

Cold Spray

Sub \$1000



- Working Pressure 35 Bar
- Powder Flow Sensor
- Equal Pressure Feeding Reservoir
- Small Powder Volume Reservoir

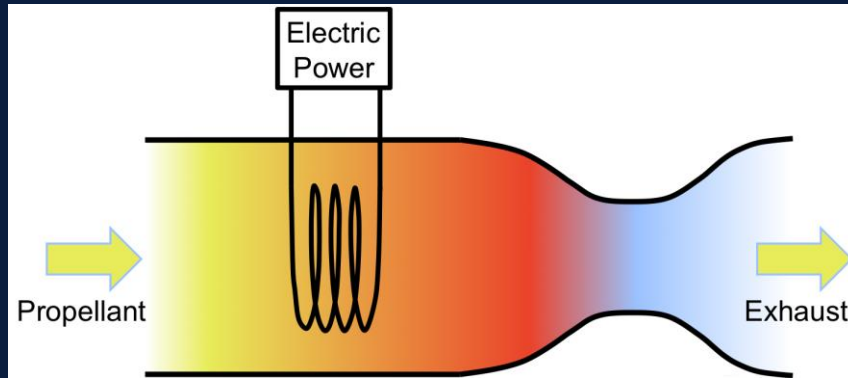
Cold spray unit using Heated air as the delivery method. Ideal for Small Experimental Batches

Senior Design Purpose:
Nozzle, Design and meeting specifications
for research purposes



Arcjet/Electrothermal Thruster

Cost \$2000



Senior Design Purpose:
Nozzle, AI Thruster fluid optimization and meeting specifications

<https://llis.nasa.gov/lesson/736>

<https://ntrs.nasa.gov/api/citations/19860015278/downloads/19860015278.pdf>

Micro Lunar Probe

Lunar Probe

Cost \$200

- Microsatellite size lunar lander/probe
- Electrothermal thruster
- lunar material analysis
- Lunar material retrieval

Micro Lander/probe used for surveying in lunar mining operations

Senior Design Purpose:
Creation, and testing of lunar probe for lunar mining

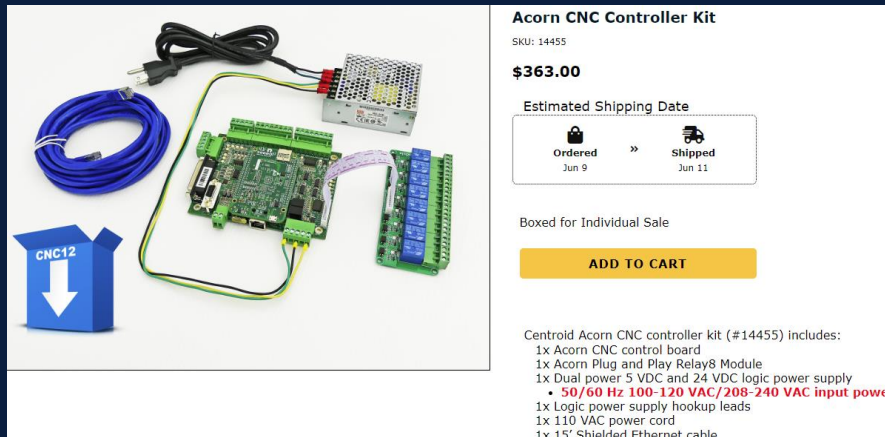
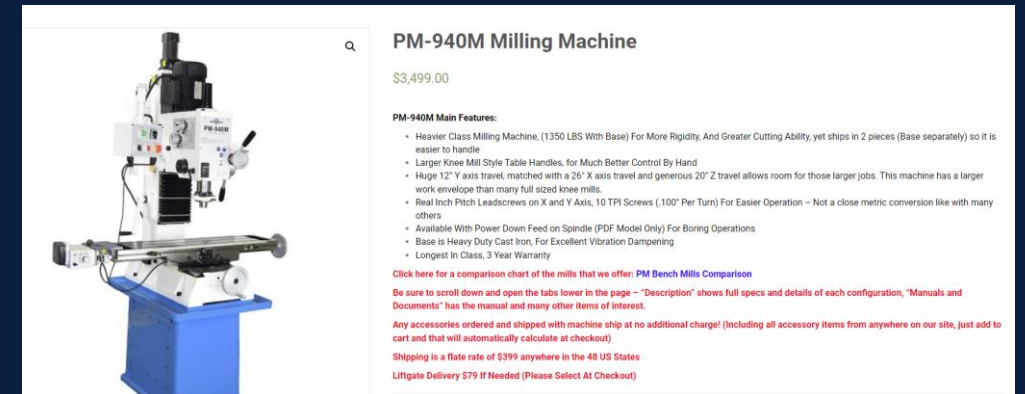
LINK: SEI Related Work

<https://www.studenteducationinitiative.com/copy-of-rev3>

WAAM / Friction stir & Milling Machine

Sub \$6,500

- Low cost WAAM/ Friction stir & Machining center



WAAM deposition and CNC machining of deposition parts on the same machine. With Friction stir capability.

