Separation Connector Improvement

Progress Update Presentation

Team 19:

Koll Christianson
Zheng Lian
Luis Herrera
Shaun Shultz

Presentation Overview

- Project Overview
- Problem Statement
- Final Design
- First FDM Prototype
- Design Modifications
- Metal Prototype
- Future Tasks
- Gantt Chart

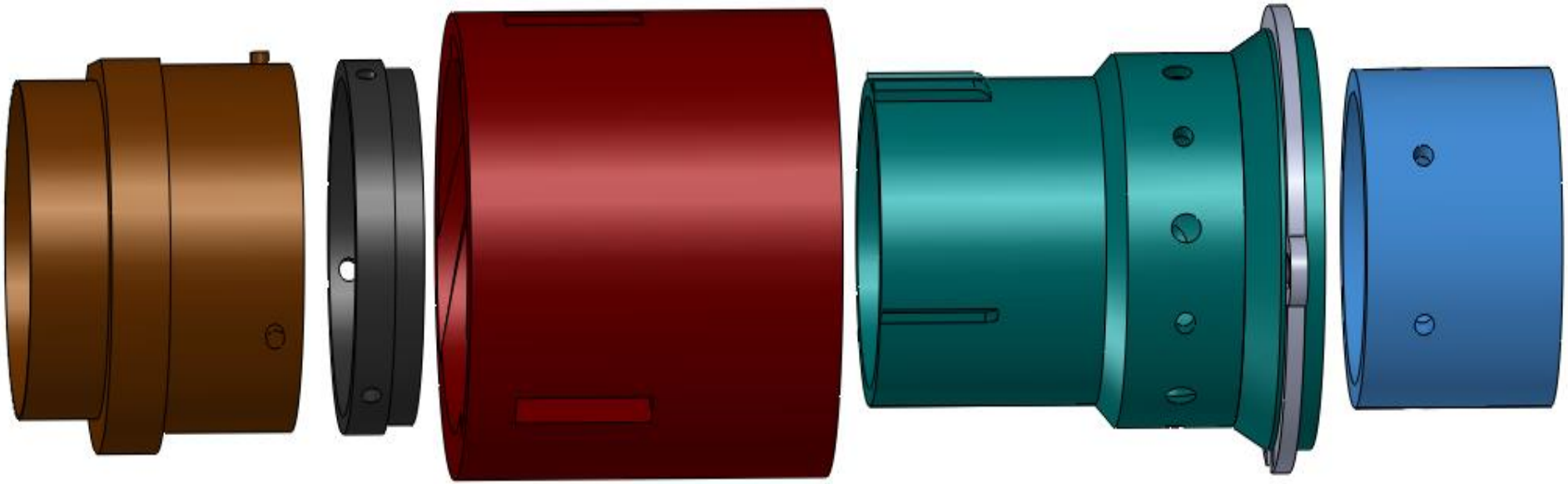
Project Overview

- Original Separation Connector

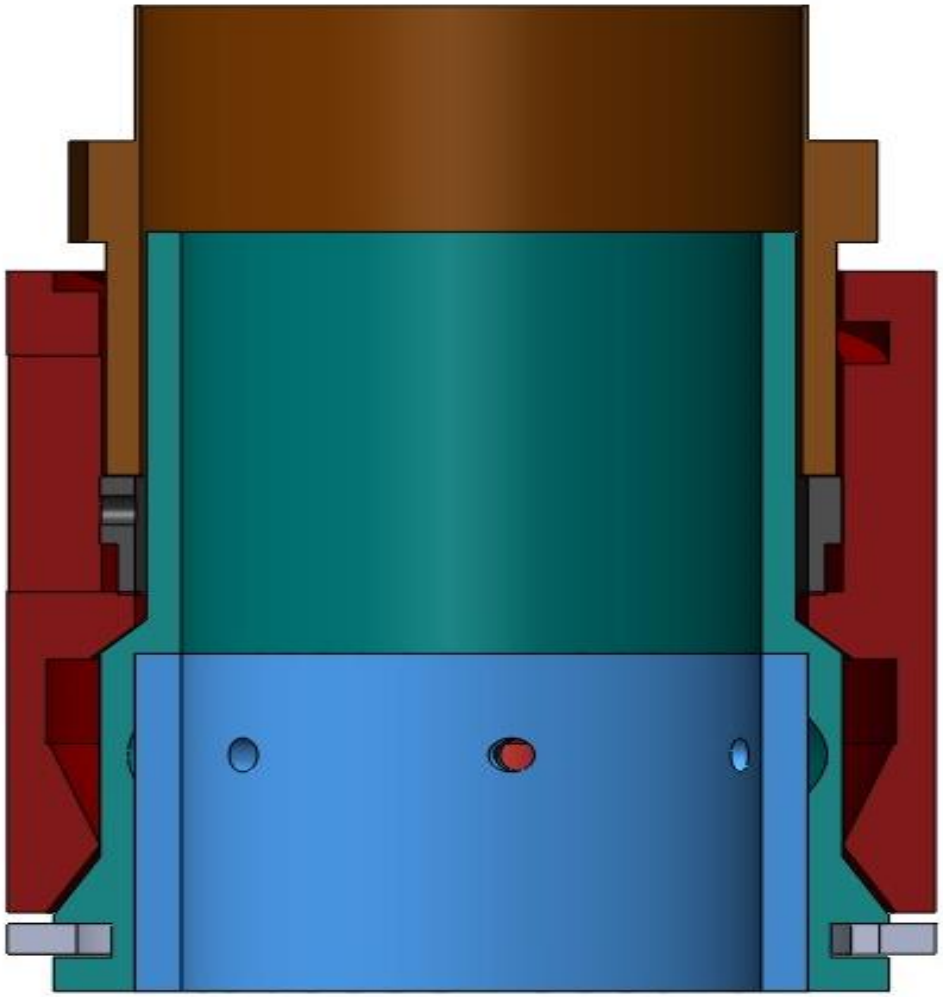
Problem Statement

- The goal for this project is to design and prototype a perfectly reliable, inexpensive, and easily manufacturable separation connector

