REQUEST FOR PROPOSAL (RFP)

Carr, Bartlett and Massey

PROJECT OVERVIEW

Name: Synth Kennethhaven Modernization
Type: Modernization
Location: Kennethhaven, AL (Industrial Park)
Industry: Chemical Processing
Value: $16,472,864
Complexity: 3/5
Date: April 09, 2025
Disciplines: Process Engineering, Mechanical Engineering
Regulations: ISO 14001

SCOPE OF WORK

Scope of Work: Chemical Processing Plant Modernization ? Industrial Park

Project Goal: Modernize an existing chemical processing unit within an industrial park to improve efficiency, safety, and environmental compliance (where applicable to ISO 14001).

1. Process Engineering

*** Task 1: Optimize Reaction Process Control: Develop and implement a new advanced process control (APC) system for the main reactor (30m³ capacity) to improve yield and reduce waste by 5%. This will involve the development of a detailed process model using Aspen Plus software, implementation of PID controllers with advanced regulatory strategies, and a full commissioning plan including testing and validation procedures. The deliverable will be a fully documented APC system design, control strategies, and validation results.**

*** Task 2: Upgrade Safety Instrumented System (SIS): Modernize the existing SIS for the process unit, upgrading to a SIL 2 rated system as per IEC 61508 standards. This involves a detailed HAZOP study to identify potential hazards, selection of appropriate safety instrumented functions (SIFs), and design of a new SIS architecture incorporating redundant sensors, logic solvers, and final elements (e.g., emergency shut-down valves). Documentation will include a complete SIS design specification, safety requirements specification (SRS), and functional safety assessment (FSA) report.**

*** Task 3: Wastewater Treatment Optimization: Design and implement modifications to the existing wastewater treatment system to improve its efficiency in removing pollutants (e.g., COD, BOD) in line with relevant environmental regulations (where applicable to ISO 14001). This will involve a detailed process flow diagram (PFD), mass balance calculations, selection of suitable treatment technologies, and the development of an operational procedure. The deliverable includes a revised PFD, equipment specifications, and commissioning procedures.**

2. Mechanical Engineering

*** Task 1: Pump System Upgrade: Replace three existing centrifugal pumps (each with a capacity of 100 m³/hr, 50 bar pressure) with high-efficiency pumps to reduce energy consumption by 10%. This will involve specifying new pumps based on performance curves, developing detailed piping and instrumentation diagrams (P&IDs), performing vibration analysis, and creating detailed shop drawings. The deliverables include a pump specification sheet, P&IDs, and shop drawings conforming to ASME B31.1 standards.**

*** Task 2: Heat Exchanger Refurbishment: Refurbish two existing shell and tube heat exchangers (dimensions 2m x 1m) to improve their heat transfer efficiency by 8%. This will involve a detailed inspection and assessment of the existing exchangers, selection of suitable materials (e.g., 316 stainless steel) for repair or replacement of components, including tubes and tube sheets, along with detailed specifications for the repair. Deliverables include a detailed inspection report, repair specifications, and quality control procedures.**

*** Task 3: Pressure Vessel Inspection and Repair: Conduct a thorough internal and external inspection of a 5m³ pressure vessel in accordance with ASME Section VIII, Division 1. This includes NDT testing (e.g., ultrasonic testing), assessment of structural integrity, and recommending necessary repairs or replacements. The deliverable includes an inspection report, repair recommendations, and updated pressure vessel calculations and certification.**

Cross-Disciplinary Tasks

*** Task 1: HAZOP and Risk Assessment Integration: The Process and Mechanical Engineering teams will collaboratively conduct a HAZOP study covering both the process and mechanical aspects of the modifications. This will ensure the identified hazards and risks are comprehensively addressed in the design and implementation of the project. The deliverable is a complete HAZOP report with mitigation strategies.**

*** Task 2: Commissioning and Startup Support: Both teams will work together during the commissioning and startup phase of the project, ensuring a smooth and safe transition to the upgraded system. This will include joint commissioning procedures, checklists, and troubleshooting support for any unexpected issues. The deliverable is a final commissioning report, signed off by both teams.**

Complexity Impact: The project's complexity is appropriately classified as 3/5 due to the incorporation of modern control systems and significant refurbishment elements, requiring coordination across multiple disciplines.

REQUEST FOR QUOTATION

Request for Quotation: Synth Kennethhaven Modernization

Project: Synth Kennethhaven Modernization ? Chemical Processing Plant Modernization

Location: Kennethhaven Industrial Park, Kennethhaven, AL

Date: April 09, 2025

1. Introduction:
This RFQ solicits proposals for the modernization of a chemical processing unit at the Synth Kennethhaven facility. The project aims to improve efficiency, safety, and environmental compliance (ISO 14001 where applicable). Complexity rating: 3/5. Scope of work detailed below.

2. Scope of Work:
The project encompasses process and mechanical engineering upgrades, including:
* Process Engineering: Advanced Process Control (APC) system implementation (Aspen Plus modeling, PID controllers), Safety Instrumented System (SIS) upgrade (SIL 2, IEC 61508), and wastewater treatment optimization.
* Mechanical Engineering: High-efficiency pump replacement, heat exchanger refurbishment, and pressure vessel inspection & repair (ASME Section VIII, Division 1).
* Cross-Disciplinary: Integrated HAZOP study and collaborative commissioning/startup support. Detailed task descriptions are available upon request.
3. Qualifications:
Bidders must demonstrate at least 3 years of experience in chemical processing plant modernization and proven regulatory compliance.
4. Proposal Requirements:
Proposals must include:
* Technical Design: Concise (1-2 pages) outlining the proposed approach to each task.
* Detailed Cost Breakdown: Itemized cost estimate for all labor, materials, and services.
5. Evaluation Criteria:
Proposals will be evaluated based on: Technical Approach (50%), Cost (30%), and Experience (20%).

6. Timeline:

*** RFQ Release: April 09, 2025**

*** Questions Due: April 30, 2025**

*** Proposals Due: May 15, 2025**

*** Project Start: May 01, 2025**
* Project Duration: 6 months

7. Contract Type: Time & Materials

8. Contact:
Submit proposals electronically to: procurement@chemicalprocessing.com

CONTACT

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TIMELINE

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