Your pen filling machine needs to incorporate PLC control, robot motion, sensing of pens and other materials at appropriate places, and continuous operation (i.e., not a single pen process with built-in human intervention per pen). Even if some aspect of your system is not functioning at demo time, you need to have these elements in its design and implementation.

The documentation for your lab project will be in the form of a manual for the operation and maintenance of your machine. This manual must include:

Instructions for:

1. loading the machine
2. starting the machine
3. clearing jams

Descriptions:

1. Operation of each major section of the machine
2. Maintenance instructions
3. Suggestions for future improvements
4. Performance data

Diagrams:

1. mechanical drawings or annotated photos
2. PLC ladder logic (with element labels and rung comments)
3. State machine diagram(s)
4. Motoman job programs
5. Stepper motor drive configuration
6. Wiring diagram or table, listing all I/O connections between PLC, sensors, pneumatic valves, step motor amplifiers, robot controller, or other devices.

Examples of manuals from previous classes can be seen at:
http://gab.wallawalla.edu/~ralph.stirling/classes/engr480 -> Reports

Deadline for turning in manuals (pdf or hard copy) is Thursday Dec 14 at noon. This documentation is an essential part of the project, which is worth 80% of your grade. Be sure that whichever team member is responsible for turning it in, actually does so.