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Part I: Overview of Business

- Pella Corporation manufactures windows and doors with a dedication to quality and a vision for innovation which helps make every day life easier for the customer.

Part II: Job Specifics

- The Manufacturing Engineering Services group at Pella Corp. researches, plans, designs, machines, welds, wires, programs, validates, installs, and maintains most of the machinery used in the production lines at the Pella Corp. window and door manufacturing facilities.

Part III: Introduce the Problem

Robotic Machine Design

- The robotics programming class will work as a design team to research, design, program, fabricate, assemble and qualify a robotic arm for a production line which can pick and place parts and components of various sizes being fed to it by a conveyor system.

Part IV: Background

- Students will have to understand and demonstrate skills in the areas of the design process, math, physics, robotics, CAD fundamentals, computer programming, fabrication, precision measurement, and testing for validation in this project.
- Pella Corp. is currently training and developing employees within the areas of CAD, robotics, and all areas of machine design to meet the challenges of designing automated machinery and robotics systems.

Part V: Business Solution

- Pella Corp. has developed and trained a team of automation and robotics designers and builders who tackle these problems within the company

Part VI: Student Solutions

- I anticipate that students will develop a system incorporating a mechanical arm, pneumatics, an adjustable gripper, a microcontroller and sensors which allow them to write a computer program which can analyze and place parts in the appropriate locations.