

REQUEST FOR PROPOSAL (RFP)

Nelson-Pruitt

PROJECT OVERVIEW

Name: Forge Patelhaven Emergency Response

Type: Emergency Response

Location: Patelhaven, WV (Refinery Zone)

Industry: Manufacturing

Value: \$6,035,406

Complexity: 3/5

Date: April 09, 2025

Disciplines: Electrical Engineering, Process Engineering, Mechanical Engineering

Regulations: ASME Standards

SCOPE OF WORK

Scope of Work: Automated Packaging Line Upgrade

Project Goal: Upgrade an existing manual packaging line in a food manufacturing facility to a semi-automated system, increasing production efficiency by 30% and reducing labor costs.

Discipline: Electrical Engineering

1. PLC Programming & HMI Development: Develop a Rockwell Automation PLC program (using RSLogix 5000) to control the automated packaging sequence, including conveyor belt speed control, sensor integration (photoelectric sensors for product detection), and automated reject system. The HMI will be developed using FactoryTalk View SE, providing real-time monitoring and control of all system parameters, including production counts and error logs. All code must adhere to IEC 61131-3 standards.

2. Motor Control & Safety System Design: Design and implement a motor control system for the conveyor belts and robotic arm (using 3-phase AC motors, 220V, 10HP max), including soft starters for reduced inrush current. Integrate a comprehensive safety system with emergency stop buttons (compliant with ANSI/RIA R15.06), light curtains at access points, and interlocks to prevent accidental operation. All safety components will be certified to relevant UL standards.

Discipline: Process Engineering

1. Process Flow Optimization: Optimize the existing packaging process flow to integrate the new automation. This includes mapping the current process, identifying bottlenecks, and redesigning the layout to accommodate the new equipment (conveyor dimensions: 15ft x 3ft, 1000 lbs capacity). Develop a detailed process flow diagram (PFD) and a mass and energy balance for the upgraded process.

2. Material Handling System Design: Design a system to handle packaged goods from the filling line to the final palletizing stage. This involves specifying appropriate conveyors (stainless steel construction, food-grade materials), selecting a palletizer (with a capacity of 50 boxes/minute), and defining the interface between the packaging machine and the palletizer, incorporating quality control check points for rejected products.

Discipline: Mechanical Engineering

1. Robotic Arm Integration: Integrate a 6-axis industrial robot (FANUC R-2000iB) to pick and place packaged products into shipping boxes. This includes designing and fabricating custom end-effectors for gentle product handling, programming the robot's movements via RobotStudio, and ensuring proper safety measures. Detailed engineering drawings and robot program code will be delivered.

2. Conveyor System Design & Fabrication: Design and fabricate custom conveyor systems (including incline, decline and straight sections) to transport products from the packaging machine to the palletizer. This will involve selecting appropriate rollers, belts, and supporting structures. The design will adhere to relevant ANSI standards and ensure smooth product transfer. Detailed design drawings including bill of materials will be provided.

Cross-Disciplinary Tasks:

1. System Integration & Testing: All three teams will collaborate on the integration of the electrical, process, and mechanical components. This includes coordinating PLC programming, robot integration, and conveyor system installation to ensure seamless operation. Comprehensive factory acceptance testing (FAT) will be performed, verifying all system functions and safety protocols.

2. Documentation & Handover: All three disciplines will contribute to the creation of comprehensive as-built drawings, process documentation (including P&IDs and control schematics), operational manuals, and training materials. This ensures a smooth transition to plant operations and facilitates future maintenance.

Complexity Impact Note: The project's complexity level (3/5) is driven by the integration of multiple subsystems and the need for precise coordination between electrical, process, and mechanical systems.

REQUEST FOR QUOTATION

Request for Quotation (RFQ): Forge Patelhaven Emergency Response - Automated Packaging Line Upgrade

Project Name: Forge Patelhaven Emergency Response (Refinery Zone, Patelhaven, WV)

Industry: Manufacturing

Project Goal: Upgrade existing manual packaging line to a semi-automated system, increasing production efficiency by 30% and reducing labor costs. Scope includes PLC programming, HMI development, motor control, safety system design, process flow optimization, material handling system design, robotic arm integration, and conveyor system design & fabrication. (See detailed Scope of Work below).

Complexity: 3/5

Scope of Work: This project requires expertise across Electrical, Process, and Mechanical Engineering disciplines. Specific tasks include (but are not limited to):

- * Electrical Engineering: PLC programming (Rockwell Automation RSLogix 5000), HMI development (FactoryTalk View SE), motor control system design (3-phase AC motors, 220V, 10HP max), and safety system integration (compliant with ANSI/RIA R15.06 and UL standards).
- * Process Engineering: Process flow optimization, material handling system design (including palletizer selection, capacity 50 boxes/minute), PFD development, and mass & energy balance.
- * Mechanical Engineering: Robotic arm integration (FANUC R-2000iB), custom end-effector design & fabrication, conveyor system design & fabrication (15ft x 3ft, 1000 lbs capacity), and detailed engineering drawings.
- * Cross-Disciplinary: System integration, testing (FAT), and comprehensive documentation (as-built drawings, P&IDs, operational manuals, training materials).

Qualifications: Minimum 3+ years' experience in manufacturing automation projects, proven regulatory compliance (relevant industry standards).

Proposal Requirements: A detailed technical design (1-2 pages max) outlining your approach and a comprehensive cost breakdown.

Evaluation Criteria: Technical Approach (50%), Cost (30%), Experience (20%).

Timeline:

* RFQ Release: April 09, 2025

* Questions Due: April 16, 2025

* Proposals Due: May 08, 2025

* Project Start: June 02, 2025

* Project Duration: 13 Months

Contract Type: Time & Materials

Submission: Submit proposals electronically to procurement@manufacturing.com

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TIMELINE

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