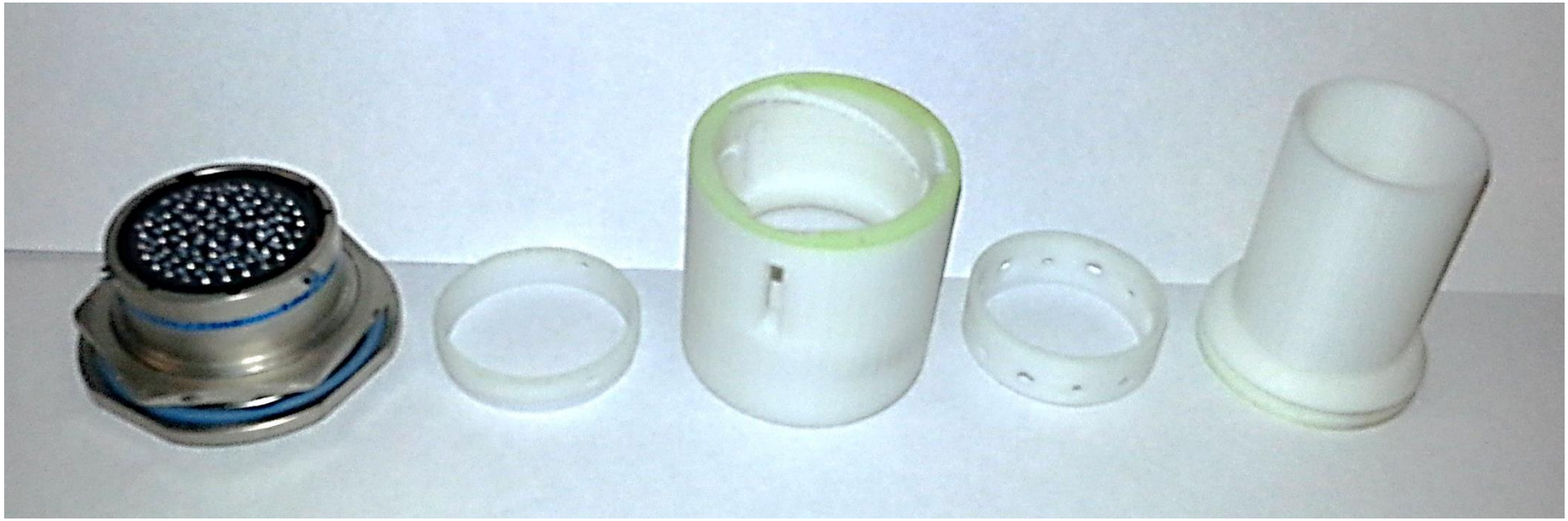
Final Design



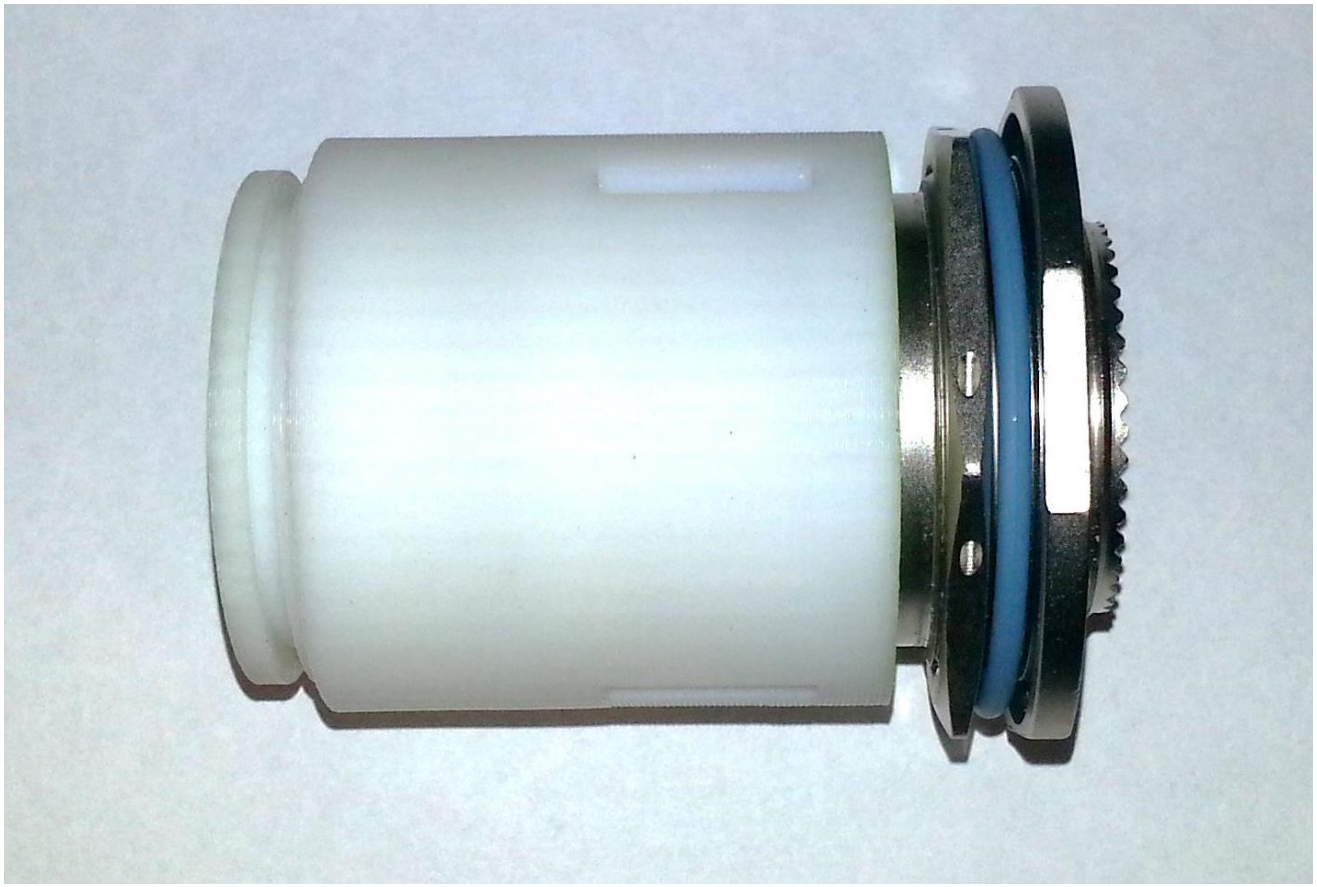
Final Design



FDM Prototype



FDM Prototype



Modifications to Design

- Coupling
- Female End
- Ball Bearing Retention Ring
- Added Spring Retention Ring

Coupling Modifications

- Problems with old design
- Fixed Helical Grooves (measurements)
- Added easy to cut slot at the end of the groove

Female End Modifications

- Problems with old design
- Added key notches
  - Ensures wires connect correctly to male end
- Made space for spring retention ring
- Cut holes for small springs
- Combined with ball bearing retention ring

