REQUEST FOR PROPOSAL (RFP)

Hayes Group

PROJECT OVERVIEW

Name: Tech Smithchester Automation Retrofit
Type: Automation Retrofit
Location: Smithchester, SC (Factory Complex)
Industry: Manufacturing
Value: $16,492,800
Complexity: 3/5
Date: April 09, 2025
Disciplines: Mechanical Engineering, Industrial Automation, Process Engineering
Regulations: OSHA Regulations, ISO 9001

SCOPE OF WORK

Scope of Work: Generic Automation Retrofit Project

Project Goal: To retrofit existing manufacturing processes within a factory complex with automated systems to improve efficiency, safety, and product quality. This project focuses on a specific production line (Line X) and involves upgrading existing machinery with PLC-controlled automation and associated safety systems.

1. Mechanical Engineering:

*** Task 1.1: Machine Modification for Automation Integration: Modify existing conveyor system (Line X) to accommodate new robotic arm integration (Fanuc R-2000iB/165). This includes fabricating custom steel mounting brackets (ASTM A36 steel, with dimensions specified in provided CAD drawings) for the robot and modifying the conveyor speed control system to synchronize with the robot?s operational cycle. All modifications must adhere to relevant OSHA safety standards.**

*** Task 1.2: Design and Fabrication of Safety Guards: Design and fabricate safety guards for all moving parts of the automated system, including the robotic arm and conveyor system. Guards must be constructed from 12-gauge steel sheet (ASTM A570), featuring interlocked safety switches complying with ANSI B11.19 standards. Completed designs including 3D models and fabrication drawings will be submitted for approval.**

*** Task 1.3: Component Selection and Procurement: Select and procure all necessary mechanical components for the automation system, including pneumatic cylinders (SMC brand, specifications provided in appendix A), bearings, and sensors. This will include sourcing components to ensure quality and compatibility, creating a comprehensive bill of materials with part numbers and vendor information.**

2. Industrial Automation:

*** Task 2.1: PLC Programming and HMI Development: Program a Rockwell Automation PLC (CompactLogix 5370) to control the entire automated system, including the robotic arm, conveyor system, and safety interlocks. Develop a user-friendly HMI (Human-Machine Interface) using FactoryTalk View SE, allowing operators to monitor and control the process parameters. All programming must be thoroughly documented with comments and logic diagrams.**

*** Task 2.2: Robot Programming and Integration: Program the Fanuc R-2000iB/165 robot arm to perform the required tasks (part pick-and-place operations, defined in provided process flow diagrams). Integrate the robot into the overall PLC control system, ensuring seamless communication and synchronized operation with the conveyor system. This includes establishing safety protocols and testing robot movements for collisions.**

*** Task 2.3: Safety System Implementation: Implement a complete safety system complying with OSHA standards, including emergency stop buttons, light curtains, and pressure mats. The system must be thoroughly tested and validated to ensure a safe working environment. All safety components will be clearly labeled and documented.**

3. Process Engineering:

*** Task 3.1: Process Optimization and Simulation: Analyze the existing production process on Line X and develop an optimized process flow for the automated system. This includes generating a simulation model (using software like Arena or AnyLogic) to predict system performance and identify potential bottlenecks. The simulation should predict throughput rates and identify areas for process improvement.**

*** Task 3.2: Quality Control Integration: Integrate quality control checks into the automated system. This involves implementing automated vision systems (Keyence or Cognex) at critical points in the process, to inspect for defects and reject faulty products. Develop acceptance criteria and logging procedures to maintain ISO 9001 compliance where applicable.**

Cross-Disciplinary Tasks:

*** Task 4.1: Joint System Integration Testing: All three teams (Mechanical, Automation, Process) will collaborate to conduct thorough integrated testing of the complete automated system. This includes functional testing of individual components and systems, as well as end-to-end performance testing under simulated production conditions. Documentation of testing procedures, results, and any necessary revisions will be required.**

*** Task 4.2: Final Documentation and Handover: All engineering teams will collaborate to create comprehensive documentation for the complete system, including as-built drawings, PLC programs, HMI screens, robot programs, and operation and maintenance manuals. This documentation will be reviewed by all teams before final handover to the client.**

Complexity Impact Note: The project complexity is rated 3/5 due to the integration of various systems and the required modifications to existing

equipment, requiring careful planning and coordination between disciplines.

REQUEST FOR QUOTATION

Request for Quotation: Tech Smithchester Automation Retrofit

Project: Tech Smithchester Automation Retrofit, Smithchester, SC

Industry: Manufacturing

Date: April 9, 2025

Due Date: May 11, 2025

Project Goal: Retrofit Line X in our factory complex with automated systems to improve efficiency, safety, and product quality. This involves upgrading existing machinery with PLC-controlled automation (Rockwell Automation CompactLogix 5370, Fanuc R-2000iB/165 robot) and associated safety systems. See detailed scope of work below.

Scope of Work:
This project encompasses mechanical modifications, industrial automation programming and integration, and process optimization. Key tasks include:

*** Mechanical: Conveyor system modification, safety guard design & fabrication (ASTM A36 & A570 steel), component selection & procurement (SMC pneumatic cylinders, etc.).**

*** Automation: PLC programming (FactoryTalk View SE HMI), robot programming & integration, safety system implementation (OSHA compliant).**

*** Process: Process optimization & simulation (Arena or AnyLogic), quality control integration (Keyence or Cognex vision systems).**
* Cross-Disciplinary: Joint system integration testing, comprehensive documentation & handover.
Detailed scope provided upon request.

Qualifications: Minimum 3+ years experience in manufacturing automation projects; proven regulatory compliance (OSHA, ANSI).
Proposal Requirements:

1. Company qualifications and relevant experience.

2. Detailed technical design (1-2 pages max).

3. Comprehensive cost breakdown.
Evaluation Criteria: Technical approach (50%), Cost (30%), Experience (20%).

Timeline:

*** RFQ Release: April 9, 2025**

*** Questions Due: April 25, 2025**

*** Proposals Due: May 11, 2025**

*** Project Start: June 3, 2025**
* Project Duration: 10 months

Contract Type: Time & Materials

Submission: Email proposals to procurement@manufacturing.com

Complexity: 3/5

CONTACT

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TIMELINE

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