Progress Report
October 5, 2006

Project Title: Animal Ventilator

Team Members:
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Advisor: Willis J. Tompkins

Date: 10/05/2006

Problem Statement:
Redesign a MRI-compatible small animal ventilator to deliver a variable volume of hyperpolarized helium and oxygen gas at user-specified frequencies. The device should be compatible with the current system in place.

Restatement of team goals:
1. Calibrate first generation prototype
2. Finalize design plans for second generation prototype
3. Construct second generation prototype
4. Calibration and testing of second prototype
   a. Volume output
   b. Timing
   c. Gas mixture

Summary of Team Accomplishments:
1. Prepared a document for Dr. Fain with design proposals including pictures, descriptions, and pros/cons.
2. Returned to the Waisman Center to talk with Dr. Fain
3. Received a prioritized list of tasks.
4. Discussed the problems with the current setup.
5. Discussed our design proposals for the new prototype.
6. Fully understand the timing problem with the pneumatic valves.

Summary of Individual Accomplishment:
1. Ashley wrote the progress report.
2. Chris wrote a brief protocol for valve testing.

Statement of Team Goals:
1. Fix the volume delivery issues with the current prototype.
2. Fix the pneumatic valve timing issue in the LabVIEW code.
3. Continue to develop the new prototype – Dr. Fain will get back to us this week with his preferred design.
4. Develop the chosen design for the new prototype.

Project Schedule:
9/15-9/29 Finish first device calibration
9/29-10/13 Research and design development of second gen. device
10/13-10/20 Finalization of new design
10/20-11/17 Manufacture of new design elements and device assembly
11/17-11/24 Software modifications
11/24-12/8 Testing and calibration of second device
12/8 Second prototype delivery
12/8 Semester Write-up
12/8 Final Presentation

Difficulties:
The LabVIEW program has a complicated method of timing the pneumatic valves, so it is going to take some reading to fix that problem. Design improvements may be difficult to implement – particularly transfer of motion from the motor to a space closer to the animal.

Activities:
(Since device delivery)
Chris: 4 hrs – team meeting, R&D
Ashley: 4 hrs – team meeting, R&D, progress report
Matt: 4 hrs – team meeting, R&D
Micah: 3 hrs - team meeting, R&D

Team Total Hours for this week: 15 hrs
Cumulative Team Hours for Fall 2006: 34.5 hrs
Cumulative Team Hours to date: 181 hrs