

Adjustable wave tube stand for Acoustic Reflection Technique

Week: October 26th – November 2nd

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Team: Ryan Carroll – Team Leader
Jeremy Glynn– Communications
Andrew Bremer – BWIG
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Problem Statement

The Vocal Tract Development lab (VT Lab) plans to compare anatomic measurements secured from Acoustic reflection technology (ART) - also known as acoustic pharyngometry – in the upright and supine position with measurements secured from imaging studies (MRI & CT).

Currently, researchers in the VT Lab need to hold the wave tube in their hands which is presenting variability in the data. It is difficult to hold the wave tube at the same angle during each trial within subjects and across subjects.

Hood Laboratories, the company who manufactures AR technology, has no plans to offer an adjustable stand.

VT Lab is requesting for the BME team to design and build a steady stand for the ART wave tube. The stand should be adjustable so that it may be used by individuals of different ages -- young children to adult. Also, the stand must allow the patient's head to remain in a standardized position in the upright and supine position. Another important criterion is that the stand/unit should be easy to clean and disinfect.

Last Week's Goals

- Purchase HDPE
- Obtain Stand
- Obtain shop access for all members
- Start building prototype

Accomplishments

- HDPE Purchased 10/30. The type of HDPE is Ultra High MW HDPE. This type is still compatible with our design.
- Stand problem was dealt with. Apparently the stand was not being shipped due to

problems with payment. These were dealt with and the status on the order is now “Ready to Ship” as of 10/31. Should be arriving next week hopefully.

- Shop access obtained for all members.
- Waiting for HDPE to ship.

This Week’s Goals

- Obtain HDPE.
- Finalize SolidWorks, Mill interface.
- Hopefully, obtain stand. Investigate means of attachment of interface to stand.
- Test gripping lining with cleaning solution. If needed, purchase gripping lining.
- Start assembly.

Difficulties

- GearTree.com is not recommended for future design students.

Team Effort

Team Member	Accomplishments	Time (Hrs)	Running Total (Hrs)
Ryan Carroll	Interface material research, Progress report, Materials ordering	1.5	22.5
Ben Engel	Materials Ordering, BSAC, Interface material research	1.5	22.5
Jeremy Glynn	Company/client contacts, Interface material research	1.5	22.5
Andrew Bremer	Website, Interface material research	1.5	22.5

Project Schedule

TASK	SEPT			OCT				NOV					DEC			
DATES	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21	28
WORK																
Brainstorming																
Research																
Designing Prototype																
Selecting Prototype																
Obtaining Materials																
Building Prototype																
Testing Prototype																
Modifications																
DELIVERABLES																
PDS																
Mid-Sem. Report																
Mid-Sem. Presentation																
Final Report																
Final Presentation																
Weekly Reports																
Notebooks																
MEETINGS																
Team Meetings																
Client Meetings																
Advisor Meetings																
BSAC Meetings																
OTHER																
Web Page																
Special Lectures																

Expenses to Date:

- **MB1 Boom Stand** – \$34.98
 - Purchased by Ryan Carroll on 10/12/2007
 - GearTree.com
 - Paid by Credit
 - Status: Shipping
- **Rubber Belt Strap** - \$9.49
 - Purchased by Ryan Carroll on 10/17/2007
 - Shentech.com
 - Paid By Credit
 - Status: Received

- **UHMW Polyethylene Sheet - \$39.29**
 - Purchased by Ben Engel on 10/30/2007
 - McMaster.com
 - Paid by Credit
 - Status: Shipped

Total: \$83.76