

# REQUEST FOR PROPOSAL (RFP)

Anderson, Gonzalez and Oliver

## PROJECT OVERVIEW

Name: Synth Brentfort Safety Compliance

Type: Safety Compliance

Location: Port Brentfort, WY (Factory Complex)

Industry: Chemical Processing

Value: \$9,131,721

Complexity: 3/5

Date: April 09, 2025

Disciplines: Mechanical Engineering, Process Engineering, Environmental Engineering

Regulations: NFPA Codes

## SCOPE OF WORK

### Scope of Work: Chemical Processing Plant - Reactor Modification

**Project Goal: Modify an existing chemical reactor to increase processing capacity by 25% while maintaining safety and environmental compliance.**

### Disciplines: Mechanical Engineering, Process Engineering, Environmental Engineering

Mechanical Engineering:

1. Reactor Vessel Modification: Design and specify modifications to the existing 5m diameter x 10m high stainless steel (316L) reactor vessel to accommodate the increased capacity. This includes detailed engineering drawings (including ASME Section VIII Div. 1 compliant calculations) specifying the addition of internal baffles (material: 316L Stainless Steel, thickness 10mm) to improve mixing efficiency and modifications to the existing manway access for improved accessibility.
2. Pump Selection and Integration: Select and specify a new centrifugal pump (capacity: 100 m<sup>3</sup>/hr, head: 50m, material: 316L Stainless Steel) to handle the increased flow rate, integrating it into the existing piping system. This task requires generating detailed 3D piping models using CAD software (AutoCAD or similar), ensuring compliance with relevant piping codes (e.g., ASME B31.3) and generating isometrics for fabrication.
3. Safety System Upgrade: Upgrade the existing pressure relief valve system (compliant with API 520 and API 521) to meet the increased operating pressure and flow requirements of the modified reactor. This involves selecting new valves with appropriate pressure ratings (specify exact pressure ratings based on process requirements), updating safety instrumented system (SIS) logic, and providing detailed specifications for installation and testing.

Process Engineering:

1. Process Simulation and Optimization: Develop a detailed process simulation model using Aspen Plus or similar software to optimize the reactor operating parameters for the increased capacity. This will involve modifying existing process flow diagrams (PFDs) and piping and instrumentation diagrams (P&IDs) to reflect the modifications and analyzing the impact on reaction kinetics, heat transfer, and overall process efficiency. Deliverables include revised PFDs, P&IDs, and a comprehensive process simulation report.
2. Material Balance and Energy Balance Calculations: Perform detailed material and energy balance calculations for the modified process to ensure mass and energy conservation, and to determine the updated utility requirements (steam, cooling water etc.). This will involve analyzing the impact of the modifications on the overall process efficiency and determining the updated utility requirements for operation, documented in a comprehensive process report.

**3. HAZOP Study: Conduct a Hazard and Operability study (HAZOP) on the modified process to identify and mitigate potential hazards. This includes generating a HAZOP report documenting identified hazards, recommended mitigations, and associated safety instrumented systems (SIS) changes to ensure that the modified process meets safety standards.**

Environmental Engineering:

1. Wastewater Treatment Optimization: Evaluate the impact of the increased production on existing wastewater treatment systems and identify potential modifications or upgrades needed to maintain compliance with environmental regulations. This task will include detailed calculations regarding increased effluent volumes and concentrations, proposing solutions (e.g., adding a secondary treatment stage) and generating reports outlining compliance strategy with relevant environmental regulations (specific regulations to be defined).
2. Air Emissions Assessment: Perform an air emissions assessment to determine if modifications to the existing air pollution control equipment are needed to comply with environmental regulations (specify applicable regulations). This task includes calculating updated emission rates for relevant pollutants and making recommendations for control upgrades (e.g., increased scrubber capacity), generating a report that summarizes findings, including emission calculations and proposed solutions.

Cross-Disciplinary Tasks:

1. 3D Model Integration: The mechanical and process engineering teams will integrate their 3D models (Piping, Vessels, Equipment) into a single, coordinated model to verify clearances, accessibility, and overall system functionality. This will ensure that all components are properly sized and located to ensure smooth operation.
2. Safety Review and Risk Assessment: The three disciplines will collaborate on a comprehensive safety review and risk assessment for the modified reactor system, including the mechanical, process, and environmental aspects. This will ensure that all aspects of the project meet relevant safety standards and minimize risk.

Complexity Impact Note: The project complexity is rated as 3/5 due to the significant modifications required to the existing reactor system and the need for careful integration of multiple engineering disciplines.

## REQUEST FOR QUOTATION

Request for Quotation: Synth Brentfort Safety Compliance Project

### 1. Project Overview:

Synth Brentfort Safety Compliance is a project to modify a chemical reactor at our Port Brentfort, WY, factory complex to increase processing capacity by 25% while maintaining safety and environmental compliance. The project involves mechanical, process, and environmental engineering disciplines (detailed scope attached). Complexity: 3/5.

**2. Scope of Work: (See detailed scope of work attached ? summarizes reactor vessel modification, pump integration, safety system upgrade, process simulation, HAZOP study, wastewater treatment optimization, and air emissions assessment.)**

### 3. Qualifications:

Bidders must demonstrate at least 3 years of experience in chemical processing plant engineering with a proven track record of regulatory compliance (OSHA, EPA, etc.).

### 4. Proposal Requirements:

Proposals should include:

- \* A concise technical design description (1-2 pages maximum).
- \* A detailed cost breakdown, including labor, materials, and overhead.

### 5. Evaluation Criteria:

Proposals will be evaluated based on:

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

### 6. Project Timeline:

- \* RFQ Release Date: April 09, 2025

\* **Questions Due: April 16, 2025**

\* **Proposals Due: April 29, 2025**

- \* Project Start Date: May 06, 2025

- \* Project Duration: 15 months

### 7. Contract Type: Time & Materials

### 8. Contact:

Submit proposals electronically to [procurement@chemicalprocessing.com](mailto:procurement@chemicalprocessing.com). A detailed scope of work is attached.

## CONTACT

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## TIMELINE

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