Development of a Thrust Test Stand for Dual-Range Micro-Thrust Devices

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Overview

The goal of the MAE Capstone Design team is to design and develop a thrust test stand for Micro-Thrust Devices.

The design team is incorporating the NASA Systems Engineering Process for product development.

After extensive research, the team has created a feasible design solution, that will be fabricated, verified, and validated in Spring 2016.

Impact

• Future CubeSats will lengthen their useful lives with onboard powered propulsion systems.

• UAH Faculty can expand and validate current research.

• Recognition for UAH in the burgeoning field of micro-propulsion testing.

Explanation

With an increasing number of CubeSats and other small satellites being launched each year, the field of micro-propulsion is now more important than ever. Cutting edge research is currently being conducted in this area, but is being hindered by the lack of adequate test instruments. The Test Stand will help bridge the gap between theory and reality for powered micro-satellites.

Key Findings

1. Designed an innovative method of testing micro-thrusters.

2. Micro-thrust measurement down to 1 micro-Newton will be achieved at UAH.

3. Creating novel test apparatus for both low and high micro-thrust measurements.

4. Future engineers trained in the NASA Systems Engineering Process

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