

Adjustable wave tube stand for Acoustic Reflection Technique

Week: November 16th – November 23rd

Client: Erin Douglas, MS-CCC-SLP
Vocal Tract Development Lab - 430 Waisman Center
Phone: 608-263-5610
Email: edouglas@waisman.wisc.edu

Advisor: Dr. Willis J. Tompkins
2134 Engineering Centers Building
Phone: 608-263-1581
Email: tompkins@engr.wisc.edu

Team: Ryan Carroll – Team Leader
Jeremy Glynn– Communications
Andrew Bremer – BWIG
Ben Engel – BSAC

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.

VTLab 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

- Face Interface.
- Mill out interface to obtain U-shape.
- Router the sharp edges for smooth finish.
- Drill holes and connect hardware for interface.
- Connect rubber straps to interface.
- Connect gripping material.

Accomplishments

- Purchased mill bit required to mill out interface piece. Bit was purchased from

Mc-Master Carr. Should arrive while we are on break and ready to go when we get back.

- Faced interface block on mill.
- Configured interface connection for stand.

This Week's Goals

- Mill out curvature for interface piece. (Should be fairly easy when our bit arrives.)
- Screw in connective straps and connect to stand.
- Place gripping material.
- Mark measurements on stand. Stand is finished.
- Divide up work for final paper.

Difficulties

Team Effort

Team Member	Accomplishments	Time (Hrs)	Running Total (Hrs)
Ryan Carroll	Progress report, Interface piece work, Team meeting	3.0	31.5
Ben Engel	BSAC, Interface piece work, Team meeting	3.0	31.5
Jeremy Glynn	Client contacts, Interface piece work, Materials testing, Team meeting	3.0	31.5
Andrew Bremer	Website, Interface piece work, Team meeting	3.0	31.5

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
- **Interface Hardware (Screws, Mounting Brackets, ect.) - \$8.00**
 - Purchased by Ben Engel on 11/15/2007
 - Local Hardware Store
 - Paid by Credit
 - Status: Received
- **Ball End Mill Piece – \$26.90**
 - Purchased by Jeremy Glynn on 11/16/2007
 - Endco.com
 - Paid by Credit
 - Status: Shipped

When finished, we're investigating selling this item to the ECB Shop.

Total: \$118.66