Senior Design Purpose:
Design of Retrofit kit and processing of parts, to bring a low-cost machine to the educational system college/trade school.

Space Junk Removal

Cost \$200

Satellite bus

- Plasma Technology
- AI path analysis
- Thrusters

Senior Design Purpose:
Autonomous drone, designed for space junk
remove (small paint clips to golf ball object)

LINK: Plasma Technology Publication

<https://pubs.aip.org/aip/pop/article-abstract/5/5/2130/1069026/A-plasma-window-for-transmission-of-particle-beams>

<https://ntrs.nasa.gov/api/citations/19670029898/downloads/19670029898.pdf>

Lunar mining Transport

Cost \$200

Satellite bus / Soft Good Spacecraft

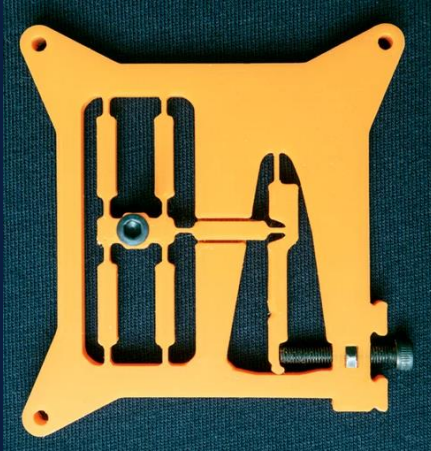
Senior Design Purpose:
Autonomous drone, designed for mining
transport

- AI path analysis
- Electrothermal thruster
- Expandable soft good system and coatings/composites

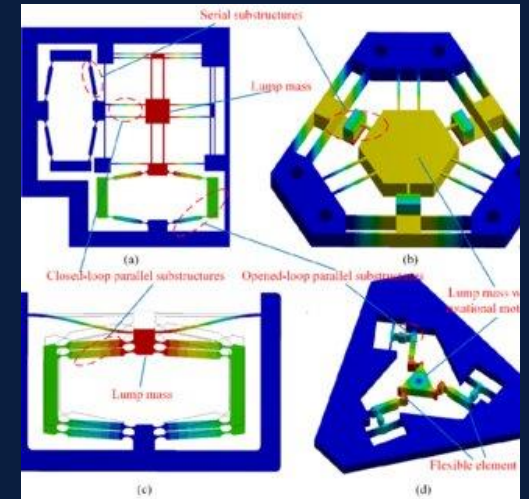


High accuracy, compliance mechanism (3D printing/ bio print)

Cost \$200



Senior Design Purpose:
High accuracy 3d printer meeting
specifications



Honorable mentions

Conventional Engine/RDE

Cost \$10,000



Potential corporate partner

LINK: SEI Related Work

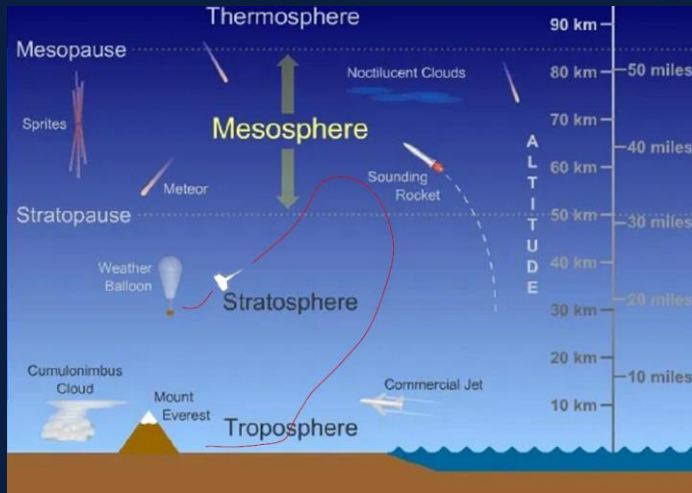
<https://www.studenteducationinitiative.com/material-testing-metalx-625>

Star Flyer

UAV

Cost \$200

Autonomous drone, designed for mesosphere experimentation



Miniaturized Cold Spring

Super critical CO₂

Miniaturized, cold spray unit using super critical CO₂ as the delivery method.

Senior Design Purpose:
Nozzle, Design and Miniaturization

