

## **BME 402 - Heart Phantom**

*Progress Report Week 2 – 1/30/09 to 2/6/09*

### *Team Members:*

Jessica Hause (Co-Team Leader)  
Erin Main (Co-Team Leader)  
Lacey Halfen (Communicator)  
Peter Strohm (BSAC)  
Fan Wu (BWIG)

### *Client:*

Orhan Unal

### *Advisor:*

Willis Tompkins

### **Problem Statement:**

This project consists of designing a heart phantom to be used for the initial testing of a new, solenoid-tipped catheter awaiting FDA approval. This catheter will ultimately be used to treat atrial fibrillation under MRI guidance. The transparent phantom will be used to test the maneuverability of the catheter under MRI guidance as well as the high resolution imaging capabilities in the vicinity of the solenoid tip. It will consist of clear tubing of various sizes representing tortuous vasculature leading to a single heart chamber. All “veins” must terminate at one end of the phantom and be sealed so they may be filled with a saline solution in either a static or dynamic state without risk of leaking.

### **Goals last Week:**

- Brainstorm ideas for changing components of the design (individual and group)
- PDS
- Take apart prototype from last semester and salvage any parts
- Begin creating parts list

### **Summary of Accomplishments:**

- Met with client to discuss the scope of our project this semester and the improvements that need to be made on our existing design
- Researched the sizes, lengths and layout of the actual human vasculature
- Created a solidworks drawing of the proposed phantom prototype for the semester
- Discussed improvements on materials
- Brainstormed ways to practice building phantom vasculature and heart

### **Goals this Week:**

- Order parts
- Finalize layout of vasculature and heart
- Take apart prototype from last semester and salvage any parts
- PDS
- Get client approval on proposed phantom design

**Project Difficulties:**

- The size of the acrylic domes may limit the number of holes we are able to drill into it and ordering additional domes is not a feasible option as delivery time is quite lengthy. As a result, we will need to test the heart design on a cheaper product before permanently altering the acrylic domes.

**Activities:**

Date	Person	Activity	Time Spent
1/30/09	Team	Team meeting with client to discuss improvements on the existing phantom and the scope of the project this semester	1.5 hrs
	Individual	Individual research (Lacey – vasculature sizes, Erin – orientation of pulmonary veins, Jess – upper vasculature, Peter – solid works drawing)	1 hr each
2/2/09	Team	Team meeting to discuss client meeting and clarify ideas	1 hr
2/5/09	Team	Team meeting to discuss final prototype features and discuss research on vasculature	1 hr

**Team Hours:**

Weekly..... 8.5 hrs  
 Total..... 17.75 hrs

**Project Timeline:**

Jan. 18 - Jan.24	Project Selection	x
	Contact Client	x
Jan. 25 - Jan. 31	Individual Research	x
	Client Meeting	x
	Brainstorm	
	PDS	
Feb. 1 - Feb. 7	Finalize Design	
	Order Parts	
Feb. 8 - Feb. 14	Construction	
Feb. 15 - Feb. 21	Construction	
Feb. 22 - Feb. 28	Construction	
Mar. 1 - Mar. 7	Midsemester Presentations (Mar. 6)	Midsemester Powerpoint
Mar. 8 - Mar. 14	Design Notebooks (Mar.11)	Construction/Testing
Mar. 15 - Mar. 21	Spring Break	Spring Break
Mar. 22 - Mar. 28	Construction/Testing	
Mar. 29 - Apr. 4	Construction/Testing	
Apr. 5 - Apr. 11	Testing	
Apr. 12 - Apr. 18	Engineering Expo	Testing

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Apr. 19 - Apr. 25  
Poster

Testing