pneumatic control system for the distillation column (5m diameter, 12m height) with a modern distributed control system (DCS) to improve process stability and data logging capabilities. The DCS will integrate with existing safety instrumented systems (SIS), adhering to ISA-84. Deliverables include system architecture design, hardware specifications and programming logic.

2. Mechanical Engineering

* **Task 1: Replace Aging Pumps:** Replace three existing centrifugal pumps (capacity 500 gpm each) that handle caustic solution (30% NaOH) within the wastewater treatment section with new energy-efficient models. Ensure the new pumps (to be selected based on a pump curve analysis) meet API 610 standards and include vibration analysis to ensure longevity. Deliverables include pump specifications, procurement documentation and installation procedures.

* **Task 2: Upgrade Heat Exchanger:** Replace the aging shell-and-tube heat exchanger (using carbon steel) in the cooling system with a new titanium unit (improved corrosion resistance) to handle process fluid operating at 200°C and 15 bar. Conduct a thermal design assessment to verify the heat transfer capacity and develop detailed engineering drawings including material specifications that meet ASME Section VIII, Division 1.

3. Piping & Pipeline

* **Task 1: Replace Carbon Steel Piping:** Replace 50 meters of existing Schedule 40 carbon steel piping (handling non-hazardous chemical solutions) with new stainless steel (304L) piping to prevent corrosion. Adhere to ASME B31.3 standards throughout the design and construction process; deliverables will include isometric drawings and piping and instrumentation diagrams (P&IDs) reflecting the modifications.

* **Task 2: Improve Valve Manifold:** Upgrade the existing valve manifold (6 valves, 2-inch diameter) serving the reactor feed system with a new simplified and more accessible design, featuring quick-acting ball valves in place of gate valves to reduce operational downtime. Ensure that the chosen valves meet API 609 standards, and provide a bill of materials and installation instructions.

Cross-Disciplinary Tasks:

* **Task 1: HAZOP Study:** Conduct a Hazard and Operability (HAZOP) study across all aspects of the upgraded process, including the new pumps, piping, and control system. This will identify and mitigate potential hazards, involving representatives from all three disciplines. A report documenting all identified hazards, associated risk levels, and mitigation strategies is required.

* **Task 2: Pre-commissioning & Commissioning:** Develop and execute a comprehensive pre-commissioning and commissioning plan that includes the flushing and cleaning of the upgraded piping and equipment, testing and validation of the control system, and final system verification against P&IDs and PFDs, coordinating effort between Process, Mechanical and Piping teams.

Complexity Impact: This project has a low complexity impact (Level 1) due to the nature of the upgrades.

REQUEST FOR QUOTATION

Request for Quotation (RFQ): Synth Chelseafort Modernization

Project: Synth Chelseafort Modernization ? Refinery Zone Chemical Processing Upgrade

Location: Chelseafort, VT

Industry: Chemical Processing

RFQ Release Date: April 9, 2025

Questions Due: April 25, 2025

Proposals Due: May 16, 2025

Project Start Date: May 25, 2025

Project Duration: 4 Months

Contract Type: Fixed Price

Scope of Work: Modernize a section of the Chelseafort refinery's chemical processing area to improve efficiency and comply with EPA regulations. This involves upgrading existing equipment and processes, encompassing process, mechanical, and piping & pipeline modifications (detailed below). A HAZOP study and comprehensive pre-commissioning/commissioning plan are also required. See attached Appendix A for complete details.

Appendix A Summary (detailed scope in full RFQ document):

- * Process Engineering: Optimize reaction vessel (increase yield by 2%), upgrade distillation column control system (DCS).
- * Mechanical Engineering: Replace three centrifugal pumps, replace heat exchanger.
- * Piping & Pipeline: Replace carbon steel piping, upgrade valve manifold.
- * Cross-Disciplinary: HAZOP study, pre-commissioning & commissioning plan.

Complexity: Low (Level 1)

Required Qualifications: Minimum 3 years of experience in chemical processing; proven track record of regulatory compliance (EPA).

Proposal Requirements:

1. Company Qualifications and Relevant Experience.
2. Detailed technical designs (1-2 pages max).
3. Comprehensive cost breakdown.

Evaluation Criteria:

- * Technical Approach (50%)
- * Cost (30%)
- * Experience & Qualifications (20%)

Submit Proposals To: procurement@chemicalprocessing.com

CONTACT

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TIMELINE

Include key dates such as submission deadlines, inquiry deadlines, and project start dates.