# REQUEST FOR PROPOSAL (RFP)

Mahoney-Wilson

## PROJECT OVERVIEW

Name: Synth Wrightstad Modernization
Type: Modernization
Location: Wrightstad, DE (Factory Complex)
Industry: Chemical Processing
Value: $8,297,684
Complexity: 3/5
Date: April 09, 2025
Disciplines: Environmental Engineering, Process Engineering, Mechanical Engineering
Regulations: NFPA Codes, ISO 14001

## SCOPE OF WORK

**Scope of Work: Chemical Processing Plant Modernization**

**Project Goal: Modernize existing chemical processing units within the factory complex to improve efficiency, safety, and environmental compliance. This project focuses on Unit 3, specifically lines A and B.**

1. Environmental Engineering

*** Task 1: Wastewater Treatment Upgrade: Design and implement an upgrade to the existing wastewater treatment system for Unit 3 lines A and B, focusing on reducing BOD and COD levels by 30%. This will involve evaluating existing treatment processes, selecting appropriate technologies (e.g., activated sludge improvements or membrane bioreactors), and producing detailed engineering drawings (AutoCAD) including piping and instrumentation diagrams (P&IDs) adhering to local wastewater discharge permits. Deliverables will include a final design report, cost estimate, and procurement specifications.**

*** Task 2: Air Emission Control Optimization: Assess existing air emission control systems on Unit 3 lines A and B for compliance with NFPA 68 and relevant local regulations. This will involve air quality modeling (using AERMOD or similar software) to determine required upgrades to reduce particulate matter emissions by 20%. Final deliverables will include a detailed report with recommendations, engineering drawings for modifications (AutoCAD), and compliance documentation for regulatory submission.**

*** Task 3: Hazardous Waste Management Plan Update: Review and update the hazardous waste management plan for Unit 3, lines A and B, to ensure compliance with ISO 14001 and all applicable local regulations. This includes conducting a waste audit, optimizing waste segregation strategies, and developing updated Standard Operating Procedures (SOPs) for the handling, storage, and disposal of hazardous materials. Deliverables will include a revised hazardous waste management plan, updated SOPs, and a training program for plant personnel.**

2. Process Engineering

*** Task 1: Process Optimization of Reaction Line A: Optimize the chemical reaction process in line A of Unit 3 to improve yield by 15% and reduce energy consumption by 10%. This requires developing a process simulation model (Aspen Plus or similar) to evaluate different operating parameters and strategies for optimizing the reaction kinetics. Deliverables include a detailed process flow diagram (PFD), mass and energy balances, and a report summarizing optimization strategies and expected benefits.**

*** Task 2: Control System Upgrade for Line B: Implement an upgrade to the distributed control system (DCS) for line B of Unit 3, incorporating advanced process control (APC) strategies. This will involve evaluating existing DCS hardware and software, selecting new components (including PLC and HMI upgrades), programming the upgraded system, and implementing safety instrumented systems (SIS) where necessary, adhering to IEC 61511. Deliverables include system design specifications, programming code, and thorough testing and validation documentation.**

3. Mechanical Engineering

*** Task 1: Reactor Vessel Inspection and Repair: Conduct a thorough inspection of the reactor vessel in Unit 3 line A (dimensions: 5m diameter x 10m height) to assess its condition and identify any areas needing repair or replacement. This requires the development of an inspection plan, utilizing non-destructive testing (NDT) methods, and the preparation of detailed repair specifications adhering to ASME Section VIII, Division 1. Deliverables include an inspection report, repair drawings, and material specifications for repairs or replacement components.**

*** Task 2: Pump and Valve Replacement (Line B): Replace obsolete pumps and valves on line B of Unit 3 (10 pumps and 20 valves, specifics to be determined via site survey) to improve reliability and maintainability. This will involve selecting replacement pumps and valves based on process requirements and specifications (including material selection, pressure ratings, and flow rates). Deliverables include detailed procurement specifications, installation drawings, and a commissioning checklist.**

Cross-Disciplinary Tasks

*** Task 1: HAZOP Study: Conduct a Hazard and Operability (HAZOP) study for both lines A and B of Unit 3, involving representatives from all three disciplines. This will identify potential hazards and operability issues related to the modernization projects, contributing to a safer and more efficient operation. The deliverable will be a comprehensive HAZOP report with recommendations for mitigation.**

*** Task 2: Integrated Safety and Environmental Management Plan: Develop an integrated safety and environmental management plan that addresses all aspects of the modernization projects. This plan will address safety protocols during construction and operation, waste management, and emergency response, ensuring compliance with all relevant regulations and standards. The deliverable will be a consolidated plan incorporating input from all three disciplines.**

Complexity Impact Note: The project complexity is appropriate for a Level 3 rating due to the scope and the integration required between the different disciplines.

## REQUEST FOR QUOTATION

Request for Quotation: Synth Wrightstad Modernization

**Project: Synth Wrightstad Modernization (Chemical Processing Plant Modernization ? Unit 3, Lines A & B)**

**Location: Wrightstad, DE**

**Issued: April 09, 2025**

**Response Due: May 01, 2025**

**Project Start: May 05, 2025**

**Project Duration: 9 months**

**Contract Type: Time & Materials**

**Scope of Work: Modernize existing chemical processing units (Unit 3, Lines A & B) to improve efficiency, safety, and environmental compliance. This includes:**
1. Environmental Engineering: Wastewater treatment upgrade (BOD/COD reduction by 30%), air emission control optimization (particulate matter reduction by 20%), and hazardous waste management plan update (ISO 14001 compliance).
2. Process Engineering: Process optimization of Reaction Line A (15% yield increase, 10% energy reduction), and control system upgrade for Line B (including PLC, HMI, and SIS upgrades adhering to IEC 61511).
3. Mechanical Engineering: Reactor vessel inspection and repair (Unit 3 Line A, 5m x 10m), and pump & valve replacement (Line B ? 10 pumps, 20 valves).
Cross-Disciplinary: HAZOP study and integrated safety & environmental management plan.

**Deliverables: Detailed engineering drawings (AutoCAD, P&IDs), reports, simulations (Aspen Plus or similar, AERMOD or similar), procurement specifications, updated SOPs, training program, compliance documentation, and testing/validation documentation.**

**Qualifications: Minimum 3 years' experience in chemical processing plant modernization, proven regulatory compliance (NFPA 68, ISO 14001, ASME Section VIII, Division 1, IEC 61511).**
Proposal Requirements: 1-2 page technical design outlining approach and methodology, detailed cost breakdown.
Evaluation Criteria: Technical Approach (50%), Cost (30%), Experience (20%).

**Questions Due: April 24, 2025**
Submit Proposals To: procurement@chemicalprocessing.com

**Complexity: 3/5**

## CONTACT

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## TIMELINE

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