Ball Bearing Retention Ring Modifications

- Problems with old design
- No longer needed
- Combined with female end

Spring Retention Ring

- Newest piece/modification
- Makes device easier to assemble

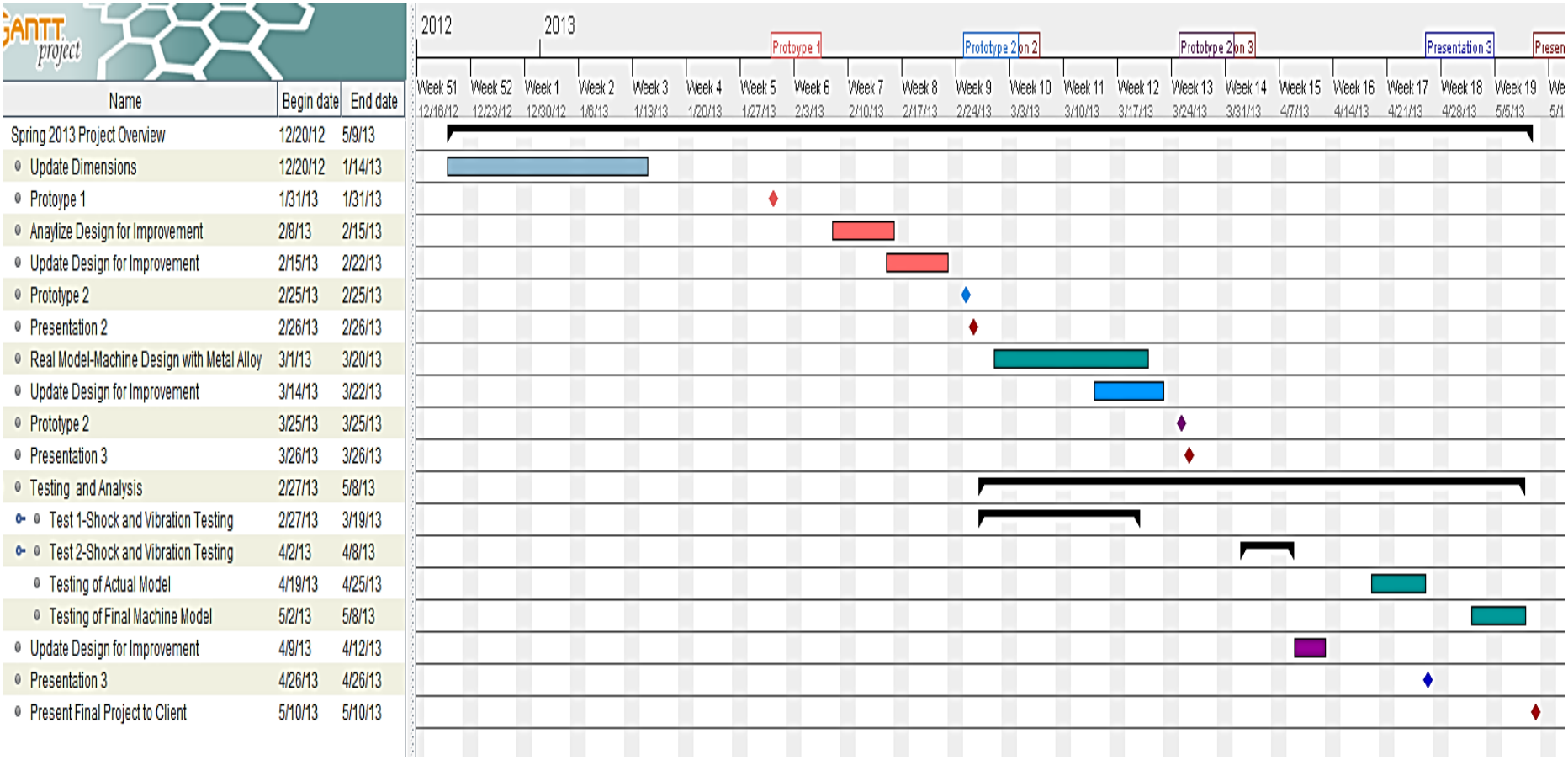
Metal prototype

- Projected date of completion: ~2 weeks
- How to cut:
  - helical grooves on coupling
  - Ball bearing retention chamfers
- Female end done by lathe
  - Add keys to ensure proper mate
  - Keys done by CNC Mill

Future Tasks

- Use CamWorks to write G-Code
- Make a working metal prototype (before spring break)
- Test prototype (after spring break)
  - Vibration, Tension, Torsion, Drop Tests

Gantt Chart



Name	Begin date	End date
Spring 2013 Project Overview	12/20/12	5/9/13
Update Dimensions	12/20/12	1/14/13
Protoype 1	1/31/13	1/31/13
Anaylize Design for Improvement	2/8/13	2/15/13
Update Design for Improvement	2/15/13	2/22/13
Prototype 2	2/25/13	2/25/13
Presentation 2	2/26/13	2/26/13
Real Model-Machine Design with Metal Alloy	3/1/13	3/20/13
Update Design for Improvement	3/14/13	3/22/13
Prototype 2	3/25/13	3/25/13
Presentation 3	3/26/13	3/26/13
Testing and Analysis	2/27/13	5/8/13
Test 1-Shock and Vibration Testing	2/27/13	3/19/13
Test 2-Shock and Vibration Testing	4/2/13	4/8/13
Testing of Actual Model	4/19/13	4/25/13
Testing of Final Machine Model	5/2/13	5/8/13
Update Design for Improvement	4/9/13	4/12/13
Presentation 3	4/26/13	4/26/13
Present Final Project to Client	5/10/13	5/10/13

Questions?