Progress Report
March 8, 2007

Project Title: Animal Ventilator

Team Members:
Chris Wegener, Team Leader   cjwegener@wisc.edu
   608-469-3961
Ashley Anderson, Communicator   aandersoniii@wisc.edu
   608-212-3462
Matt Smith, BWIG   mrsmith4@wisc.edu
   414-640-3088
Micah Brown, BSAC   micahbrown@wisc.edu

Client:  
Sean Fain, Ph.D.
Dept. of Medical Physics
UW Medical School
Clinical Sciences Center E3/311
Phone: 263-0090
Page: 265-7000 Ext. 5251
email: sfain@wisc.edu

Advisor: Willis J. Tompkins

Date: 3/1/2007

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. Order parts for second generation prototype
4. Finish construction of second generation prototype
5. Calibration and testing of second prototype
   5.a. Volume output
   5.b. Timing
   5.c. Gas mixture

Summary of Team Accomplishments:
1 Created new model of axle holder that applies downward pressure
2 Drilled and countersank base
3 Assembled entire model
4 Envisioned new ways to calibrate syringe volume output
5 Created Powerpoint presentation for midsemester

**Summary of Individual Accomplishment:**
1 Everyone helped in machining the last of the parts. Chris and Micah worked on the actual machines, while Matt and Ashley correlated progress with Solidworks and cleaned up and assembled the pieces as they were finished.
2 Matt got motor from Waisman Center

**Statement of Team Goals:**
1. See if translation of motor and axle support would be beneficial
2. Develop method to verify/measure output
3. Begin preliminary testing of second generation prototype

**Project Schedule:**
1/26-2/16 Finish construction of second generation device.
2/17-2/23 Software testing and modifications made
2/24-3/16 Written development of test procedures and securing test equipment and sites
3/17-4/6 Non-animal testing of device
4/7-4/27 Write-up of results, final paper, and poster
5/4 Deliver

**Difficulties:**
Some of the parts were made on the fly, and were not as well made or designed as well as they could have been. Next week when we have time we plan on redoing those parts. The motor is usually housed at the Waisman Center, which is inconvenient for us to test fitting with the motor. We will have to go out there in the future to perform motor testing. The monometer used previously may not give the needed measurements for this round of validation. We therefore are having trouble figuring out how to perform these trials.

**Activities:**
Chris: 4.0 hrs– team meeting, machining, presentation
Ashley: 5.0 hrs – team meeting, machining, LabVIEW work, presentation
Matt: 5.0 hrs – team meeting, SolidWorks preparation, progress report, presentation
Micah: 5.0 hrs - team meeting, machining, presentation

**Team Total Hours for this week:** 19 hrs
**Cumulative Team Hours for Spring 2007:** 89.5 hrs
**Cumulative Team Hours to date:** 359.5 hrs