Reusable Cryogenic Connector

FAMU-FSU Engineering

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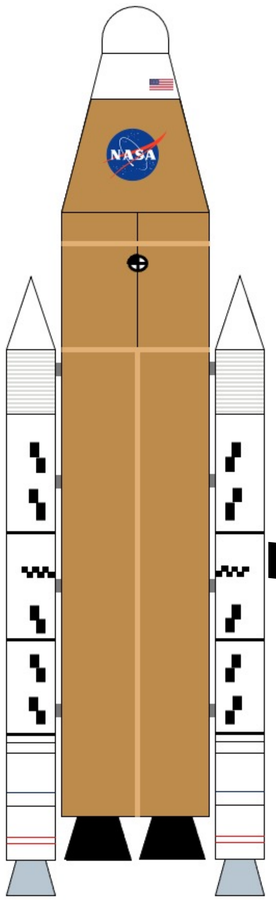
Objective

Our objective is to design, build, and test a cryogenic connector interface with a focus on the seal/joint design for refueling to support future missions on the moon.



Key Goals

- Refuel
- Versatility
- Operable
- Low Loss
- Ergonomic

Targets

Connector diameter: $2.570\ cm\ -3.000\ cm$

Volumetric Flow rate: $0.100\frac{in^3}{min}$

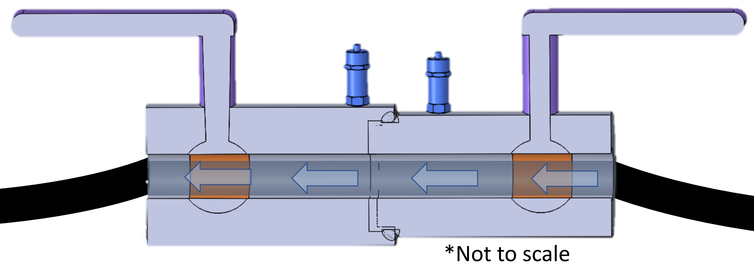
Permissible leakage: $0.001\frac{in^3}{min}$

Boil off rate: $0.023\frac{in^3}{min}$

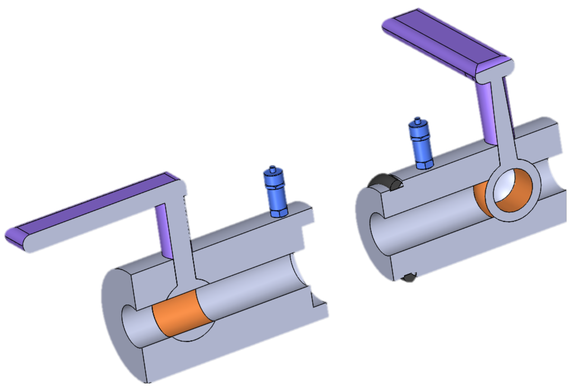
Connection force: $< 48\ N$

Future Work

- Spring Project Plan
- Build Prototype
- Cryogenic Testing

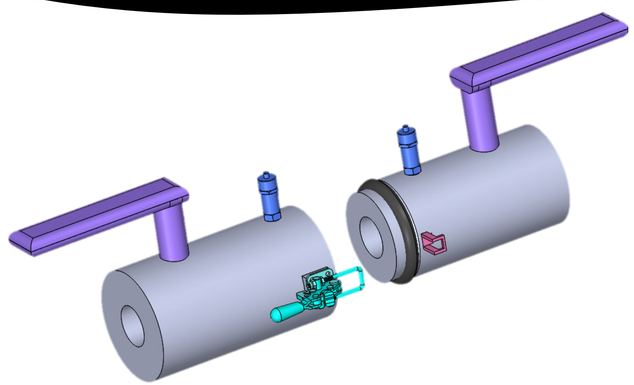


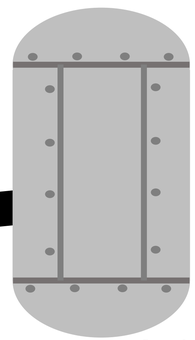
*Not to scale



Final design components

Flow control lever
Boil off Pressure release valves
Hook for latch seal
Quick disconnect latch
Kel-F O-ring
Ball valves
Stainless Steel piping wrapped in multi-layer Insulation





Cryogenic fuel storage tank